Central South Consortium
Consortiwm Canolbarth y De
Joint Education Service
Gwasanaeth Addysg ar y Cyd

EAS
Education Achievement Service
for South East Wales
Gwasanaeth Cyflawni Addysg
i Dde Ddwyrain Cymru

ERW
Ein Rhanbarth ar Waith
Education through Regional Working
www.erw.org.uk

GwE
Tuag at Ragoriaeth
Towards Excellence

Teacher assessment

Key stages 2 and 3

Mathematics: learner profile

Level 6

Foreword

This profile is intended to help teachers see the type of evidence that can be used to take to a cluster meeting, in order to support the best-fit judgements made. It also clearly demonstrates that the evidence predominantly lies in a pupil's book and hence is what is already available to the teacher.

The profile also includes a detailed commentary which provides clarity on why the best-fit judgment was awarded. There is no suggestion or expectation that a learner profile is produced for every pupil in the cohort or that teachers write such an extensive commentary.

Learner Profile Mathematics Level 6

(Book 1)

2.4.14

Measurements

L5 - Convert one metric unit to another.

1 cm = 10 mm (Times / Divide)

1 m = 100 cm

1 km = 1000 m

1 Kg = 1000 g

1 Tonne = 1000 Kg

1 cl = 10 ml

1 L = 100 cl

1 L = 1000 ml

1. 5000 m = 5 km (÷1000) ✓
2. 7852 m = 7.852 km (÷1000) ✓
3. 11.5 km = 11500 m (×1000) ✓
4. 42 cm = 0.42 m (÷100) ✓
5. 225 cm = 2.25 m (÷100) ✓
6. 89 cm = 890 mm (×10)
7. ½ km = 500 m (✗)
8. 400 ml = 0.4 L (÷1000)

9. 50cl = 500 ml (x10)

3414

Metric units

10. 0.2m = 20cm ✓

b. 2) 1.005 kg = 0.0000 1005 x 1005 gm

c. 10.07L = 10L 0.07mL x

d. 30.09m = 30m 0.09cm X

2.
2000 pc	=	6500g
1000 pc	=	3250g
500 pc	=	1625g
50 pc	=	812.5g X

3. 19.88 Km = 1min
0.01988 Km = 1min x 60mins X

4.4.14

Metric Units

4. 5kg ÷ 7 = 0-7 each day

5. 5000 ÷ 9 = (555ml) × (1250ml) × 750ml

1a. 170cm = 1-7m ✓

b. 2255g = 0-2255 ×

c. 135m 90cm = 135.9m ✓

d. 60Km 750m = 60.75Km ✓

2. 6 × 275 × 7 =

$$\begin{array}{r} {}^{2}{}^{0}{}^{0}7^{1}0\,5 \\ 6\,\boxed{1200}\boxed{420}\boxed{30} = 1200 \\ 0420 \\ 0030 \\ \hline {}^{1}{}^{0}{}^{0}{}^{0}{}^{1}{}^{0}6^{1}5^{1}0 \end{array}$$

$$\begin{array}{r} 7\,\boxed{7000}\boxed{4200}\boxed{350}\boxed{0} \\ 7000 \\ 4200 \\ 0350 \\ \hline 11550\,ml = 11.55L \end{array}$$ ✓

3. 5000 × 60

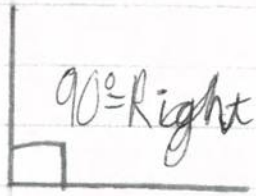
$$\begin{array}{r} 5^{5}{}^{0}{}^{0}{}^{0}0^{1}0^{1}0 \\ 6^{3}\,\boxed{3000}\boxed{0}\boxed{0}\boxed{0} \\ 0\,\boxed{0}\boxed{0}\boxed{0}\boxed{0} \\ \hline = 300,000 \end{array}$$

$$\begin{array}{r} 2^{1}\,\boxed{6}\boxed{0}\boxed{0}\boxed{0}\boxed{0} \\ 4\,\boxed{12}\boxed{0}\boxed{0}\boxed{0}\boxed{0} \\ \hline 7,200,000\,ml = 7,200L \end{array}$$

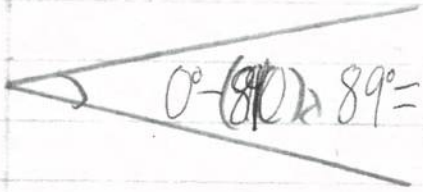
4_1455 ✓

10.4.14

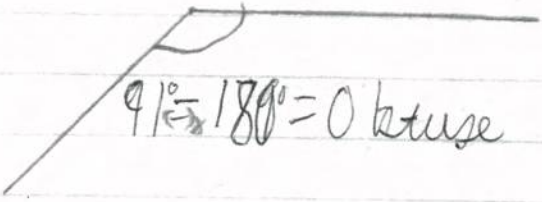
Angles



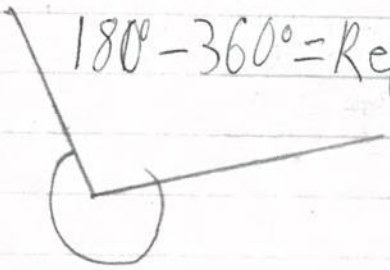
90° = Right angle



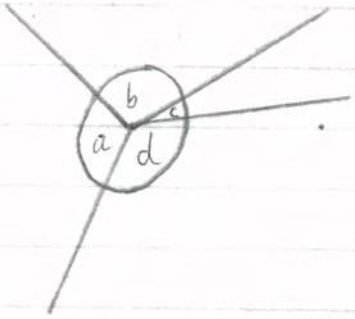
0° - 89° = Acute



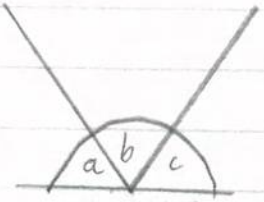
91° - 180° = Obtuse



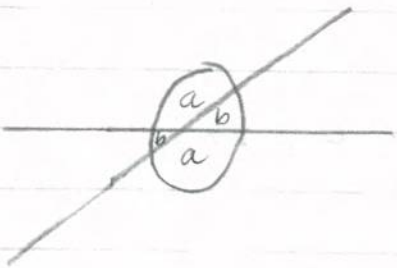
180° - 360° = Reflex



Angles at a point Add to 360°



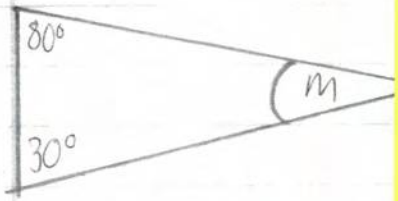
Angles on a straight line Add to 180°



Vertically opposite Angles are equal

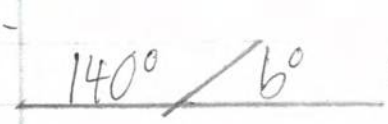
LS (implied). Angle rules., calculate angles on a straight line, around a point, vertically opp.

yr 7 POS.



1- 

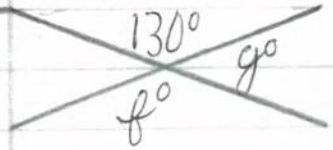
=

2- 

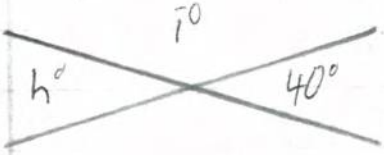
$= b° = 40°$, Angles on a straight line. ✓

3- $c = 150°$, Angles on a straight line. ✓

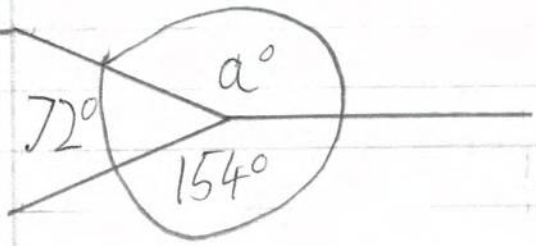
4- $d = 50°$, Angles on a straight line. ✓

6. 

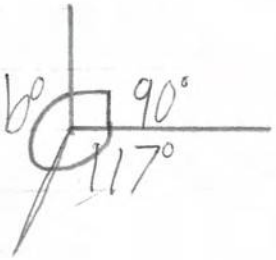
$= g° = 50°$, Angles on a straight line. ✓
$= f° = 130°$, Vertically opposite. ✓

7- 

$= h° = 40°$, Vertically opposite
$= i° = 140°$, Angles on a straight line

1- 

$= a° = 134°$, Angles at a point. ✓

2- 

$= b° = 153$, at a point. ✓

L5 - Understanding of place value to multiply whole numbers.

a. 537 x 45 = 5[illegible]

	40	5
500	20000	2500
30	1200	150
7	280	35

= 20000
02500
01200
00280
00150
00035
24,165
1 1

b. 682 x 537 = 500 30 7

	500	30	7
600	300000	18000	4200
80	40000	2400	560
2	1000	60	14

= 300000
040000
018000
004200
002400
001000
000560
000060
000014
366,234
1 1 1

c. 636 x 58 = 6 3 6

	5	8
3	3 / 0	1 / 5
6	1 / 8	2 / 4

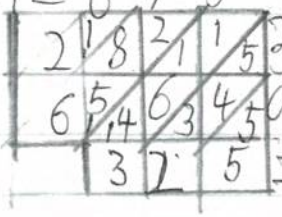
8 8 8 = 36,888
3 6

d. 362 x 87 = [illegible]

	8	7
2	1 / 6	1 / 4
4	3 / 2	2 / 8
1	0 / 8	0 / 7

4 9 4 = 27,494

e. 675 × 39 = 675

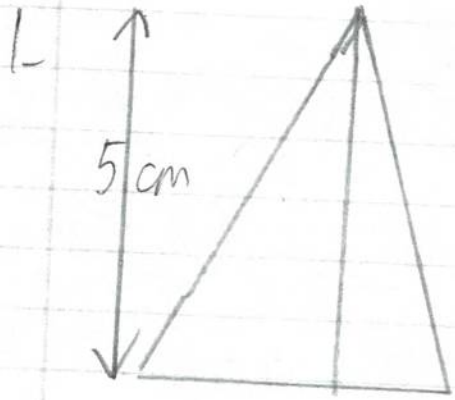


= 26,325

6 May 20

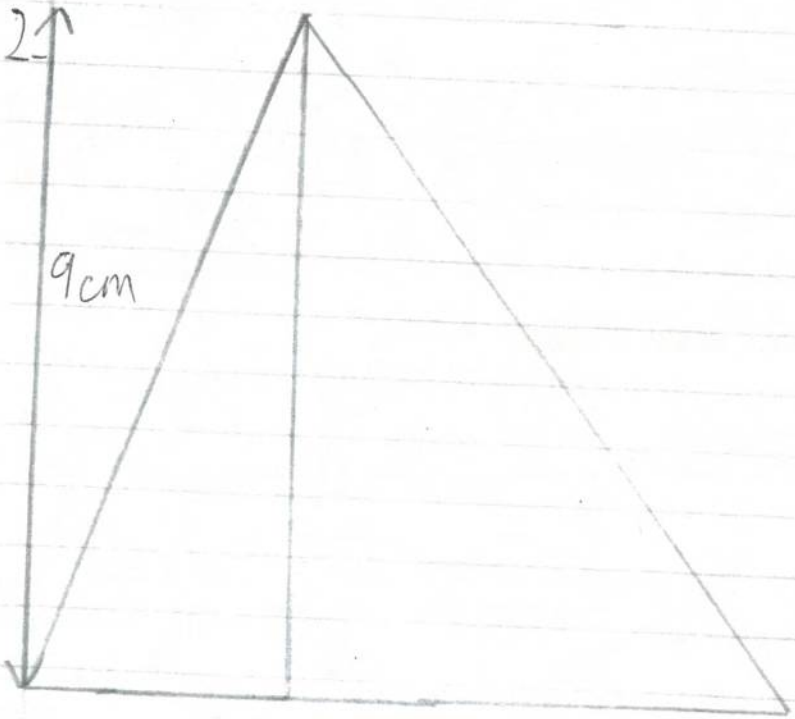
Area of triangles

$\frac{b \times h}{2}$ b = base, h = height



4cm

$4 \times 5 = 20 \div 2 = 10 cm^2$ ✓

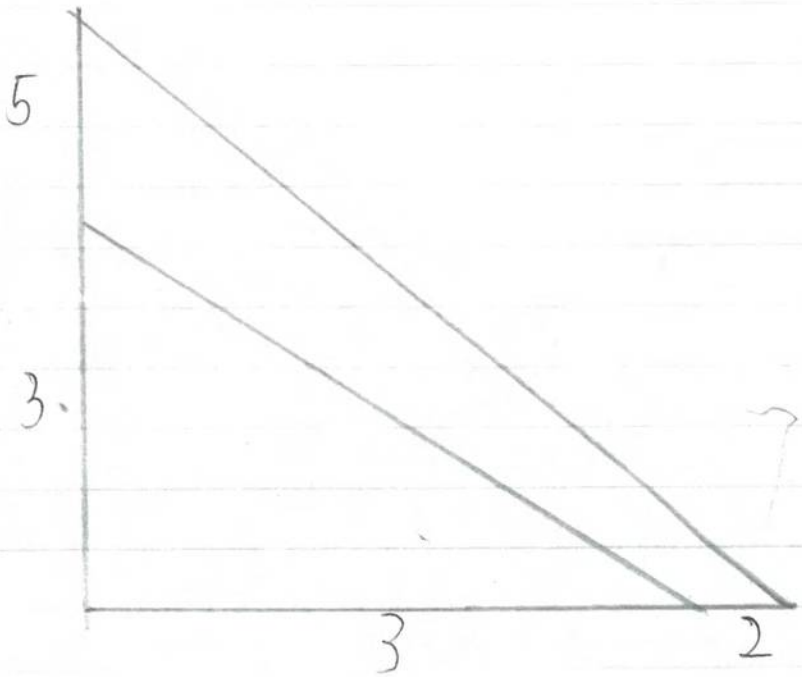


10cm

$9 \times 10 = 90 \div 2 = 45 cm^2$ ✓

4.

3.



$8 \times 5 = 40 \div 2 = 20$ ~~$(=)(\times) = 10cm^2$~~

$5 \times 2 = 10cm^2$

$3 \times 3 = 9 \div 2 = 4.5$

$$\begin{array}{r} 10.0 \\ +\ 04.5 \\ \hline 14.5 \end{array}$$

Fraction	Decimal	Percentage
$\frac{3}{4}$ ✓	0.75 ✓	75% ✓
$\frac{2}{5}$ ✓	0.4 ✓	40% ✓
~~$\frac{3}{5}$~~ ✓	0.6 ✓	60% ✓
$\frac{9}{10}$ ✓	0.9 ✓	90% ✓

14 - Equivalences of F/D/%.

1. $\frac{13}{50} = \frac{26}{100} = 26\%$ ✓
2. 68% ✓
3. 14% ✓
4. 71% ✓
5. 65% ✓

6_ 30% ✓

7_ 45% ✓

1. 3_542 ✓

2. 6_2 ✓

3_ 85-10 ✓

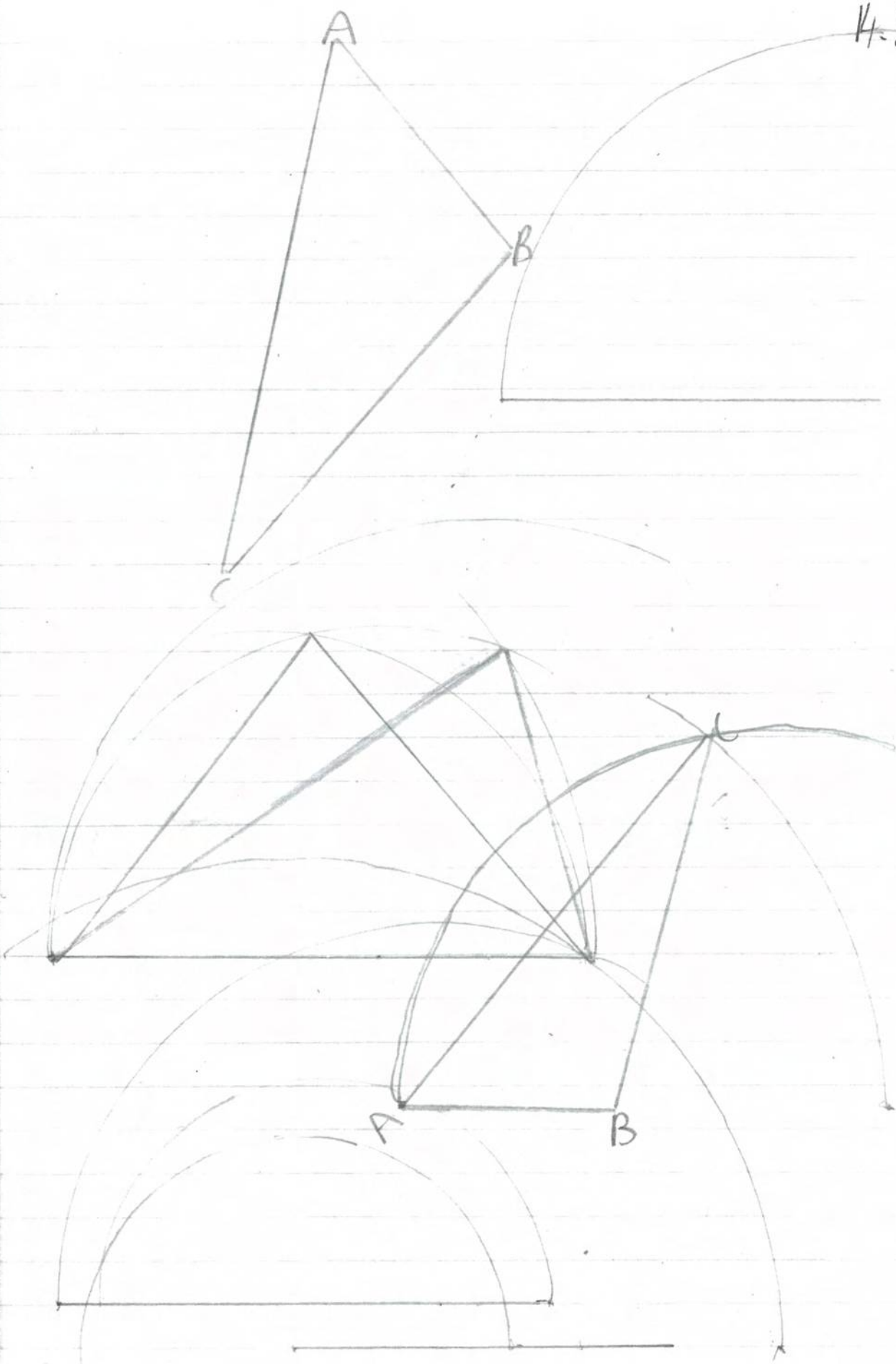
4. 654.2 ✓

5_ 9_15 ✓

6_ 11-30 ✓

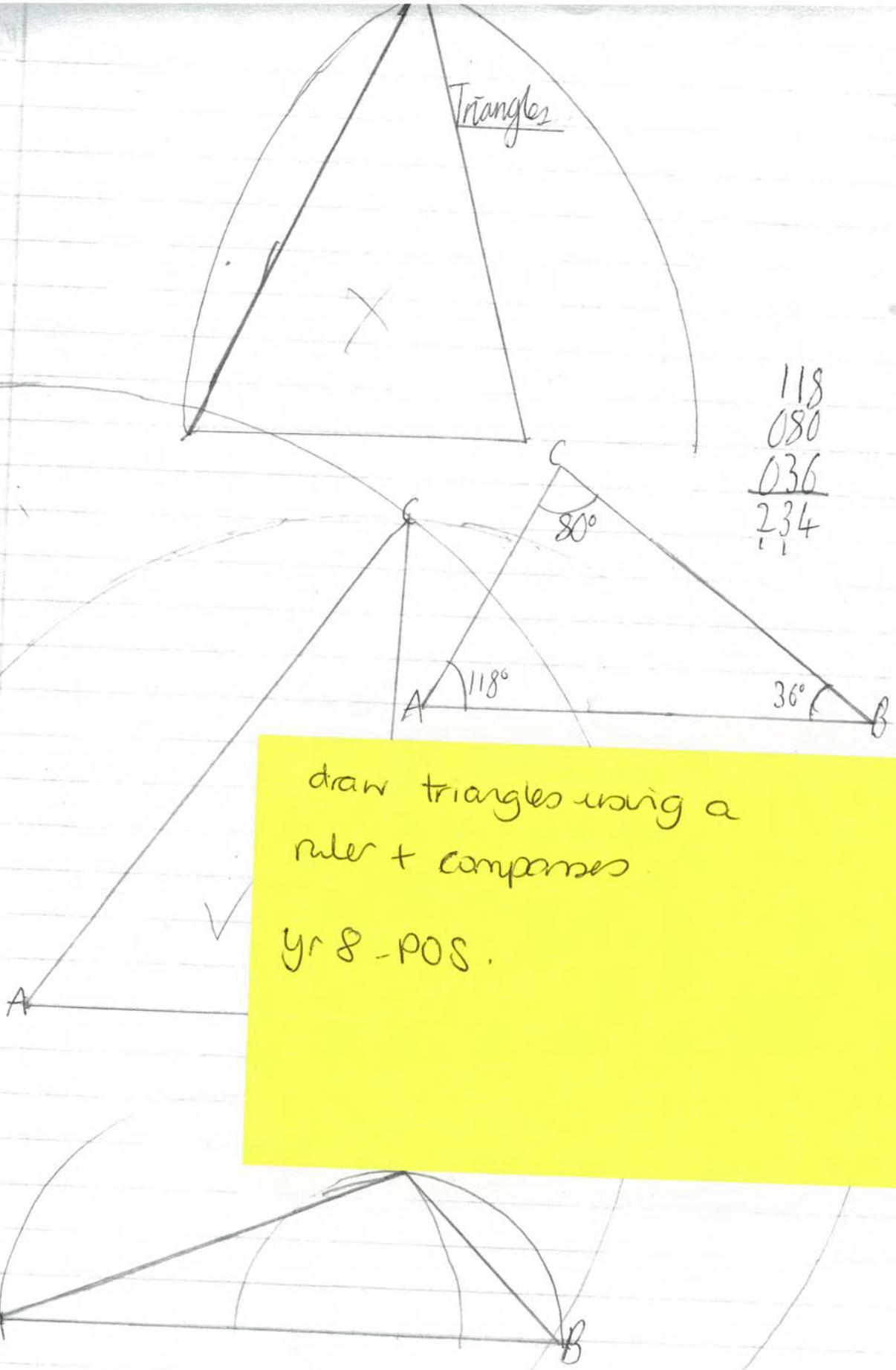
7. 440 ✓

14.5.14



15.5

Triangles



118
080
036
234

draw triangles using a ruler + compasses

Yr 8 - POS.

.14

20 May

Ratios

£280 ÷ 7 = 40
3 : 4 = 3 + 4 = 7
Ni Ne

7 x 3 = 21
7 x 4 = 28

7 x 40 = 280

3 x 40 = 120
4 x 40 = 160

£120 = Nieces
£160 = Nephews

1- 36 Horses
Stallions, Mares, Foals
2 : 7 : 3

2 + 7 + 3 = 12 x 3 = 36

1 = 3

6 = Stallions
21 = Mares
9 = Foals

21 + 9 + 6 = 36

a) Ratio of boys : girls in a class is 4 : 3
If there are 20 boys how many girls are there?

$20 \div 4 = 5$

$1 = 5$

$5 \times 3 = 15$

Ratio (C) $\times$ 20 : 15

b) $714 \div 3 = 3\overline{)714} = 238 \times 4$

$$\begin{array}{r} 238 \\ 4\overline{)0\,9\,5\,2} \end{array}$$

(238 Boys) $\times$
714 Girls
952 Boys

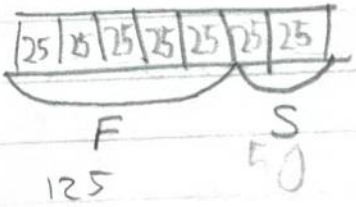
1. $24 : 35$ ✓

2. $2 : 5$ ✓

3. $5 : 2 = 5 + 2 = 7$
Flour Sugar

Flour = 125g
Sugar = x

$$7\overline{)125.00\,00\,00\,0} \quad 017857142\ldots$$



50g of sugar ✓

4.

22.5.14

Ratios

4. Coil of wire 3:4
4=32cm

32÷4=8=1(X3)
8X3=24

24+32=56cm

Length=56cm ✓

5. 77 pupils in the zoo in the afternoon ✓

6. The length of the shorter rope is 56cm ✓

7. 52:39 = Ken:Bob = 4:3 ✓

1. 1:3:8 ✓

2. 2:3:7 ✓

3. 36cm ✓

4.
a. 480ml ✓
b. 1440ml ✓

5.
a. Annabel ✓
b. 2005 ✓

L6 - Calculating using ratios in appropriate situations.

Simplifying ratios.

Ratio Worksheet

1. The three angles of a triangle are in the ratio of 3: 5: 7. Calculate the size of **each** angle.

= 15

~~15 ÷ 3 = 5~~

180° ÷ 15 = 12

3 × 12 = 36
5 × 12 = 60
7 × 12 = 84

= 180°

2. Fruit punch is made by mixing orange juice and mango juice in the ratio of 4:1.
a) How much orange juice do I need with 250 ml of Mango?
b) How much Mango Juice do I need with 800ml of Orange?
c) How much Mango juice is needed to make 2 litres of mixed punch?

a) 1000 ml

b) 200 ml

c) 2L = 2000 ml

4+1 = 5 2000 ÷ 5 = 400

400ml = mango
1600 ml = orange

3. A man planted 600 red flowers and 240 yellow flowers in his garden.
a) Write down the ratio of red to yellow flowers in its simplest form.
b) The man also planted some crocus and daffodil bulbs, in the ratio of 1:5. If he planted 420 bulbs in total how many crocus bulbs did he plant?

a) 600 : 240
60 : 24
10 : 4
5 : 2

b) 1 : 5 = 6
c : d

420 ÷ 6 = 70 each

70 crocus
350 daffodils

Past Exam Questions

1.(a) Tim and Shula bought a car for £5000.
Tim paid £3500 and Shula paid £1500.

Write the ratio 3500 : 1500 as simply as possible.

35 : 15
7 : 3

7 : 3

[2]

(b) Tim, Shula and Carol share the running costs of the car in the ratio 1 : 2 : 3.
Last year it cost £1860 to run the car.

T S C
1 2 3
6

How much did Carol pay?

$6\overline{)1860}$ = 310

310 each

T = 310
S = 2 × 310 = 620
C = 3 × 310 = 930

£ 930

2. Edie drinks 12 litres of water in 5 days.

At this rate, how much water would she drink in 3 days?

12 ÷ 5

$5\overline{)12.^{2}0}$ = 2.4

2.4 × 3 = 7.2

litres

[2]

3.(a) During one hour a garage sold 2750 litres of petrol and 1750 litres of diesel.

Work out the ratio of petrol to diesel.
Give your answer in its simplest form.

p : d

2750 : 1750

275 : 175

55 : 35

$5\overline{)27^{2}5}$ = 55

$5\overline{)17^{2}5}$ = 35

11 : 7

11 : 7

6-
a-35

4.6.14

[redacted]

Round to the nearest 10, 100, 1000 and decimal places ✓
Estimate (Using rounding) ✓
Written methods for calculating ✓
Calculate with negative numbers ✓
Factors / Multiples ✓
Equivalent fractions ✓
Calculating with fractions ✓
Write and evaluate algebraic expressions ✓
Calculating with decimals (Skipped)
Solve equations ✓
Angles.

1. 4330 (100 0) = 4000 ✓
2. 3470 (100) = 3500 ✓
3. 3335 (10) = 3340 ✓
4. 4453 (100 0) = 4000 ✓
5. 1214 (100) = 1200 ✓
6. 3426 (10) = 3430 ✓
1. 6.2184 (1 dp) = 6.2 ✓
2. 85.102 (2 dp) = 85.10 ✓

3. 654.21 (1 dp) = 654.2 ✓

4. 9.152 (2 dp) = 9.15 ✓

5. 11.296 (2 dp) = 11.30 ✓

6. 437.015 (10) = 440 ✓

1. 800 × 200 = 160,000 ÷ 100 = 1,600 ✓

2. 400 + 100 = 500 = estimate ✓

(3) 382
+ 116
498 = exact ✓

3. 800 − 400 = 400 = estimate ✓

807
−374
433 = exact ✓

L4 – Process a range of written methods.
four operations

1.
	3	10	7
9	27	0	63
2	8	5	3 ✓

2.
	2	5	3
2	04	10	06
7	14	35	21
6	8	3	1 ✓

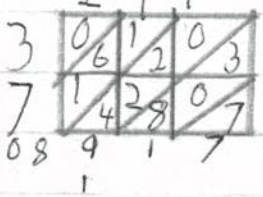
3. 1374
3) 4122 = 1374 ✓

4. $17\overline{)5^{5}9^{8}8^{3}4} = 352$ ✓

5. $5\overline{)6^{1}3^{3}2.3000} = 126.4$ ✓

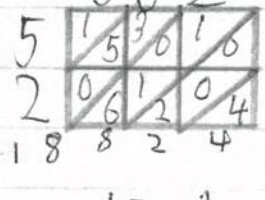
5 Jan

1. 241



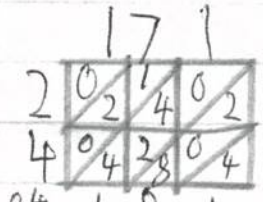
$= 8917$ ✓

2. 362



$= 18824$ ✓

3. 171



$= 4104$ ✓

(1)

1. $14\overline{)1^{1}9^{5}8^{2}8} = 142$ ✓

2. $(47\overline{)6^{6}5^{5}2^{3}8.40}) \times 17\overline{)85^{11}28} = 384$

3. $21\overline{)5061} = 241$

1. 473 cakes. 25 were eaten. The rest are packed in boxes

$473 - 25 = 448$

$8\overline{)4^{4}4^{4}8}$ $\begin{matrix}056\\ \text{boxes}\end{matrix}$ ✓

2. 30z. 5x z as m. How many more z than m

$30 \div 5 = 6$

24 more z than m ✓

1. $-8+3=-5$ ✓

2. $-8+-3=-11$ ✓

3. $-8-3=11$ ✓

4. $-8--3=-5$ ✓

5. $-3--8=5$ ✓

1. $6 \times 4=24$ ✓

2. $-6 \times -4=24$ ✓

3. $-6 \times 3=-18$ ✓

4. $6 \times -4=-24$ ✓

5. $25 \div -5=-5$ ✓

1. $\frac{5}{6}=\frac{25}{30}$ ✓

2. $\frac{2}{3}=\frac{18}{27}$ ✓

3. $\frac{4}{5} = \frac{24}{30}$ ✓

4. $\frac{5}{7} = \frac{45}{63}$ ✓

5. $\frac{4}{15} = \frac{12}{45}$ ✓

6. $\frac{12}{13} = \frac{36}{39}$ ✓

7. $\frac{1}{3}$ ✓

1. $\frac{3}{4} \neq \frac{2}{5} = \frac{15}{20} \neq \frac{8}{20} = \frac{23}{20} = 1\frac{3}{20}$ ✓

2. $\frac{2}{3} + \frac{3}{7} = \frac{14}{21} + \frac{9}{21} = \frac{23}{21} = 1\frac{2}{21}$ ✓

6 Jan

3. $\frac{3}{10} + \frac{2}{3} = \frac{9}{30} + \frac{20}{30} = \frac{29}{30}$ ✓

$\frac{2}{3}$ of 39

1. 39 ÷ 3 = 13

13 × 2 = 26

2. $\frac{1}{5} \times \frac{2}{5}$ = Multiply top × top and bottom × bottom

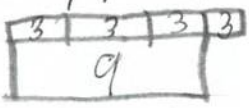
$\frac{2}{25}$

3. $\frac{4}{7} \times 25 =$ make it $\frac{4}{7} \times \frac{25}{1}$ then do 4×25 and 7×1

$\frac{100}{7}$

4. $\frac{1}{5} \div \frac{2}{5}$ = turn the second fraction upside down and multiply $= \frac{1}{5} \times \frac{5}{2} = \frac{5}{10}$

5. John had some apples and and bananas. After eating $\frac{1}{4}$ of the apples he had twice as many banas as apples left. If he has 9 more banana than apples, how many apples did he have to start with

A 

B 

He ~~started~~ with 12 apples.

1. $4e + 3 - 6e + 5 + 4e = 2e + 8$ ✓

2. $4 + 8d - 3d = 4 + 5d$ ✓

1. $8x + 9 = 3x + 69$

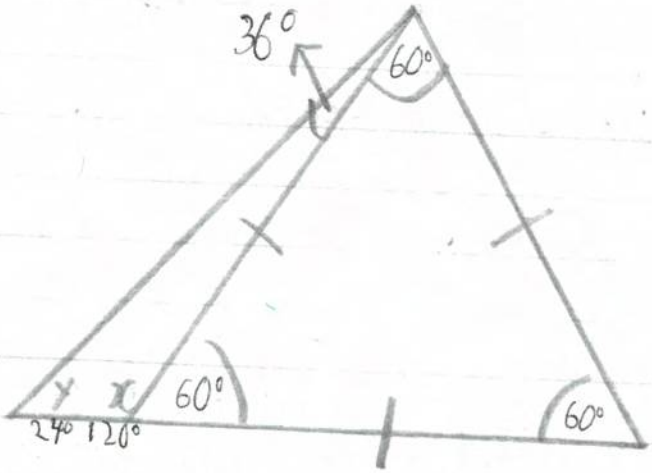
$x = 12$ ✓

2. $4x + 37 = 7x + 4$

$x = 11$ ✓

3. $2x + 17 = 7x + 2$

$x = 3$ ✓



Triangle = 180°

$60 + 60 + 60 = 180$

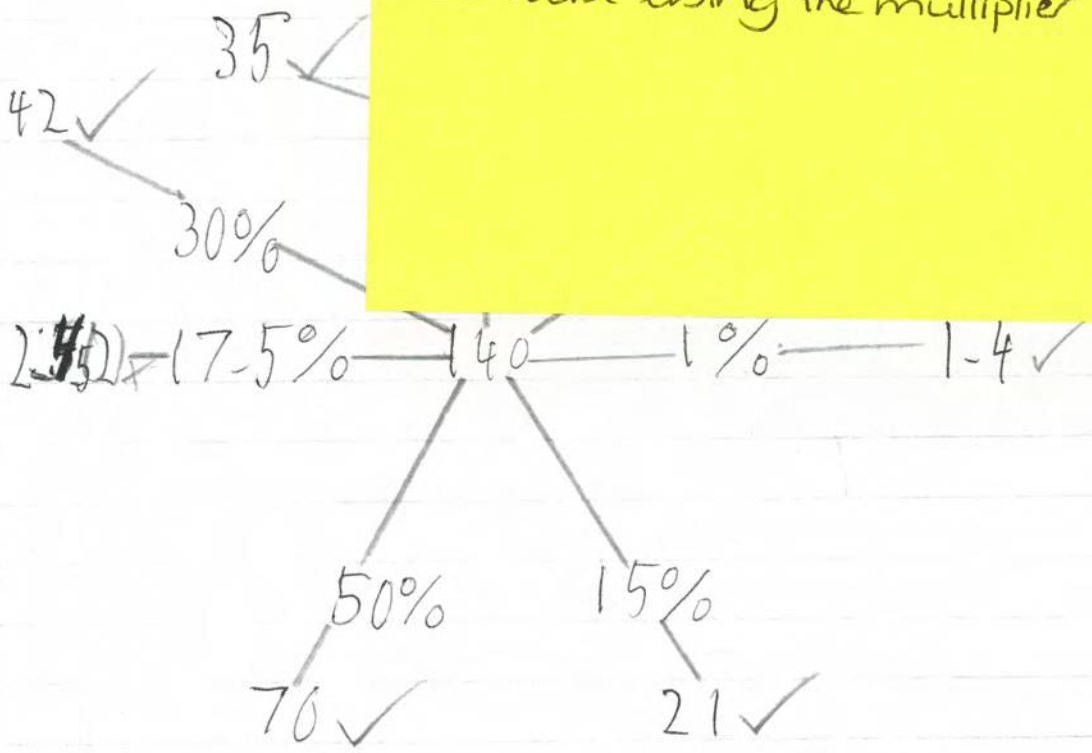
$36 + 24 + 120 = 180$

$96 + 24 + 60 = 180$

Areas of shape are not necessarily drawn to scale

L5- Percentage parts of quantities

Leading to L6 - % increase + decrease using the multiplier method.



1. 68% of 10 = 68 × 0.1 = 6.8

2. 69% of 30 = 69 × 0.3 = 20.7

3. 8% of 600 = 8 × 0.6 = 4.8

4. 40% of 600 = 40 × 0.6 = 24

5. 96% of 200 = 96 × 0.2 = 19.2

1. 54 ÷ 80 = 0.675 × 100 = 67.5% ✓

2. 43 ÷ 60 = 0.716 × 100 = 71.6% ✓

Some shoes cost £60. If they have 15% off what is the new cost?

10% of £60 = £6 5% = £3 15% £9 60 - 9 = £51

that is equal to $60 \times 0.85 = £51$

If the 0.85 was a percentage it would be which is 100% − 15%.

1. $82 \times 0.2 = 16.4$ ($\times 100 = 1640$).
2. $482 \times 0.75 = 428.98$
3. $47 \times 0.89 = 41.83$
4. $88 \times 0.77 = 67.76$
5. $592 \times 0.62 = 37.04$
6. $14 \times 0.47 = 6.58$

You have the correct Multipliers - Now use a calculator to work out the reduced amount.

L6 - % increase/decrease

To find (£) 37% of £235 is to times 235 by the (answer) difference of 100-37. 235 x 0.63 = 148.05

1. 430 ÷ 10 = 43 x 4 = 172

430 + 172 = £602

100% + 40% = 140%

430 x 1.4 = 602

1. Increase (by) £24 by 90%

24 x 1.9 = 45.6 ✓

2. Increase £80 by 9%

1.09 x 80 = 87.2 ✓

3. Increase £800 by 20%

800 x 1.2 = 960 ✓

4. 47 increased by 34%

47 x 1.34 = 62.98 ✓

5. Increase 86 by 14%

86 x 1.14 = 98.04 ✓

6. What is 43% more than 162

$162 \times 1.43 = 231.66$ ✓

7. 546 plus an extra 39%

$546 \times 1.39 = 758.94$

8. 74 increased by 3%

$74 \times 1.03 = 76.22$

I

Percentages

1. $68 \times 1.21 = 82.28$

2. $98 \times 0.68 = 66.64$

1. $820 \times 1.07 = 877.4 - 820 = \$57.40$ ✓

2a. $90 \times 1.07 = \$96.3 - 90 = \$96.30$ ✓

b. \$96.30 ✓

3. $920 \times 1.07 = \$984.40$ ✓

4. $240 \times 1.07 = \$256.80$ ✓

5. $60 \times 0.95 = \$17.50$

6. $35 \times 15 = \$525 \times 0.85 = \$446.25$ ✓

(7) ×

A rugby shirt is in a sale "15% off"

It will cost £55.25

What was its cost before it way reduced.

£55.25 → 85%

55.25 ÷ 85 = 0.65 → 1%

£65

The "85%" comes from "100% - 15%"

The price of a car increases in value by 12%. It now costs £9200.

What was its original value?

82.142857 × 100 = £8214.28 ✓

Increase

1). 30 by 20%

Decrease

2). 70 by 40%

3). 80 by 15%

4). 220 by 5%

5). A season ticket for Bolton F.C. this season costs £410. It is to go up by 34% next season. How much will a season ticket cost next season ?

6). A shirt is slightly shop soiled so it is reduced by 30%. It was £40.50, how much is it to be sold for ?

7). The bill for a meal came to the cost of the meal plus 15% service charge
The total cost was £80.50. What was just the cost of the meal ?

1. $30 \times 1.2 = 36$

2. $70 \times 1.4 = 98$

3. $80 \times 0.85 = 68$

4. $220 \times 0.95 = 209$

5. $410 \times 1.34 = £549.40$

6. $(40 \times 5) \times 40.5 \times 0.7 = £28.35$

7. $80.5 \div 115 = 0.7 = 1\%$

$0.7 \times 15 = 10.5 = 15\%$

$80.5 - 10.5 = £70.00$

Well done [redacted]

27.6.14

Percentages

1. (44) 44 × 0.8 = £35.20
2. 5400 × 1.06 = £5724
3. 245 × 0.7 = 171.5
4. 95 × 0.93 = 88.35
5. 2.8 × 1.01 =

4 July

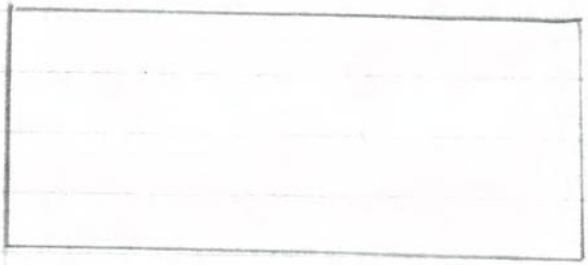
Formulae of Parallelogram and trapezium (area)

Area of parallelogram = area = b × h = base × height

Area of trapezium = h × (b + c) ÷ 2

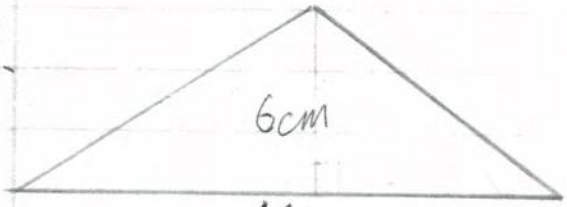
(base add) → bottom add top × height ÷ 2

1.



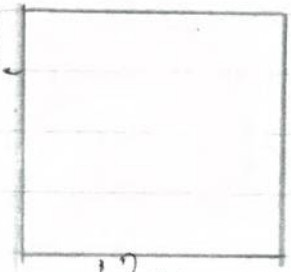
= 7 × 9 = 63 m² ✓

2.



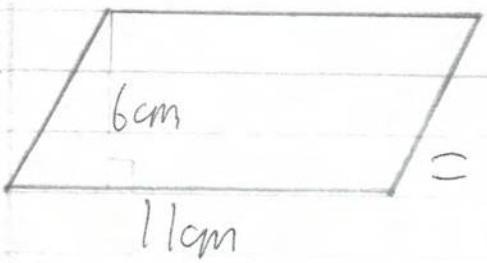
= 10 × 6 = 60 ÷ 2 = 30 cm² ✓

3.



= 13² = 1 3 × 1 3 = 1 6 9 = 169 cm² ✓

4.



= 6 × 11 = 66 cm² ✓

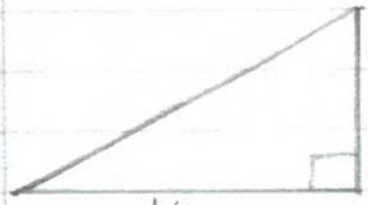
Use formula to find area of
parallelogram - yr 7 POS
area of trapezium - yr 8 POS

5.



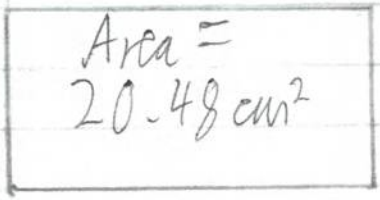
$= 8 \times 5 = 40 m^2$ ✓

6.



$= 14 \times 8 = 112 \div 2 = 56 m^2$ ✓

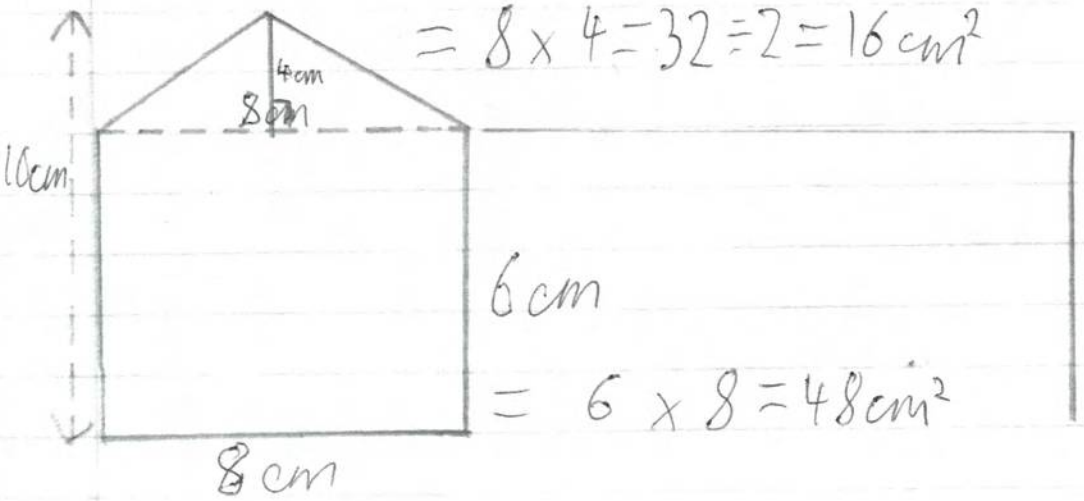
Area = 20.48 cm^2



3.2 cm

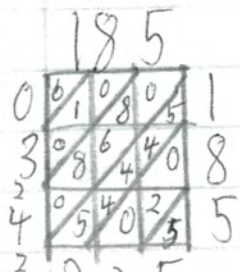
$= (3.2 \times 6.4 cm^{(2)}) \div 2$ ✓

$= 8 \times 4 = 32 \div 2 = 16 cm^2$



$= 6 \times 8 = 48 cm^2$

$48 + 16 = 64 cm^2$ ✓



$= 34,225 - 37$

$34,225$
$-\ 37$
$34,188$

$20 \overline{)34188.80} = 1,709.4$

1709.4

£50 + 30% = 130%

$50 \times 1.3 = 65$

3. 3% of 500 = 15 ✓

4. 23 ÷ 0.5 = 46 (=) ✓

5. Book = £6.99 5 books = £34.95 ✓

6. √81 = 9 ✓

7. Area of triangle. Base = 7cm Height = 9cm = 63 ÷ 2 = £54.31

8. 0.784 to 2dp = 0.78 ✓

9. 3/5 as % = 60 ✓

10. 4/7 of 28 = 16 ✓

7/10

Target areas = Working out the area of triangles and multiplying 2 decimals.

a) 75° ✓

b) 45° ✓

c) 92° ✓

d) 105° ✓

e) 80° ✓

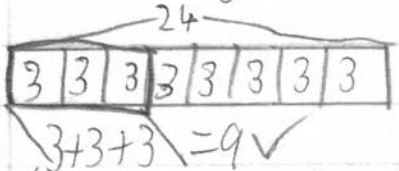
) 40 ✓

11.

	40	8
30	1200	240
6	240	48

= 1200
0240
0240
0048
1728 ✓

12. 3 8ths of 24



13. How many 1/4 in 5 4/8? = 22 ✓

14. How many 1/4 in 2 1/3? = 21 ✓

15. 0 2/5 as a decimal? = 0.4 ✓

16. Find 10% of £54? = £5.40 ✓

17. Find 2% of 150? = 3 ✓

18. Find the area of a triangle. Base 8cm x 10cm = 80cm² = 4 ✓

19. What is √64? = 8 ✓

20. What is 1/8 as a percentage? = 12.5 ✓

20/20

1. 0.7 x 0.3 = 0.021 x

2. 0.4 x 0.2 = 0.08 x

8.4.14

Numeracy Practice

1. $19 - 3 \times 4 = 7$ ✓

2. What is the value of $2^{?} = 16$ ✓

3. The factors of 24
   1 ✓
   2 ✓
   3 ✓
   4 ✓
   6 ✓
   12 ✓
   24 ✓
   8 ✓

4. A book is £7.99. How much does 6 books cost
   £47.94 ✓

5. What number do you need ~~add~~ to 0.017 to make 2
   1.983 ✓

6. What is 0.8137 to 3 decimal places?
   0.814 ✓

7. Multiply 0.9 and 0.3 $= (3) \times 0.7 \times 0.27$ ✓

8. $0.3 \div 0.1 = 0B$ ✓

9. $14 \div 0.5 = 28$ ✓

$$5 \overline{)63.^{3}7^{2}2^{2}5} \quad 12.745$$ ✓

en Hinkes

Tuesday 25th March

Numeracy Practice

Problem 1

$5^2 = 16$ $\quad 5 \times 5 = 25$

$2^5 = 32$ ✓ $\quad 2 \times 2 \times 2 \times 2 \times 2 = 2 \times 2 = 4 \times 2 = 8 \times 2 = 16 \times 2 = 32$

$2 \times 5 + 5 \times 2 = 20$ (✓) $\quad 2 \times 5 = 10 \rightarrow 20 \leftarrow 5 \times 2 = 10$

Problem 2

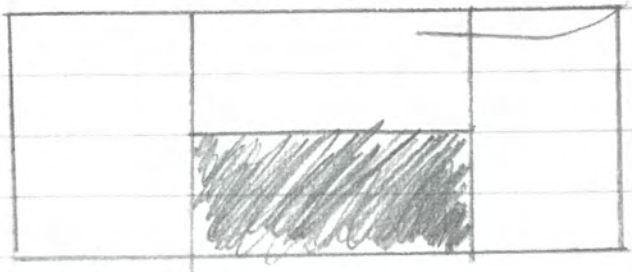
16			280		
50%	8	✓	10%	28	✓
n^2	64	✓	$\times \frac{1}{7}$	4	✓
+6	70	✓	$\times 9$	36	✓
$\times 4$	280	✓	$\sqrt{n}$	6	✓
✓			$\times 8$	48	✓
			✓		

Problem 3

1000			11		
25%	250	✓	$\times 8$	88	✓
$\frac{1}{2}$	125	✓	-8	80	✓
-4	121	✓	$\times 4$	320	✓
$\sqrt{n}$	11	✓	5%	16	✓
			$\sqrt{n}$	4	✓

Problem 4

This large rectangle is made from 4 smaller rectangles each measuring 2 cm x 4 cm



Statements

1. Perimeter of small rectangle is 12 cm ✓
2. Perimeter of large rectangle is 48 cm (✓)
3. Area of rectangle is 24 cm^2 x 32 cm

1. Factors of 28

28

1 ✓
2 ✓
4 ✓
7 ✓
14 ✓
28 ✓

2. 6th multiple of 9 = 54 ✓

3. bill = £181 = Shop 1 £237 = shop 2 Total = 418 ✓

4. (1-88) × 1-63

5. 1-0-2186 = (0-8924) × 0-715

6. 0-785 = 0-79 ✓

7. 2-347 = 2-3 ✓

8. 18-15 ÷ 3 = 3 ÷ 3 = 1 x -13

9. grams in 7-3 kg = 7300g ✓

10. 0-8l = 80ml ✓

11. 1/4 in 7 1/4 = 29 ✓

12. 9 ÷ 0-5 = 18 ✓

Wen Hinks

13. $0.18 \times 0.7 = 0.056 \times 0.56$

14. 20% as a fraction $= \frac{1}{5}$ ✓

15. 36 | 72 × 72

3	2	60
6	420	12

$= 2592$ ✓

16. $0.3 \times 0.2 = 0.06$ ✓

17. 3% of 500 = 15 ✓

18. Area of triangle angle 1 = 7cm angle 2 = 4cm $= 28cm^2 \div 2 = 14cm^2$ ✓

19. £5.99 book × 5 = £29.95 ✓

0942 ✓

20. 65 × 78 = 5994

16/20

~~*△*|□0~~

~~***△|□00~~

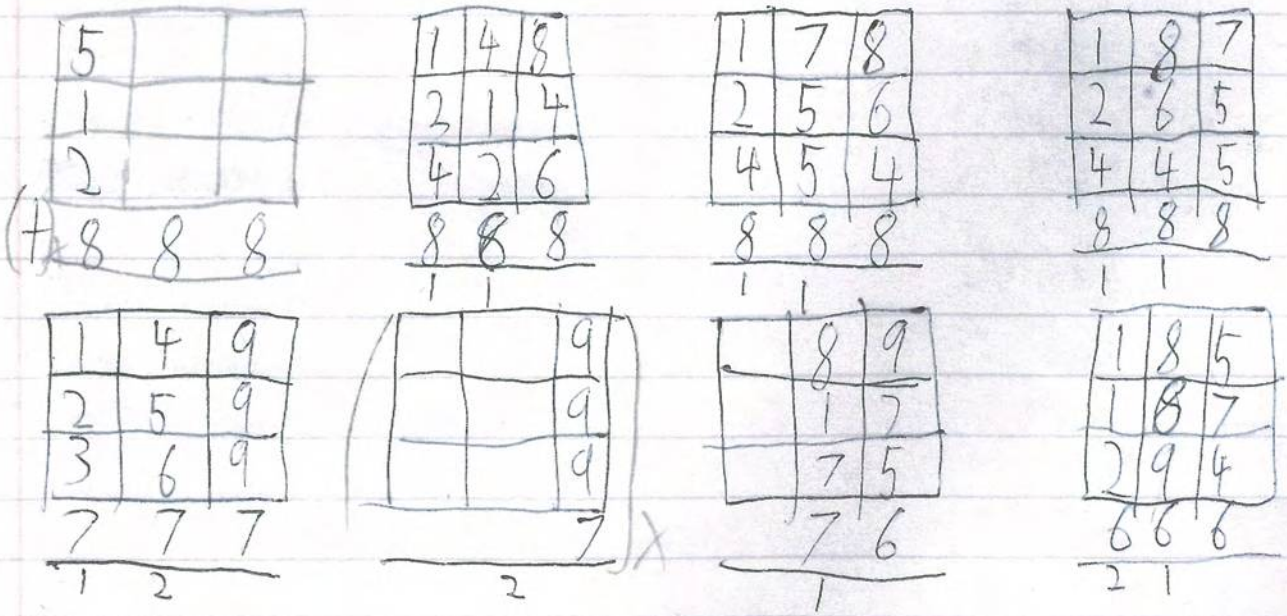
*|00

*=00

(081(55)16180

(? ? ? ? ? ?)

08118811180



1. 380 ✓
2. 45 ✓
3. 20% ✓
4. 9.1 ✓
5. 0.65mm ✓
6. 9:35 ✓

W

(15 × 9 = 135) ✓

(38 × 20 = 760) ✓

(47 × 42 = 1614) ✓

(47 × 31 × 24 = 24028) ✓

	15	
9	9	45

= 54 ✓

	20	
3	6	0
8	16	0

= 22 ✓

	42	
4	16	8
7	28	14

= 66 ✓

	15	
9	90	45

= 135 ✓

	20	
3	600	0
8	160	0

= 760 ✓

	42	
4	1600	80
7	280	14

= 1974 ✓

	24028	
+	1614	
+	0760	
+	0135	
	26537	
	111	

✓

	47	
3	1200	210
1	40	7

= 1457

20	2000	8000	1000	140
4	4000	1600	200	28

= 40000 + 20000 + 16000 + 8000 + 2000 + 1000 + 2800 + 1400 = 91200

	34968	
	01974	
	00760	
	00135	
	37837	
	221	

37837

7,156,264,527

Nearest billion: 7 billion

Nearest million: 7,156 million

Increase in population:

19% in China, how many is it:

Everyone in line how long for:

Learner Profile Mathematics Level 6

(Book 2)

3rd September

Expectations

I want to (gain:) x achieve:

- Level 6B at the end of the year
- Approximately 80% in the end of year exams.
- I want to learn about circles (radius, sector, etc.

To do this, I will:

- Try my best at everything
- Work quickly
- Do research

To help me do these, others will:

- Others will :) • Give help if needed
- Not annoy me
- Be quiet at times

To help me, Mr. Abbott will:

- Provide helpto understand things

9 Septem

Broken Calculator

1. $4-3=1$ ✓

2. $(4\times2)\times4\times(3-2-2-2-2-2=2)\times3-3-4-3$ ✓

3. $3\times3-3-3=3$ ✓

4. $4\times4-4-4-4=4$ ✓

5. $3\times4-3-4=5$ ✓

6. $3\times3-3=6$ ✓

7. $(3\times4-3)\times4\times4-3-3-3=7$ ✓

8. $3\times4-4=8$ ✓

9. $3\times3=9$ ✓

10. $4\times4-3-3=10$ ✓

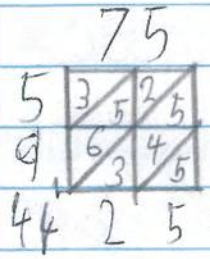
9/10

Estimating

$70\times70=4900$

	7	4
6	42	24
7	49	28

$49\ 5\ 8 = 4958$



1. 4500 ✓

2. 1800 ✓

3. 440 × 70 = 44 × 7 = 7, 44 → 308 → 30,800 ✓

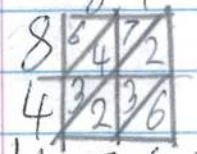
4. 120,000 ✓

5. 200 × 40 = 8,000 ✓

6. 480,000 ✓

1. 5 × 4 = 20 ✓

2. 72 = Estimate ✓



L5. Check solutions by estimating first.

1. $\frac{9.89 \times 7.752}{4.17 + 1.41} = \frac{10 \times 8}{4 + 1} = \frac{80}{5} = 16$

1. $\frac{547}{4.8 \times 9.7} = \frac{500}{5 \times 10} = \frac{500}{50} = 10$ ✓

1. $\frac{69 \times 398}{207} = \frac{100 \times 400}{200} = \frac{40000}{200} = 2,000,000$ ×

3. $\frac{7.5 \times 2 - 79}{2.71 + 3 - 19} = \frac{(10) \cdot 8 \times 3}{3 + 3} = \frac{24}{6} = 4$ ✓

4. $\frac{409 \times 5 - 814}{0.19} = \frac{400 \times 6}{0.2} = \frac{2,400}{0.2} = 12,000$ ✓

LS. Identify + obtain information to solve problems.

1. 24 hours in a
24 x 7 =

	2	4
7	14	28

1 6 8 he

	1	6	8
5	05	30	40
2	02	12	16

08736 = hours in a year

	8	7	3	6
9	72	63	27	54
0	00	00	00	00

78'6240 = (Average) x 78,240 = How many hours a 90 year old has lived

Answer = No

2. 60 seconds in a minute, 60 minutes in an hour.

60 x 60 = 60

	6	0
6	36	00
0	00	00

3600 = (minu) x seconds in an hour.

	3	6	0	0
2	18	10	00	00
4	12	24	00	00

106400 = seconds in a day

206400

7 | 1 4 | 0 0 | 4 2 | 3 8 | 0 0 | 0 0

1,444,800.

144800.0

5 | 0 5 | 3 0 | 2 0 | 4 0 | 0 0 | 0 0

2 | 0 2 | 8 8 | 0 8 | 1 6 | 0 0 | 0 0

67,529,600 = seconds in a year

144800.0

5 | 0 5 | 3 0 | 2 0 | 4 0 | 0 0 | 0 0

2 | 0 2 | 8 8 | 0 8 | 1 6 | 0 0 | 0 0

082,309,600

Answer = 0

3. 50(grams) x Kilograms = me (approx.)

3grams = 1pound coin (approx.)

50 x 3 = 150

I am worth approximately £150.

(Homework) x

17th September

Starter

1. Triangles Tessellate ✓
2. Area of a circle is called a circumferance ✓
3. Seven squared is 49 ✓
4. A rhombus has 4 equal sides ✓
5. 17 is a prime number ✓
6. A mile is about 1.6 Kilometres ✓
7. 8 (8's) x eights are 64 ✓
8. 366 days in a leap year ✓
9. There are 21 dots on a dice ✓
10. A hexagon has 6 sides ✓

Negative Numbers

1. $6-4=2$ ✓
2. $4-6=-2$ ✓
3. $-4--6=2$ ✓
4. $-6--4=-2$ ✓
5. $-4+6=2$ ✓
6. $-6+4=-2$ ✓
7. $6+-4=2$ ✓
8. $-6+-4=-10$ ✓
9. $-6-4=-10$ (10 / 10) x

LS
+/- -ve numbers.
x/÷ -ve n°s

10. $-4--2--7=5$ ✓

1. $6\times5=30$

2. $6\times-5=-30$

3. $-6\times5=-30$

4. $-6\times-5=30$

5. $20\div5=4$

6. $20\div-5=4$

7. $-20\div5=-4$

8. $-20\div-5=4$

Questions

1. $21°C-50°C=-29°C$ ✓

2a. $15°C--26°C=41°C$ ✓

b. $-26°C-6°C=-32°C$ ✓

(9a) x

15th September

Starter

$85 \times 86 \times 87 = 635\,970$

Bodmas

1. $\frac{23+9}{7-3} = \frac{32}{4} = 8$ ✓

2. $\frac{7-2^2}{4^2-15} = \frac{3}{1} = 3$ ✓

3. $\frac{5^2+3}{2\times7} = \frac{28}{14} = 2$ ✓

4. $\frac{5\times6-4}{13} = \frac{26}{13} = 2$ ✓

5. $\frac{8\times2-4}{3+1^2} = \frac{12}{4} = 3$ ✓

6. $\frac{12-3\times2}{14\div7} = \frac{6}{2} = 3$ ✓

7. $\frac{20-3^2}{10-(5+4)} = \frac{11}{1} = 11$ ✓

8. $\frac{3+9\times8}{1+6\times4} = \frac{75}{25} = 3$ ✓

1. $((-6\times5)=35) + (13-6)\times5 = 35$ ✓

2. $(3 \times 6) + 7 = 25$ ✓

3. $(3 + 2) \times 4 = 20$ ✓

4. $(4 + 6) \div 5 = 2$ ✓

5. $(5 \times 4) - 9 = 11$ ✓

1. $3^2 + 9 \div 3 = 6$ ✓

2. $(4 \times 7) - (2^4 + 1 \times \div 2) = 6 \times -14 = 6$ ✓

3. $\frac{14x - 2}{5 + 4^2} = \frac{7}{28} = 3 + 3 = 6 \times \frac{5 + 4^2}{14x - 2} + 3 = 6$ ✓

4. $(7 + 4^2) + (-3 + 1) - 3 \times 5 = 6$ ✓

Marked by Luke Thomas

Well done! right as always!
Just watch your presentation :)

5.

L6. x/÷ using brackets with powers.
BIDMAS.
Yr9 - POS.

16 September

Power

1. $9^9 = 9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9$

2. $2^{11} = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

3. $5^7 = 5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5$

4. $4^3 = 4 \times 4 \times 4$

5. $7^5 = 7 \times 7 \times 7 \times 7 \times 7$

1. $5^3 \times 5^2$

$5 \times 5 \times 5 \times 5 \times 5$

2. $6^{12} \times 6^4 = 6^{12+4} = 6^{16}$

1. $2^4 \times 2^5 = 2^9 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 512$ ✓

2. $3^2 \times 3^4 = 3^6$ ✓

3. $7^2 \times 7^9 = 7^{11}$ ✓

4. $5^4 \times 5^6 = 5^{10}$ ✓

5. $a^5 \times a^8 = a^{13}$ ✓

Yr 8 AOS. Expres repeated multiplicahon as powers.

- Use powers

LS/6.

1. $4^4 \div 4^3 = 4^1 = 4$ ✓ $\frac{4 \times 4 \times 4 \times 4}{4 \times 4 \times 4}$

2. $6^7 \div 6^5 = 6^2 = 36$ ✓

3. $1^9 \div 1^5 = 1^4 = 1$ ✓

17 Septemb

Power

1. $2^6 \div 2^2 = 2^4$ ✓
2. $3^9 \div 3^5 = 3^{04}$ ✓
3. $7^3 \div 7^3 = 7^0$ ✓
4. $p^7 \div {}^5p = p^2$ ✓
5. $z^6 \div {}^4z = z^2$ ✓

$(4^2)^3 = 4^{2\times3} = 4^6 = 4096$

$4^2 \times 4^2 \times 4^2 = 4^6$

$4 \times 4 \times 4 \times 4 \times 4 \times 4 = 4^6$

1. $(3^5)^3 = 3^{5\times3} = 3^{15}$ ✓
2. $(7^4)^5 = 7^{4\times5} = 7^{20}$ ✓
3. $(6^7)^8 = 6^{7\times8} = 6^{56}$ ✓
4. $(3^4)^1 = 3^{4\times1} = 3^4$ ✓
5. $(8^3)^{12} = 8^{3\times12} = 8^{36}$ ✓

1. $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$

2. $2^4 = 2 \times 2 \times 2 \times 2 = 16$

3. $2^3 = 2 \times 2 \times 2 = 8$

4. $2^2 = 2 \times 2 = 4$

5. $2^1 = 2$

6. $2^0 = 1$

Anything to the power of $0 = 1$

$52{,}000{,}000{,}000^0 = 1$

7. $2^{-1} = \frac{1}{2}$

8. $2^{-2} = \frac{1}{4}$

9. $2^{-3} = \frac{1}{8}$

10. $2^{-4} = \frac{1}{16}$

23rd September

Negative Vibes

1. 3+-7=-4 ✓
2. 2-8=-6 ✓
3. 8+-1=7 ✓
4. 4--1=5 ✓
5. 1--3=4
6. 7-12=-5 ✓
7. 2+5+2=1+1+1+6

Decimals

1. 8.92 ✓
2. 9.97 ✓
3. 43.92 ✓
4. 61.08 ✓
5. 61.78 ✓
6. 62.06 ✓
1. 6.14 ✓

2. 83.83 ✓

3. 8.26 ✓

4. 11.97 ✓

5. 11.67 ✓

6. 5723 ✓

1. 0.04 ✓

2. 2 ✓

3. 0.18 ✓

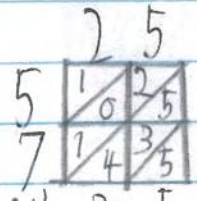
1. 0.616 ✓

2. 0.135 ✓

1. [0.63]



2.



3- 5 5

4	3 0	3 0
4	2 0	3 0

142 0 = 2.42 ✓

1- 8 4 2

3	3 4	1 2	0 6
1	0 8	0 4	0 2
5	4 0	2 0	1 0

265 2 3 0 = 265230 = 26.523 ✓

2- 3 2 4

4	1 2	0 8	1 6
7	2 1	1 4	3 8

15 2 2 8 = 1.5228 ✓

3- 6 1

7	4 2	0 7

427 = 4.27 ✓

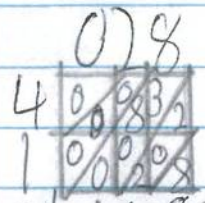
L5. Use understanding of place value to multiply whole numbers + decimals

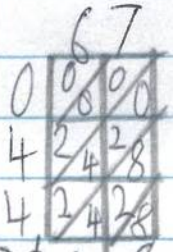
24th September 2014

Broken Calculator

15+1=16
10+10+1+1+1+1=24 11+11+1+1=24
55+15+15+11+1(+1)=97
555+1(+500)+11+111+1+1=624

Decimals





1. 32
3|96

2. 0.83
5|4.15

3. 0.174
6|1.044

1. 0.8
3|2.4

2. $6\overline{)2.518}$ 0.43

3. $7\overline{)3.731}$ 0.2 × $7\overline{)3.721}$ 0.53

1. $5\overline{)\cancel{0}.125}$ 0.025 ✓

2. $5\overline{)3.75}$ 0.75 ✓

3. $5\overline{)\cancel{0}8.35}$ 07.7 ✓

4. $6\overline{)2.4}$ 0.4 ✓

5. $7\overline{)4.9}$ 0.7 ✓

L5
Divide whole numbers and decimals

1. $3\overline{)25.480}$ 08.466

1. $7\overline{)458.4}$ 065.2 = 65.2 ✓

2. $\cancel{0}6\overline{)492\cancel{6}}$ $0821\cancel{0}$ = 8210 ✓

* Really impressed with your work on estimating for 'Big Calculations'

* You have shown good understanding of Powers

? Keep up the excellent work.

CA 24/9

25th September 2014

Decimals

1. (1.04, 1.23) × 0.312, 0.321, 1.04, (0) ✗ 1.23 ✓

2. 0.047, 0.34, 0.4, 0.403, 0.43 ✓

3. 0.709, 0.79, 0.792, 0.97 ✓

4. 2.071, (2.0704) × 2.074, 2.701, 2.71 ✓

5. 0.008, 0.0885, 0.11, 0.875, 0.88 ✓ (5/5)

3. $4\overline{)12\,20} = 3180$ ✓

4. $9\overline{)58\,79\,00} = 63100$ ✓

5. $8\overline{)94.4} = 11.8$ ✓

6. $3\overline{)8\,24.72} = 8.24$ ✓

7. $23\overline{)83\,72\,0} = 3640$ ✓

23
46
69
92
115
138

29th September

Decimals

4. 09.54
3 | 28.62 = £9.54 ✓

5. 1.09, 1.49, 1.6, 1.62, 1.8 ✓

6. 12.450
05.025
06.000
23.475 Km ✓
1

7. 5 4 1 0
2.86
3.64 m ✓

8. 134.52
7 | 941.384 = £134.52 ✓

9. 865
6 | 4 3 3 0
5190 = £51.90

10. a) 023.50
9 | 211.450 = £23.50

b) 19 x 03.54
19 | 361.826 = £3.54

30th September

Assessment Topics

Place Values
Multiples / Factors
Calculation (Including negatives and BODMAS)
Estimation
Rounding (SF)
Powers

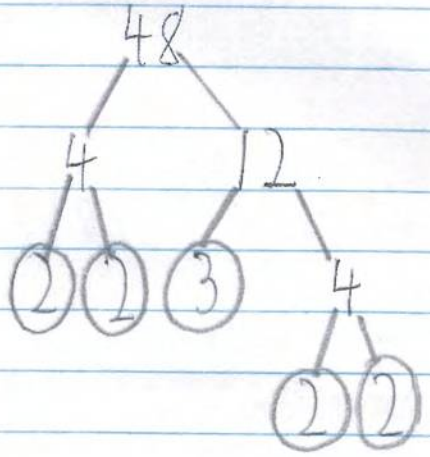
Factors are numbers that go into other numbers.

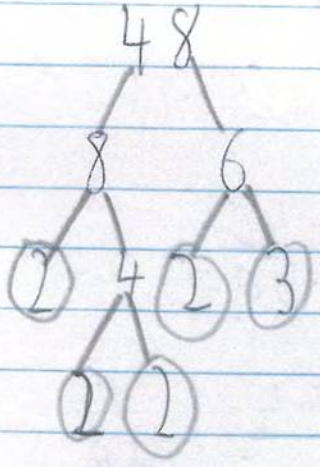
Factors of 21 = 1, 3, 7, 21

Multiples are numbers in a numbers time table.

Multiples of 13 = First 4 = 13, 26, 39, 52

Product of primes is when you find the prime numbers in a number.





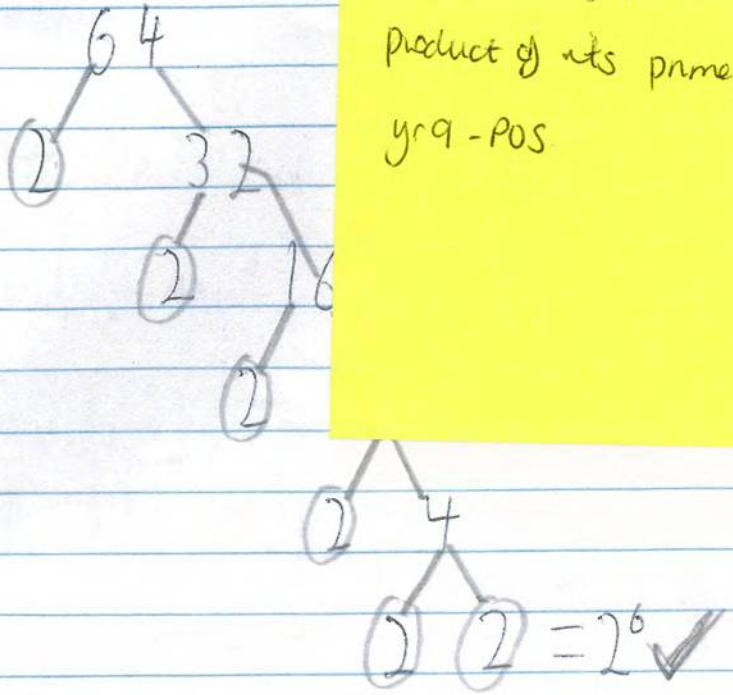
$2 \times 2 \times 2 \times 2 \times 3 = 2^4 \times 3 = 48$

L6.

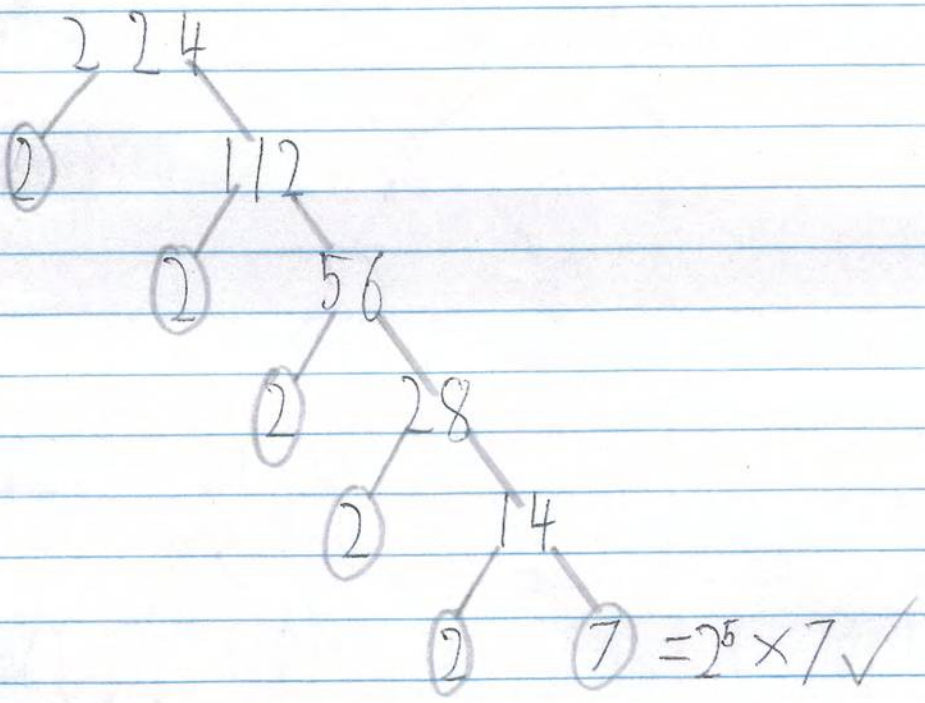
Extension of powers to writing numbers as a product of its prime factors in index form.

yr 9 - POS

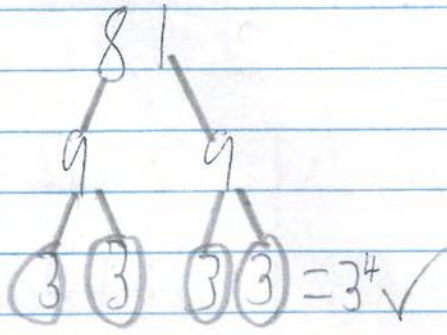
1.



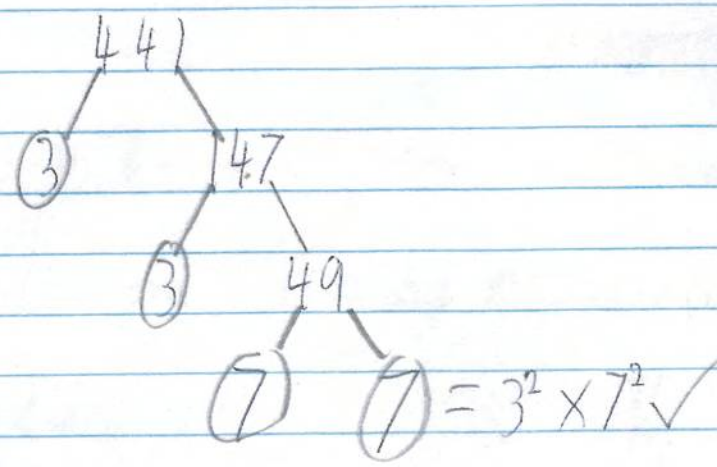
2.



3.

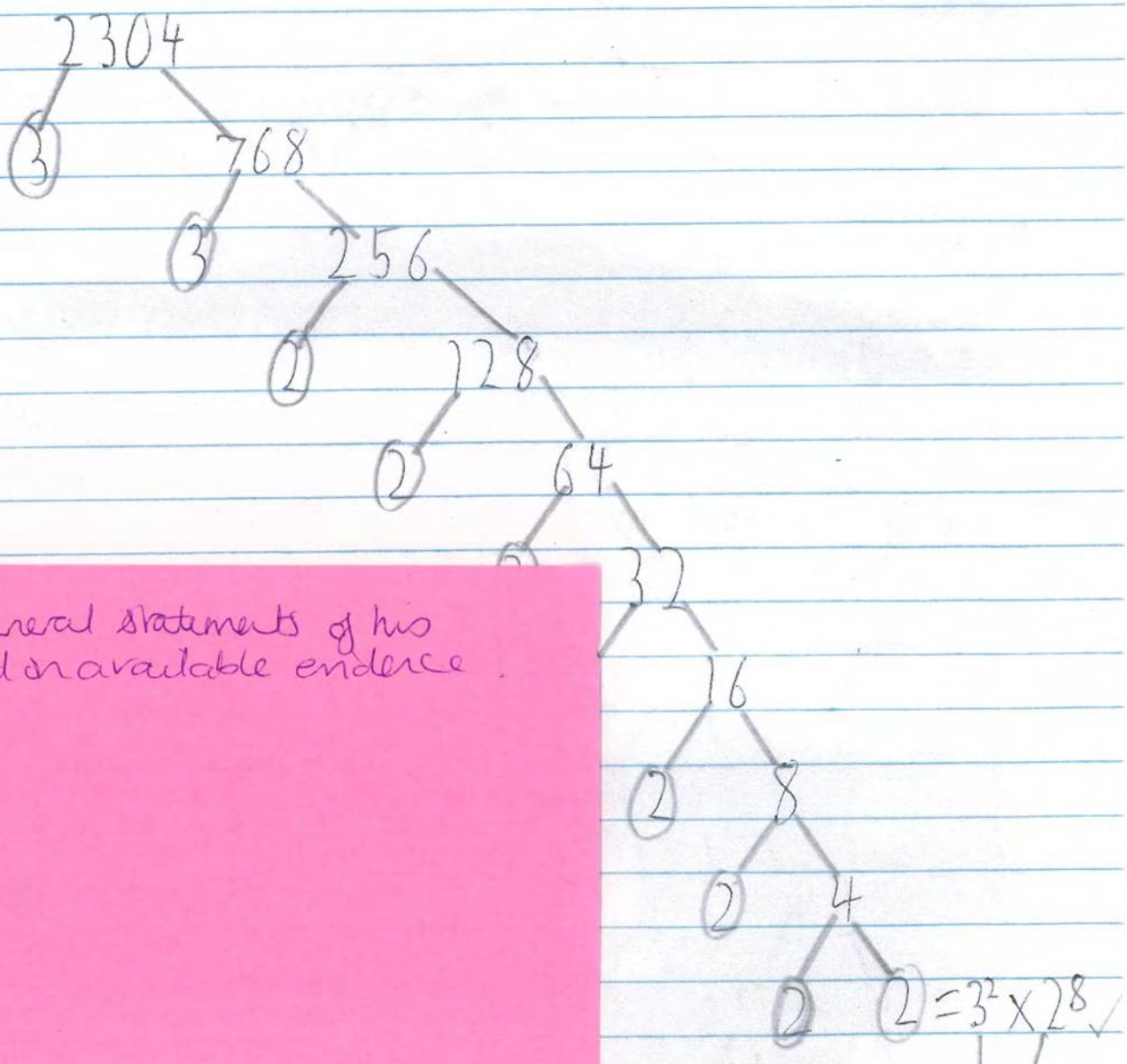


4. 441



$= 3^2 \times 7^2$ ✓

5. 2304



$= 3^2 \times 2^8$ ✓

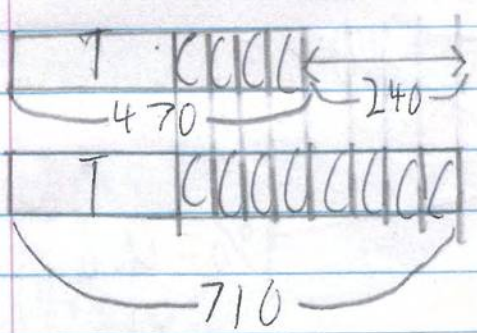
If the powers are even it's a square number.

LS - Make general statements of his own, based on available evidence.

7th October 2014

Test Corrections

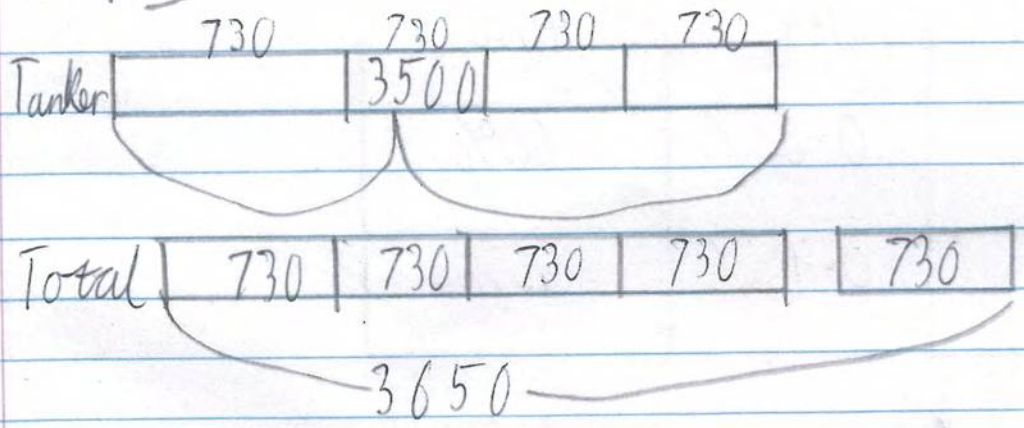
12a. A table and 4 similar chairs cost £470.
A table and 8 similar chairs cost £710



12b. C 10

2 10 10 10

12c. D.O.T 150 ? +580



12d. B.S

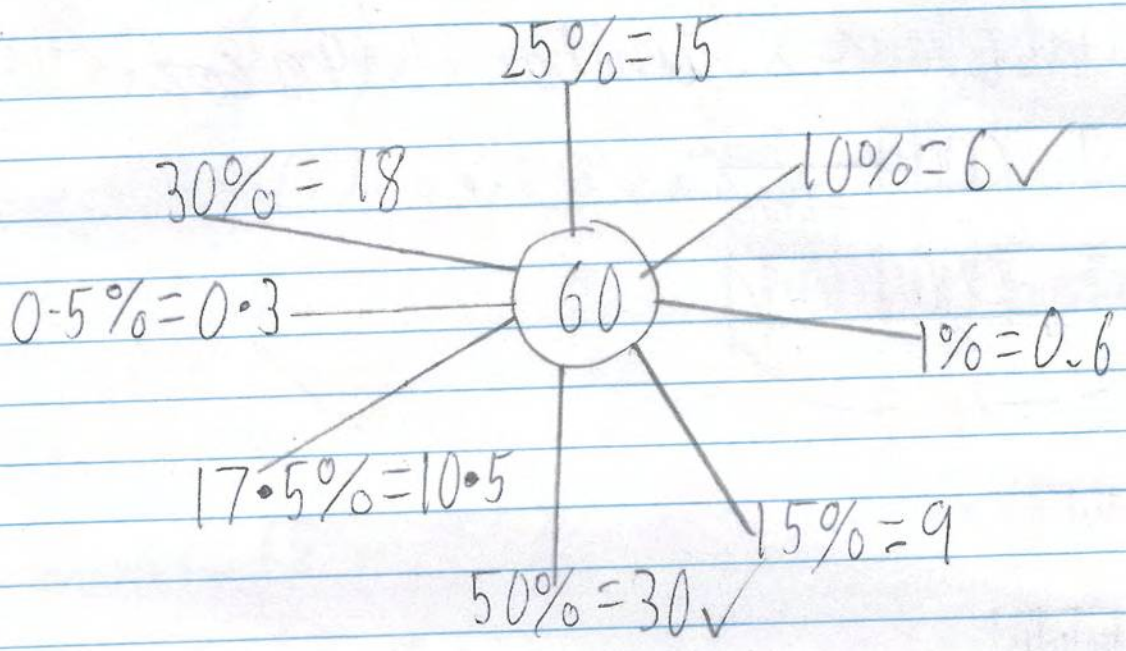
A.S 10 20

B.F

A.F 10 10 10 10

8 October 201

Percentages



Fraction	Decimal	Percentage
$\frac{3}{4}$	0·75 ✓	75% ✓
$\frac{2}{5}$ ✓	0·4	40% ✓
$\frac{3}{5}$ ✓	0·6 ✓	60%
$\frac{9}{10}$ ✓	0·9 ✓	90%

(1-✓)

$$24 \overline{)40.^{16}0^{16}0} \quad 01.\dot{6}6$$

24, 48, 72, 96, 120, 144, 168 | X

1-60% ✓

2. $85.416\dot{6}$ ✓

3. $37\dot{7}$ ✓

4. 80.875 ✓

5. $26.\dot{6}0818713450292397\dot{6}$ ✓

6. 30.5 ✓

7. $95.\dot{1}$ ✓

9th October 2014

Fractions, Decimals, Percentages

1. $\frac{5}{8} = 5 \div 8 = 0.625 = 0.625 = 62.5\%$ ✓

2. $\frac{3}{8} = 0.375 = 0.375 = 37.5\%$ ✓

3. $\frac{2}{5} = 0.4 = 0.4 = 40\%$ ✓

4. $\frac{4}{7} = 0.\dot{5}7142\dot{8}5 = 0.\dot{5}7142\dot{8} = 57.\dot{1}42\dot{8}5\dot{7}\% \approx 57\%$ (To 0.d

0.862

Lets think of

H	T	U	•	$\frac{1}{10}$
0	0	0	•	8

So our fract

So our fraction is $\frac{800}{1000} + \frac{60}{1000} + \frac{2}{1000}$

So our fraction is $\frac{862}{1000}$

Find equivalences between fractions, decimals + percentages.

LG/LS.

Not yet use the equivalences.

Fraction	Decimal	Percentage
$\frac{21}{50}$	0·42	42%
$\frac{7}{20}$	0·35	35%
$\frac{7}{8}$	0·875	87·5%
$\frac{9}{25}$	0·36	36%
$\frac{1}{125}$	0·08	8%
$\frac{5}{7}$		

0125

7 | 0/0 | 0/5 | 1/4 | 3/5 |

00875 = 875 = 0·875

Starter

13th October 2014

A = 60 ✓
B = 14 ✓
C = 102
D = 15 ✓
E = 60 ✓
F = 30 ✓
G = 109 ✓
H = 49 ✓
I = 81 ✓
J = 86 ✓
K = 14 ✓
L = 109 ✓
M = 67 ✓
N = 67 ✓
O = 81 ✓
P = 40 ✓
Q = 40 ✓
R = 49 ✓
S = 86 ✓
T = 30 ✓
U = 15 ✓

Percentage

1. $56 \times 0.68 = 38.08$

2. $32 \times 0.24 = 7.68$

3. $53 \times 0.19 = £10.07$

4. $32 \times 0.06 = 1.92$

1. $162 \times 1.43 = 231.66$

2. $546 \times 1.39 = 758.39$

3. $74 \times 1.03 = 76.22$

1. 88×0.77 ✓

2. 592×0.62 ✓

3. 1.4×0.47 ✓

To increase using percentages, add the percentage with a 1. before it and multiply by the number you are increasing.

e.g. 9 increased by 24% = 9×1.24

To decrease using percentages, take the percentage off 1.00 as a decimal and multiply by the number you are decreasing.

e.g. 9 decreased by 24% = 9×0.76

LO. finding % increase and decrease using the multiplier method.

yr 8/9-POS

14th October 2014

Reverse Percentage problems

Football boots are on sale.

30% off

They now cost £56

What was the original price.

£56 = 70%

56 ÷ 7 = 8

8 × 10 = £80 = 100%

The price of bread increases by 10%.

The new price is £1.32.

How much did it cost before the price rise.

£1.32 = 120%

1.32 ÷ 12 = 11

L.G. Reverse percentages.

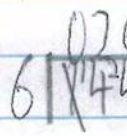
Given sale price, what was the original price.

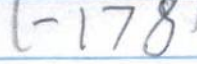
15th October

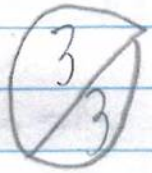
Starter

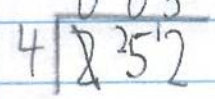
	97			375			48	
×2	194	✓	2/5	150	✓	×3	144	✓
−18	176	✓	80%	120	✓	+6	150	✓
25%	44	✓	+1/10	132	✓	÷5	30	✓
7/11	28	✓	÷12	11	✓	+34	64	✓
×9	252	✓	x^2	121	✓	÷4	16	✓
÷4	63	✓	+200%	363	✓	+9	25	✓
+13	76	✓	−178	185	✓	−13	12	✓
÷4	19	✓	−1/5	158	✓	x^2	144	✓
x^2	361 (Answer)	✓	+1/4	195 (Answer)	✓	1/2	72 (Answer)	

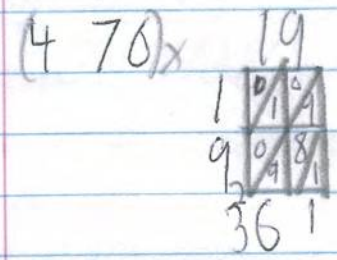


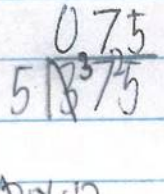


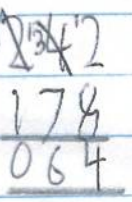












21st October 2014

Starter

9 x 8 x 7 x 6 x
5 x 4 x 3 x 2 = 120
6 x 5 x 4 x 1 = 120
6 x 5 x 3 x 1 = 90
9 x 5 x 2 x 1 = 90
7 x 6 x 4 x 1 = 168
7 x 3 x 4 x 2 = 168
8 x 7 x 3 x 1 = 168

Assessment

Decimal place value
Use of < and >
Round to decimal places
Decimal calculation
Find percentage of amounts
Wordy percentage questions
Increase/decrease with multipliers

What do '<' and '>' mean?

10 > 8 Ten is greater than 8

5 < 9 Five is less than 9

1. 6·5 > 6·2 ✓

2. 4·8 > 4·7 ✓

3. 0·08 > 0·06 ✓

4. $0.42 > 0.417$ ✓

5. $0.531 < 0.64$ ✓

6. $4.37 > 4.267$ ✓

7. $5.219 > 5.16$ ✓

8. $4.32 = 4.32$ ✓ 8/8

1. $0.8 + 0.6 = 1.4$ ✓

2. $1.75 + 0.5 = 2.25$ ✓

3. $0.85 + 0.042 = 0.892$ ✓

1. $0.9 - 0.4 = 0.5$ ✓

2. $3.64 - 0.32 = 3.32$ ✓

3. $8.35 - 2.752 =$

$$\begin{array}{r} 8.350 \\ -\ 2.752 \\ \hline 5.598 \end{array}$$ ✓

1. $0.7 \times 0.5 = 0.35$ ✓

2. $1.95 \times 0.4 = 0.78$ ✓

3. $0.31 \times 0.528 = 528 = 0.16368$ ✓

3	1	0	4
1	0	2	8
	1	6	3	6	8

1. (3.5 × 5) × 01 · 42822 ×

35 | 150 · 000000

2. 9/12

3.

1. At a school 46% of people are student boys, 42% of people are student girls. The rest of the people are adults.

If there are 1000 people in total, how many adults are there?

46% + 42% = 88% = students. 12% = Adults

12% of 100 = 12
12% of 1000 = 120 ✓

2. Some trainers cost £60 after a 20% discount. What did they cost originally?

£60 = 80%

1/3

60 ÷ 8 =

1. (642 × 1·2) × Increase 642 by 20% = 642 × 1·2
2. (142) × Increase 142 by 34% = 142 × 1·34
3. Increase £2500 by 3% = £2500 × 1·03 /

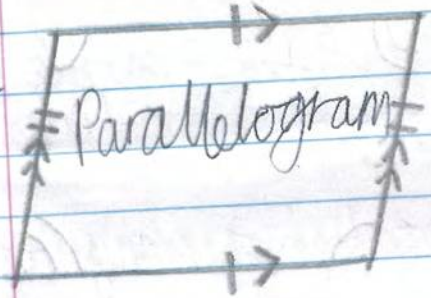
4. 3/8

LG - Properties of quadrilaterals

3rd November

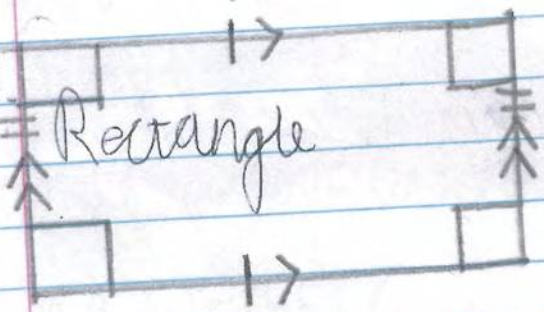
e parallel.
90°-
neet, there is a right
lar)

2. Parallelogram



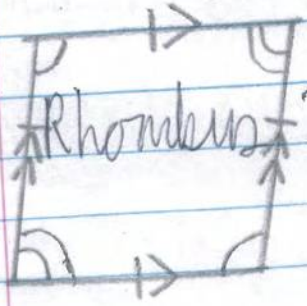
1. (The main) It has 2 pairs of equal sides.
2. 2 pairs of parallel sides.
3. Opposite angles are equal.

3. Rectangle



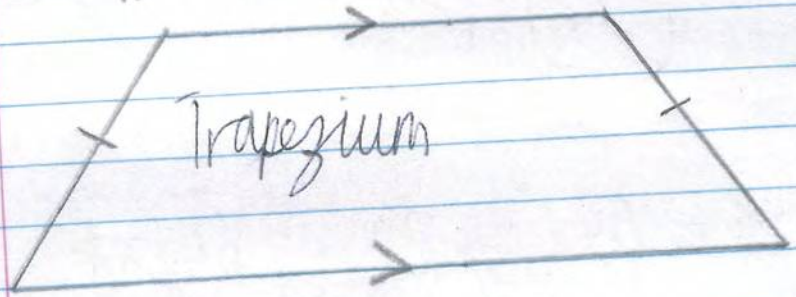
1. 4 right angles.
2. Opposite sides are equal in leng
3. Opposite sides are parallel.

4. Rhombus



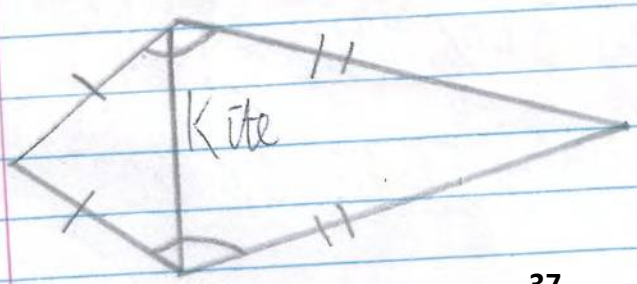
1. All the sides are the same length.
2. Opposite angles are equal.

5. Trapezium



1. One pair of sides are parallel.

6. Kite



1. 2 pairs of equal adja sides.
2. One line of symmetry.
3. One pair of equal angs

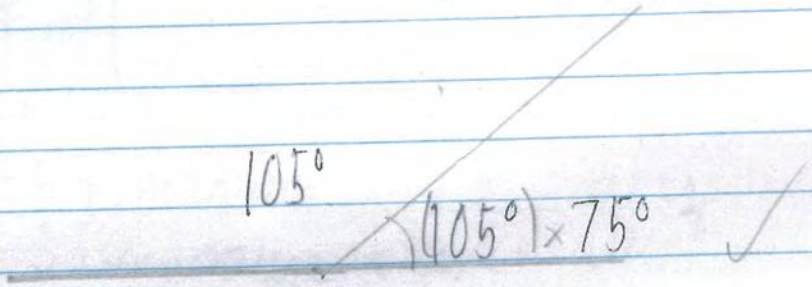
5th November 2014

Starter

1. 12 ✓
2. 18 ✓
3. 20 ✓
4. 19 ✓

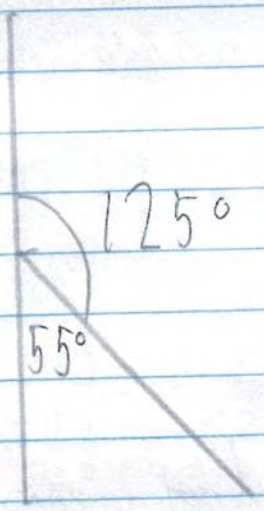
Angles

1.



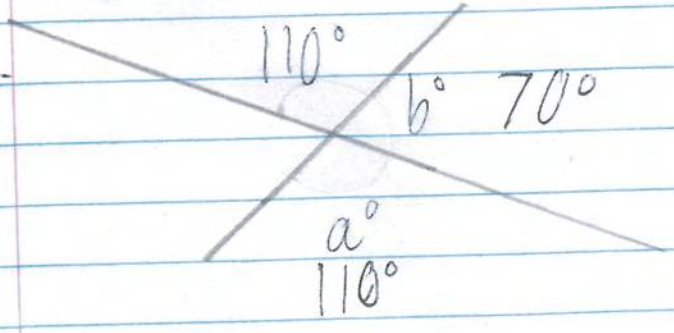
✓

2.



✓

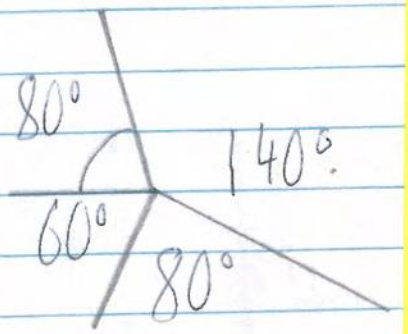
3.



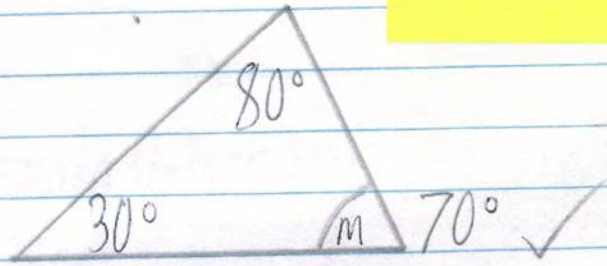
✓

L6 - Solve problem using angle properties (L5) and properties of intersecting + parallel lines.

4.

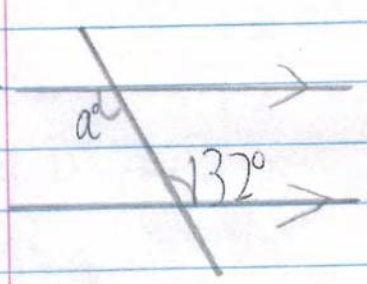


5.



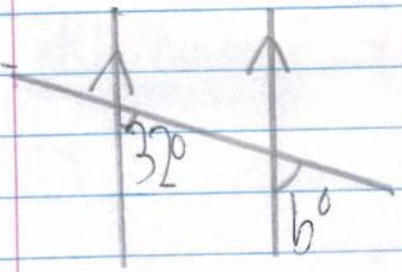
✓

1.



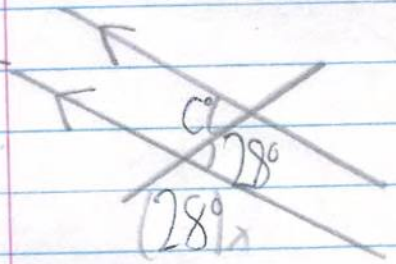
$a° = 132°$ ✓ because it is an alternate angle. ✓

2.



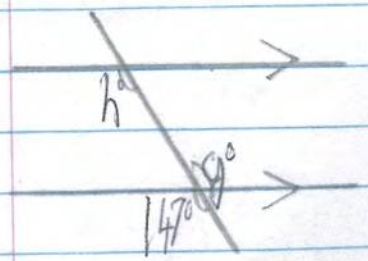
$b° = 32°$ ✓ because it is an corresponding angle. ✓

3.



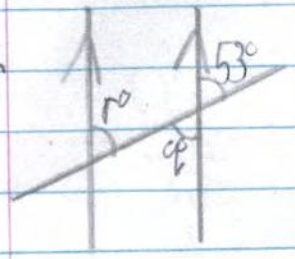
$c° = 28°$ ✓ because it is an alternate angle. ✓

5.



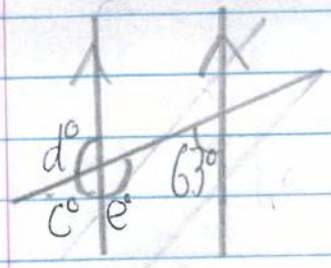
$h° = 147°$ ✓ because it is a corresponding angle with 147°. ✓
$g° = 147°$ ✓ because it is an alternate angle with $h°$. ✓

6.



$r° = 53°$ ✓ because it is a corresponding angle with 53°. ✓
$q° = 53°$ ✓ because it is an alternate angle with $r°$. ✓

10



$c° = 63°$ because it is a corresponding angle.
$e° = 117°$ because it is angles on a line with $c°$.
$d° = 117°$ because it is opposite angles with $e°$.

11th November 20

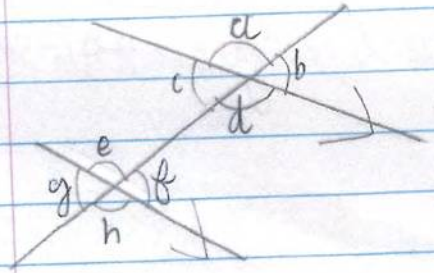
Starter

20 = T
9 9 = K
9 1 = K
16 = P
19 = S
15 = O
14 = N
15 = O = Position

220
154
165
165
176
209
99
+ 99
1287
144

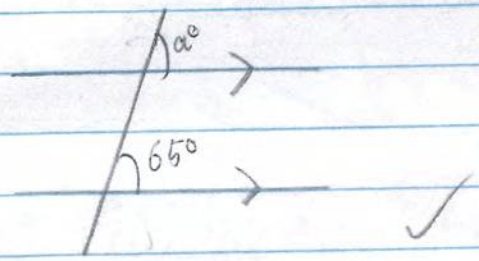
Angles and Parrallel lines

1.



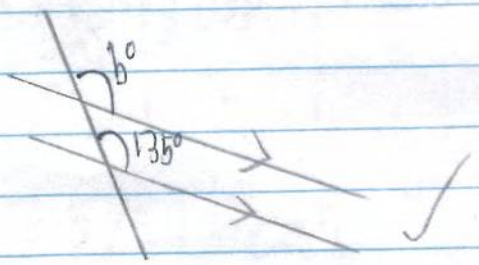
a + d	a + e ✓
c + b	c + g ✓
e + h	b + f ✓
g + f	d + h ✓

2.

a. 

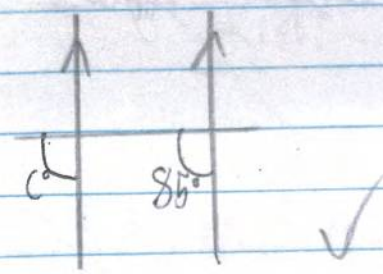
✓

$a° = 65°$ because it is a(n) corresponding angle. ✓

b 

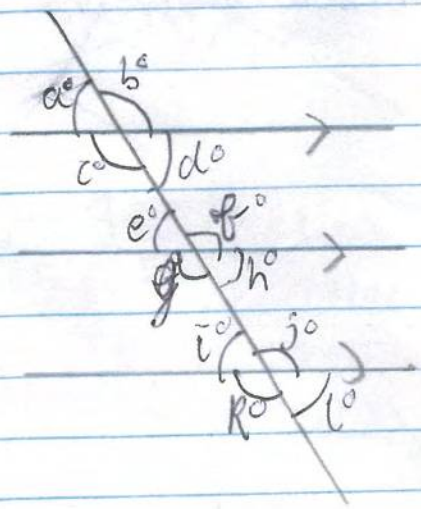
✓

$b° = 135°$ because it is a corresponding angle. ✓

c. 

✓

$c° = 85°$ because it is a corresponding angle. ✓

3. 

a + e x
c + g x
e + i x
g + k x
b + f x
d + h x
f + j x
h + l x

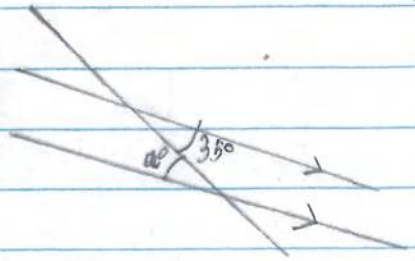
Please Correct Mistakes
C + f
d + e
g + j
i + h

Alternate angles

12th November 2014

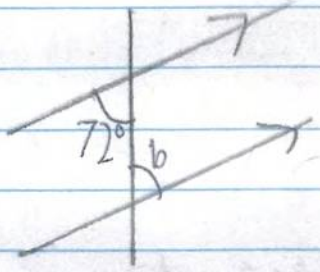
Angles and Parallel Lines

4a.



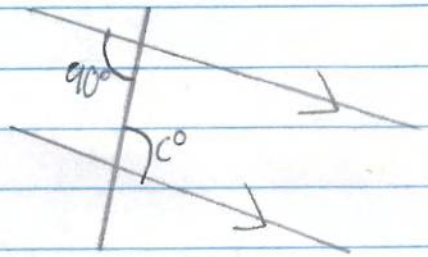
$a° = 35°$ because it is an alternate angle. ✓

b.



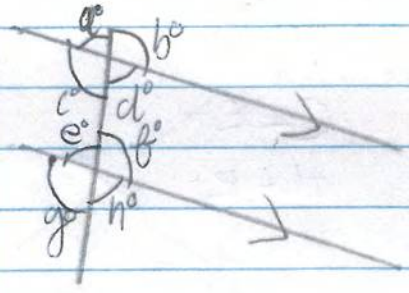
$b° = 72°$ because it is an alternate angle. ✓

c.



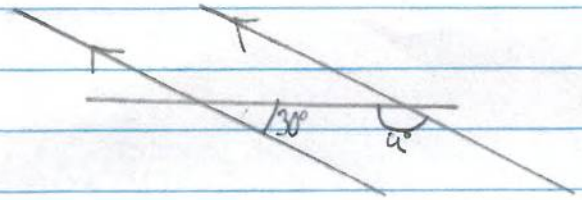
$c° = 90°$ because it is an alternate angle. ✓

5.



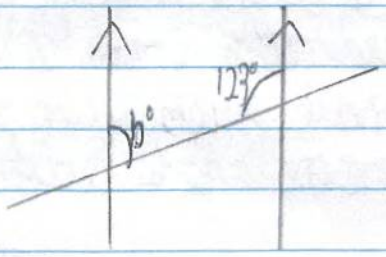
c + e ✓
d + f ✓

6a.



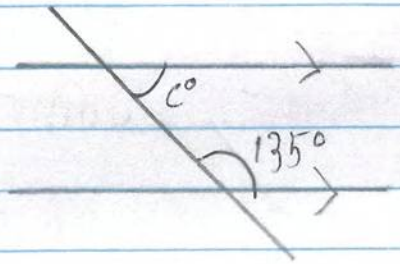
$a° = 150°$ because it is an allied angles. ✓

b.



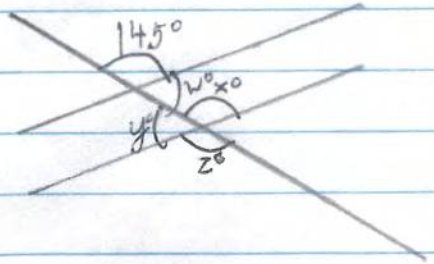
$b° = 57°$ because it is an allied (alternate) angles. ✓

c.



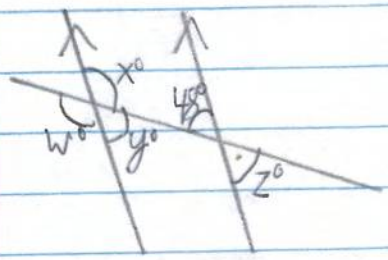
$c° = 45°$ because it is an allied angle. ✓

7a.



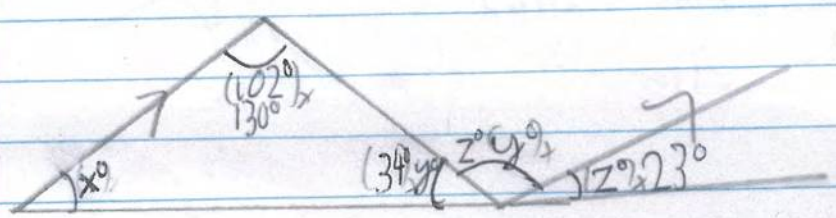
$w° = 35°$ because it is angles on a straight line with 145° ✓
$x° = 145°$ because it is angles on a straight line with $y°$ ✓
$y° = 35°$ because it is an alternate angle with $w°$. ✓
$z° = 145°$ because it is an opposite angle with $x°$. ✓

b.



$w^\circ = 132^\circ$ because it is an opposite angle with x°. ✓
$x^\circ = 132^\circ$ because it is an allied angle with 48°. ✓
$y^\circ = 48^\circ$ because it is an alternate angle with 48°. ✓
$z^\circ = 48^\circ$ because it is an opposite angle with 48°. ✓

c.



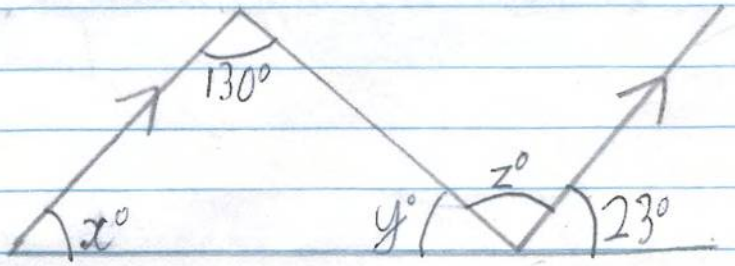
$x^\circ =$
$y^\circ =$
$z^\circ =$

13th November 2014

Starter

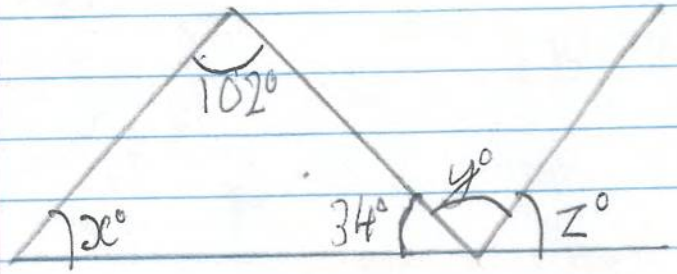
1. 366.90 ✓
2. 54.15 ✓
3. 6.10 ✓
4. 0.66 ✓
5. 4.04 ✓
6. 2.12 ✓
7. 5.06 ✓
8. 0.90 ✓
9. 0.57 ✓
10. 0.93 ✓

7.c



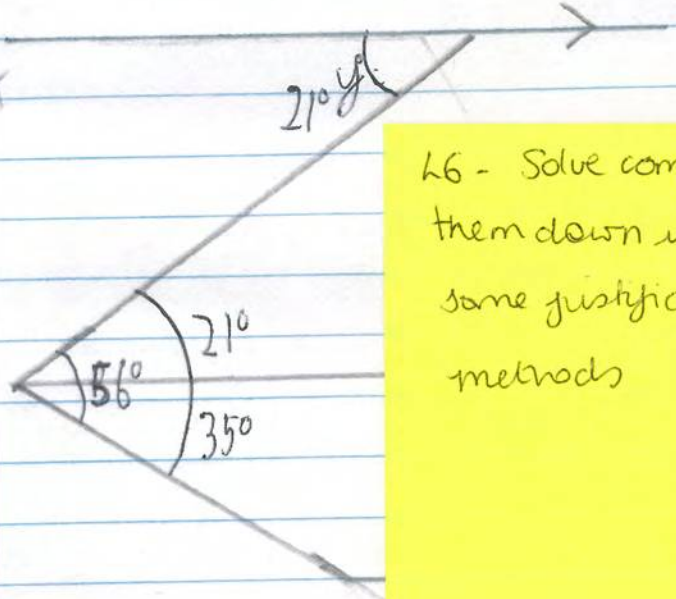
$x° = 23°$ because it is a corresponding angle with 23° ✓
$y° = 27°$ because there are 180° in a triangle! ✓
$z° = 130°$ because it is angles on a straight line with y° and 23° ✓

d.



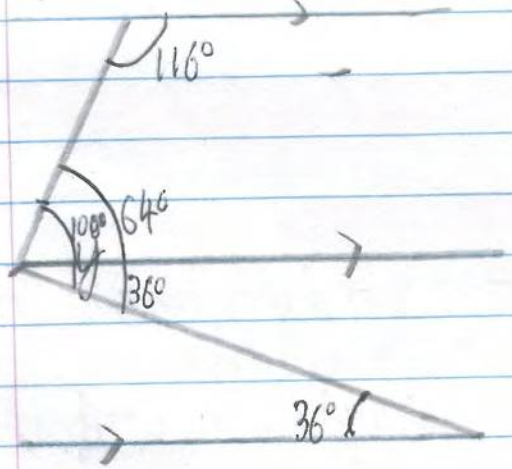
$x° = 44°$ because there are 180° in a triangle. ✓
$y° = 102°$ because it is alternate angles with 102°. ✓
$z° = 44°$ because it is a corresponding angle with $x°$. ✓

(8.b)



L6 - Solve complex problems by breaking them down into smaller tasks + give some justifications to support their methods (in the context of angle properties and parallel lines).

$y° = 21°$ because it is an alternate angle with 21°.



$y° = 100°$ because it is a total of 64° and 36°.

* You have done well with the angle problems

* Your work is really well presented

? Let me know if you need help with % Change still - You made a few mistakes with this topic

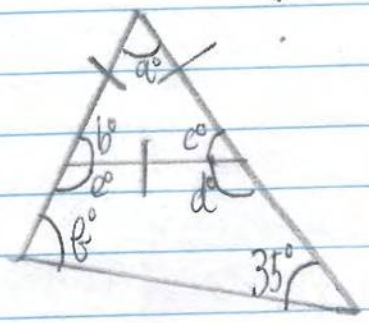
CA 18/11

Classwork

Wednesday 19th November 2014

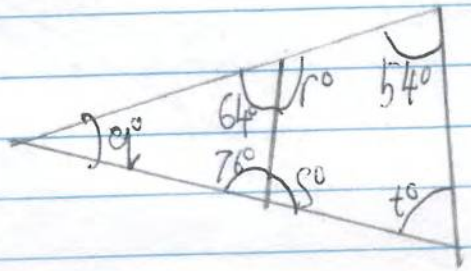
Angles and Shapes

1.



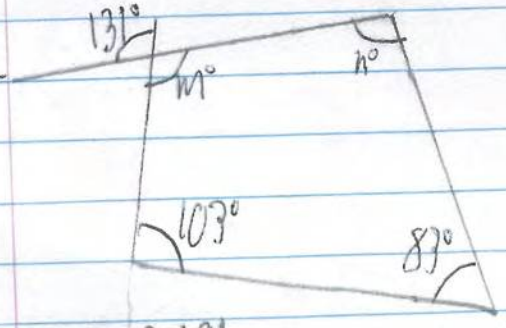
$a° = 60°$ because there are 180° in an equilateral triangle. ✓
$b° = 60°$ because there are 180° in an equilateral triangle. ✓
$c° = 60°$ because there are 180° in an equilateral triangle. ✓
$d° = 120°$ because it is angles on a straight line with c°
$e° = 120°$ because it is angles on a straight line with d°
$f° = 85°$ because there are 360° in a quadrilateral. ✓

2.



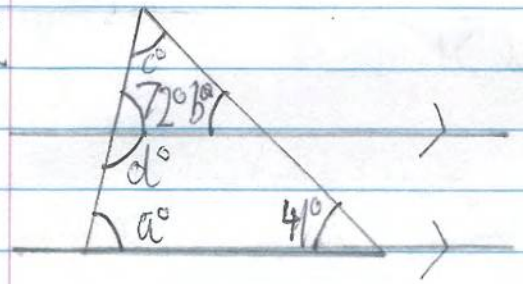
$q° = 40°$ because there are 180° in a triangle. ✓
$r° = 116°$ because it is angles on a straight line with 64° ✓
$s° = 104°$ because it is angles on a straight line with 76° ✓
$t° = 36°$ because there are 180° in a triangle. ✓

3.



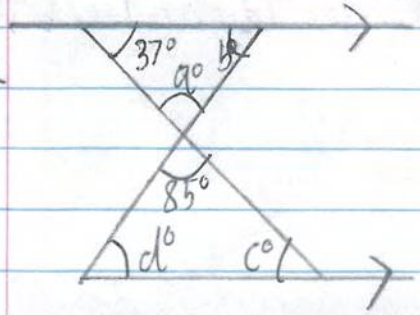
$m° = 131°$ because it is an opposite angle. ✓
$n° = 43°$ because there are 360° in a quadrilateral. ✓

4.



$a° = 72°$ because it is a corresponding (and) angle with 72°.
$b° = 41°$ because it is a corresponding angle with 41°.
$c° = (113) \times 67°$ because there are 180° in a triangle
$d° = 108°$ because it is angles on a straight line with d°.

5.



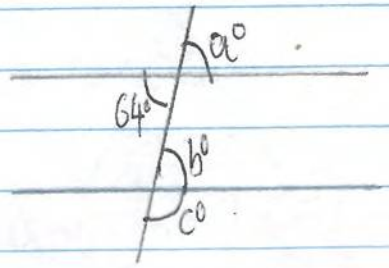
$a° = 85°$ because it is an opposite angle with 85°. ✓
$b° = 58°$ because there are 180° in a triangle. ✓
$c° = 37°$ because it is an alternate angle with 37°. ✓
$d° = 58°$ because it is an alternate angle with b°. ✓

Classwork

25th November 2014

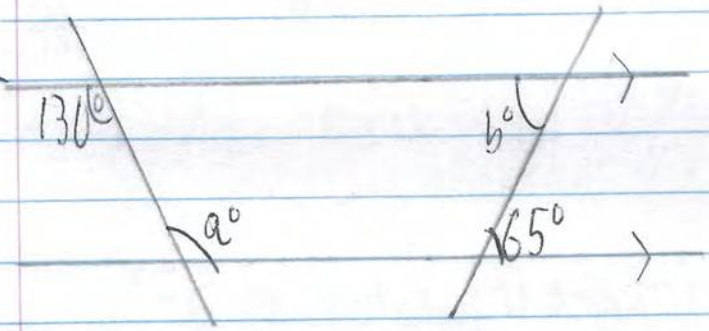
Angles and Shapes

1.



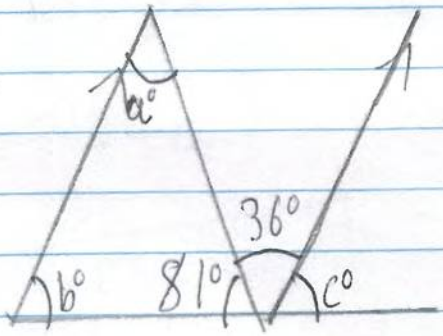
$a^\circ = 64^\circ$ because it is an opposite angle with 64°. ✓
$b^\circ = 64^\circ$ because it is an alternate angle with 64°. ✓
$c^\circ = 116^\circ$ because it is angles on a straight line with b°. ✓

2.



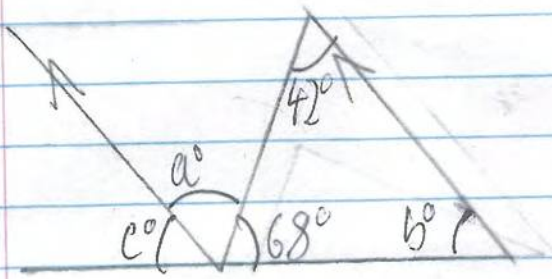
Central shape = Trapezium
$a^\circ = 130^\circ$ because it is an alternate angle with 130°. ✓
$b^\circ = 65^\circ$ because it is an alternate angle with 65°. ✓

3.



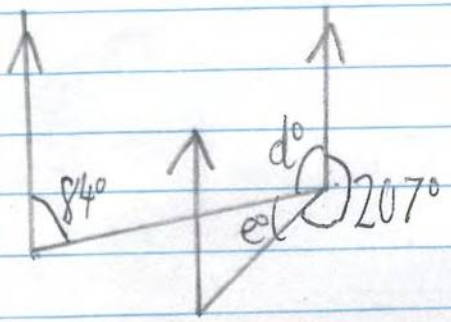
$a^\circ = 36^\circ$ because it is an alternate angle with 36° ✓
$b^\circ = 63^\circ$ because it is a corresponding angle with c°. ✓
$c^\circ =$ because it is angles on a straight line with 81° and

4.



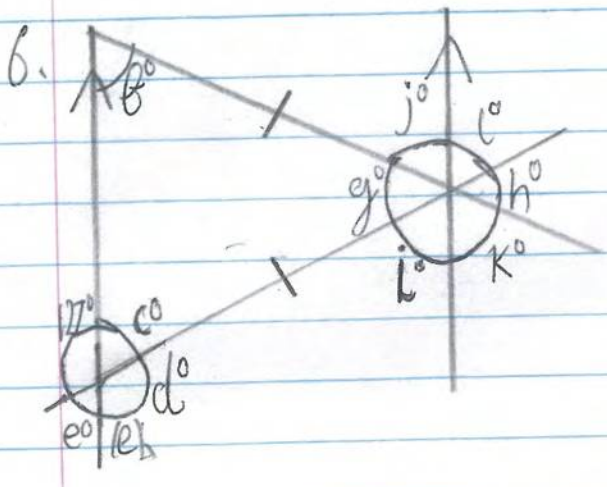
$a° = 47°$ because it is an alternate angle with $42°$. ✓
$b° = 70°$ because there are $180°$ in a triangle. ✓
$c° = 70°$ because it is a corresponding angle with $b°$. ✓

5.



$d° =$ ~~because~~ $96°$ because it is an allied angle with $84°$. ✓
$e° =$ ~~because~~ $57°$ $73°$ because there are $360°$ at a point. ✓

6.



$i°$ ×
$j°$
$k°$ $j°$ ×
$l°$
$K°$ ×

Did you understand when I went through this?

$l°$ ×

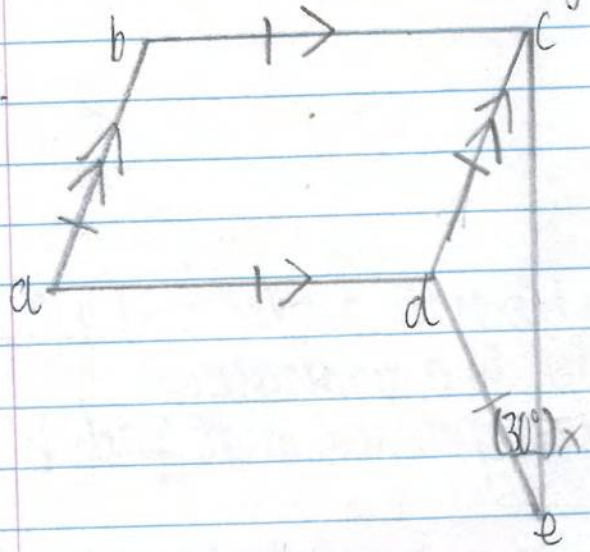
$c°$ $106°$ because there are $180°$ in a straight line. ×
$d°$ $127°$ because it is an opposite angle with $127°$. ✓
$e°$ ×
$f°$ $127°$ because it is an alternate angle with $127°$. ×
$g°$ $127°$ because it is an alternate angle with $d°$. ×
$k°$ ×

26th November 201

Classwork

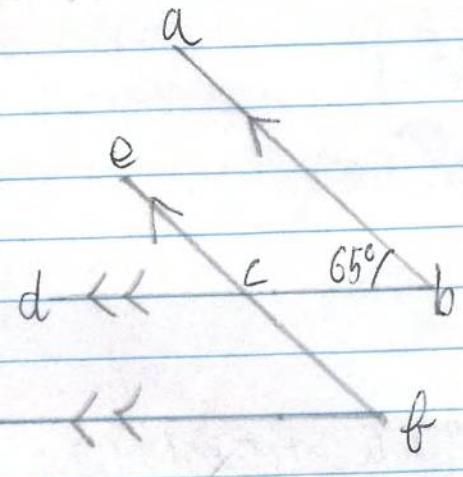
Angles

1.



abc = 100° ✓
bcd = 80° ✓
cda = 100° ✓
cde = 120° ✓
dec = 30° ✓
ecd = 30° ✓
eda = 140° ✓
bce = 190° ✓
bad = 80° ✓

2.



ecb = 115° ✓
eed = 65° ✓
efg = 65° ✓
dfe = 115° ✓

13/13

27th September 2014

(687) 138 225 303 306
-303 +132 241 138 133
359 ✗ 170 196 132 163
1 662 573 602
11 1 11

(602) ✗

Fractions

$\frac{2}{3} \overset{\times 3}{=} \frac{6}{9}$ ($\times 3$ on both)

(3/7) ✗ $\frac{15}{20} \overset{\div 5}{=} \frac{3}{4}$ ($\div 5$ on both)

$\frac{4}{12} \overset{\div 4}{=} \frac{1}{3}$ ($\div 4$ on both)

1. $\frac{18}{24} = \frac{3}{4}$ ✓

2. $\frac{36}{48} = \frac{3}{4}$ ✓

3. $\frac{16}{30} = \frac{8}{15}$ ✓

4. $\frac{10}{48} = \frac{5}{24}$ ✓

5. $\frac{15}{65} = \frac{3}{13}$ ✓

6. $\frac{28}{49} = \frac{4}{7}$ ✓

6/6

1. $\frac{19}{8} = 2\frac{3}{8}$ ✓

2. $\frac{5}{3} = 1\frac{2}{3}$ ✓

3. $\frac{10}{3} = 3\frac{1}{3}$ ✓

1. $8\frac{1}{10} = \frac{81}{10}$ ✓

2. $6\frac{1}{8} = \frac{49}{8}$ ✓

3. $9\frac{6}{11} = \frac{105}{11}$ ✓

4. $7\frac{5}{8} = \frac{61}{8}$ ✓

Ordering Fractions

$\frac{45}{5}$	$\frac{13}{2}$	$\frac{74}{10}$	$\frac{12}{4}$	$\frac{31}{20}$
×14 ↓	×10 ↓	×2 ↓	×5 ↓	×1 ↓
16	10	14	5	3
20	20	20	20	20 ✓

3. $\frac{10^{4}}{12}$ $\frac{2^{1}}{6}$ $\frac{2^{2}}{3}$ $\frac{3^{3}}{4}$

×1 ×2 ×4 ×3

$\frac{10}{12}$ $\frac{4}{12}$ $\frac{8}{12}$ $\frac{9}{12}$

5- $\frac{3^{1}}{12}$ $\frac{2^{3}}{3}$ $\frac{3^{4}}{4}$ $\frac{1^{2}}{2}$

×1 ×4 ×3 ×6

$\frac{3}{12}$ $\frac{8}{12}$ $\frac{9}{12}$ $\frac{6}{12}$

1st December 2014

Missing Digits

1. 25 x 22 = 550 ✓
2. 491 x 32 = 15712 ✓
3. 506 x 110 = 55660 ✓
4. 94 x 115 = 10810 ✓
5. 919 x 730 = 670870 ✓

Test Rivision

1. $\frac{5}{6}$ of 24 = 20 ✓

2. $\frac{3}{5}$ of 45 = 27 ✓

3. $\frac{7}{8}$ of 48 = 42 ✓

4. $\frac{2}{9}$ of 54 = 12 ✓

Wordy fraction questions

1.

1. $\frac{8}{9} = \frac{80}{90}$

$\frac{1}{5} = \frac{18}{90}$

$\frac{80}{90} - \frac{18}{90} = \frac{62}{90}$

The drinks weigh $\frac{62}{90}$ of a kilogram. This is equal to $\frac{31}{45}$.

/

2. $7 \times 4 = 28$

$3 \times 4 = 12$

12 students failed the test therefore 16 students passed it. ✓

3. $50 \div 5 = 10$

$3 \times 10 = 30$

Alice made 30 chocolate questions. ✓

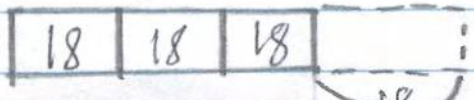
4. $8 - 5 = 3$

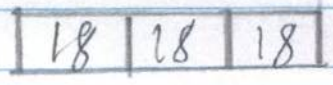
$15 \div 3 = 5$

$(1/8) \times 5 \times 5 = 25$

$25 + 15 = 40$

Meili bought 40m of ribbon. ✓

5. B 

G 

$7 \times 18 = 126$

126 children (in a class) ✓

6. $1400 \div 4 = 350$ $350 \div 7 = 50$ ✓

B: $50 \times 2 = 100$ 100 boys wear spectacles. ✓

9th December 21

Fractions

1. $\frac{1}{4} + \frac{3}{8} = \frac{5}{8}$ ✓

2. $\frac{4}{7} - \frac{1}{2} = \left(\frac{15}{14} = 1\frac{1}{14}\right) \times \frac{1}{14}$ ✓

3. $\frac{1}{3} \times \frac{5}{8} = \left(\frac{23}{24}\right) \times \frac{5}{24}$ ✓

4. $\frac{2}{6} \div \frac{3}{5} = \left(\frac{12}{6} = 2\ \frac{5}{24}\right) \times \frac{10}{18} = \frac{5}{9}$ ✓

5. $3\frac{2}{5} = \frac{17}{5}$ ✓

6. $\frac{19}{4} = 4\frac{3}{4}$ ✓

L6 implied. (L5).

~~Recap~~ +/-/x/÷ fractions extending to mixed numbers.

yr 7/8/9-POS.

1. $\frac{2}{5} + \frac{1}{4} = \frac{13}{20}$ ✓

2. $\frac{2}{3} + \frac{1}{4} = \frac{11}{12}$ ✓

3. $\frac{3}{5} - \frac{2}{7} = \left(\frac{31}{35}\right) \times \frac{11}{35}$ ✓

4. $\frac{7}{8} + \frac{2}{3} = \frac{37}{24} = 1\frac{13}{24}$ ✓

1- $2\frac{1}{2} + 1\frac{5}{7} = 4\frac{3}{14}$

2- $4\frac{1}{4} - 1\frac{3}{5} = 4\frac{5}{20} - 1\frac{12}{20} = 3\frac{-7}{20} = 2\frac{13}{20}$

1- $2\frac{1}{6} + 2\frac{1}{5} = 2\frac{5}{30} + 2\frac{6}{30} = 4\frac{11}{30}$ ✓

2- $1\frac{5}{6} + 1\frac{4}{5} = 1\frac{25}{30} + 1\frac{24}{30} = 2\frac{49}{30} = 3\frac{19}{30}$ ✓

3- $5\frac{1}{2} - 1\frac{1}{5} = 5\frac{5}{10} - 1\frac{2}{10} = 4\frac{3}{10}$ ✓

4- $4\frac{1}{6} - 2\frac{3}{5} = 4\frac{5}{30} - 2\frac{18}{30} = 1\frac{17}{30}$ ✓

11th December 21

Fractions

1. $4\frac{3}{4} + 2\frac{1}{5} = 6\frac{17}{20}$ × $6\frac{19}{20}$

2. $2\frac{3}{5} + 1\frac{3}{7} = 4\frac{1}{35}$ ✓

3. $7\frac{4}{9} + 41\frac{4}{5}$ $(49\frac{1}{45})$ × $= 49\frac{1}{45}$ × $49\frac{11}{45}$ $\frac{20}{45} + \frac{36}{45} \quad \frac{56}{45}$

4. $2\frac{3}{5} - 1\frac{3}{7} = (1\frac{11}{35})$ × $1\frac{29}{35}$ × $1\frac{6}{35}$

5. $6\frac{3}{4} - 2\frac{2}{5} = 4\frac{2}{20}$ × $4\frac{7}{20}$

6. $7\frac{1}{5} - 2\frac{4}{7} = (\frac{33}{35})$ × $4\frac{12}{35}$ × $4\frac{22}{35}$ 1/6

$2\frac{1}{6} \times 3\frac{3}{4} = \frac{13}{6} \times \frac{15}{4} = \frac{195}{24} = 8\frac{3}{24}$

A much better method used here. Use this same method for Q3–6.

$3\frac{1}{2} \div 1\frac{1}{5} = \frac{7}{2} \div \frac{6}{5} = \frac{7}{2} \times \frac{5}{6} = \frac{35}{12} = 2\frac{11}{12}$

1. $2\frac{1}{2} \times 1\frac{2}{3} = \frac{5}{2} \times \frac{5}{3} = \frac{25}{6} = 4\frac{1}{6}$ ✓

2. $3\frac{1}{4} \times 1\frac{3}{5} = \frac{13}{4} \times \frac{8}{5} = \frac{104}{20} = 5\frac{4}{20} = 5\frac{1}{5}$ ✓

3. $4\frac{3}{4} \div 2\frac{1}{2} = \frac{19}{4} \times \frac{2}{5} = \frac{38}{20} = 1\frac{18}{20} = 1\frac{9}{10}$ ✓

4. $6\frac{2}{3} \div 2\frac{1}{2} = \frac{20}{3} \times \frac{2}{5} = \frac{40}{15} = 2\frac{10}{15} = 2\frac{2}{3}$ ✓

Fractions to decimals

1. $\frac{4}{10} = 0.4$ ✓

2. $\frac{18}{50} = 0.36$ ✓

3. $\frac{17}{20} = 0.85$ ✓

4. $\frac{14}{25} = 0.56$ ✓

5. $\frac{18}{40} = 0.45$ ✓

6. $\frac{28}{35} = 0.80$ x ✓

7. $\frac{21}{30} = 0.7$ ✓

8. $\left(\frac{27}{45}\right) \times 30 = \frac{9}{10} = \frac{3}{10} = 0.3$ ✓

Well done you have shown you can order fractions, calculate with fractions and change them to decimals :)

L5
Converting between fractions and decimals.

7th January

Starter

1234, 1243, 1324, 1342, 1423, 1432
2134, 2143, 2341, 2314, 2413, 2431

Probability

To calculate probability

The number of ways something can happen
The total number of possible outcomes

mathematical terminology = P(w) = x

1. P(r) = 1/3 = 33.3% ✓
2. P(y) = 1/6 = 17.5% ✗ ✓
3. P(g) = 0 = 0% ✓

a. P(5) = 1/6 ✓
b. P(0) = 0 ✓
c. P(Prime Number) = 5/6 3/6 ✓
d. P(Odd Number) = 3/6 ✓
e. P(>2) = 4/6 ✓
f. P(0-7) = 1 ✓ or

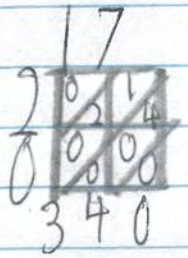
L5 - use the probability scale from 0 to 1.

a. P(H) = 1/11 ✓
b. P(A) = 2/11 ✓
c. P(M/I) = 3/11 ✓

2.a. P(Vowel) = 5/26 ✓
P(Consonant) = 21/26 ✓

8th January 2015

Starter



$8 \times 7 = 56$

2 3 4 0
$-\ 0\ 5\ 6$
$284 - 7 = 277$

LG. They identify all outcomes when dealing with a combination of 2 experiments.

yr 8 POS.

Probability

Sample Space Diagram

	1	2	3	4	5	6
H	H1	H2	H3	H4	H5	H6
T	T1	T2	T3	T4	T5	T6

Q1. What is the probability of getting a head and a number between 2 and 4?

A1. $1/6 = P(H + 2 < n < 4)$

Q2. What is the probability of getting a tail or a head and a 4?

A2. $P(T/H + 4) = 7/12$

	Orange/O	Yellow/Y	Blue/B
H	HO	HY	HB
T	TO	TY.	TB

Q.1. What is the possibility of getting tails and (orange), orange or heads and Yellow?

A.1. $3/6 = P(TO/HY)$

Q.2. What is the possibility of getting a head or a tail with either Yellow or Blue?

A.2. $4/6 = P(H/T+Y/B)$

	Spades	Clubs	Hearts	Diamonds
H	HS	HC	HH	HD
T	TS	TC	TH	TD

Q.1. What is the probability of getting a red head?

A.1. $P(HH/HD) = 3/8$

Q.2. What's the probability of getting a tail and either a spade or a heart?

A.2. $P(T+S/H) = 2/8$

12th January 2014

Probability Mystery

A = 50%
B = 0%
C = 50%
D = 0%
E = 0%
F = 0%

A =	%	0.6
B =	%	0.7
C =	%	0.4
D =	%	0.1
E =	%	0.7
F =	%	×0.2

Classwork

Experimental Probability (13th January)

Experimental probability = $\frac{\text{Number of times an event occurs}}{\text{Total Number of trials}}$

1. Cat = 17
Chimp = 4
Dog = 27
Bird = 6
Other = 1

a. P(a) 13/50 ✓
P(h) 4/50 ✓
P(B) 6/50 ✓
P(D) 23/50 ✓

b. 54 ✓

c. 6 ✓

d. 81 ✓

LS - different outcomes may result from repeating an experiment.

L6 Knowledge that the total probability of all the mutually exclusive outcomes of an experiment is 1, and find and justify probabilities

June [redacted] Paper 1
Q1

Red dice						
6	6	6	6	6	6	6
5	5	5	5	5	5	6
4	4	4	4	4	5	6
3	3	3	3	4	5	6
2	2	2	3	4	5	6
1	1	2	3	4	5	6
	1	2	3	4	5	6

White dice

In a game, a player throws two fair dice, one coloured white and the other coloured red.
The score for the throw is the greater of the two numbers showing on the dice.
For example, if the white dice shows 4 and the red dice shows 2, the score for the throw is 4;
if both the white and red dice show 2, the score for the throw is 2.

a) Complete the following table to show all the possible scores. [2] ✓

(b) (i) What is the probability that a player scores 3? $\frac{5}{36}$ [1] ✓

(ii) What is the probability that a player does not score 3? [2] ✓

$1 - \frac{5}{36} = \frac{31}{36}$

A player wins a prize by getting a score of 2 or less.

(c) Alex plays the game once. What is the probability that he wins a prize? [1]

$\frac{4}{36} = \frac{1}{9}$

(d) (i) 360 people each play the game once.
Approximately how many people would you expect to win a prize? [2]

$360 \times \frac{1}{9} = 40$

(ii) It costs £1 to play the game once. The prize for winning is £5. If the 360 people each play the game once, approximately how much profit do you expect the game to make? [2]

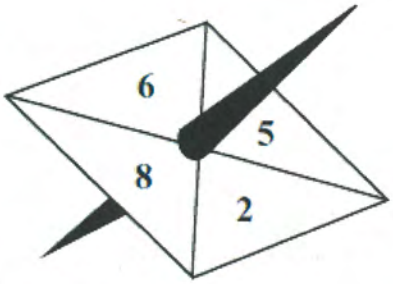
360 x £1 = £360

40 people get a prize of £5 = £200

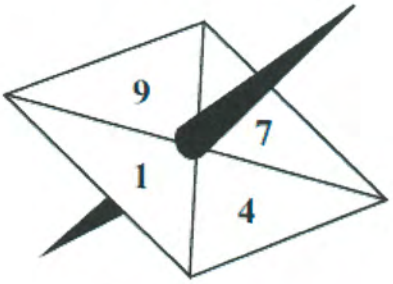
profit is £360 - 200 = £160

June [redacted] - pilot paper 1

Q2 Spinner A has four equal sections numbered 2, 5, 6 and 8. Spinner B has four equal sections numbered 1, 4, 7 and 9. Both spinners are spun and the **difference** of the two numbers obtained is the score.



Spinner A



Spinner B

(a) Complete the following table to show all the possible scores.

Spinner B \ Spinner A	2	5	6	8
9	7	4	3	1
7	5	2	1	1
4	2	1	2	4
1	1	4	5	7

(b) Find the probability that the score is greater than 4. [2]

$\frac{4}{16} = \frac{1}{4}$

Q8 Jim has one spin of the spinner shown below.

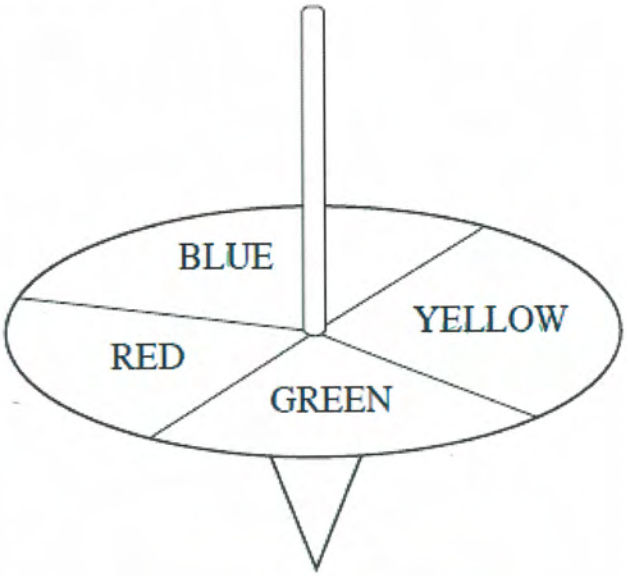


Diagram not drawn to scale.

(a) The table below shows the probabilities of Jim obtaining YELLOW, GREEN, BLUE with one spin of the spinner. Complete the table by inserting the probability that Jim obtains RED with one spin of the spinner. [2]

Colour	YELLOW	GREEN	BLUE	RED
Probability	0·26	0·24	0·37	0·13

(b) In a game, a player chooses two colours on the spinner and wins the game if either of the colours chosen is obtained with one spin of the spinner. Which **two** colours would you choose to have the best chance of winning? [1]

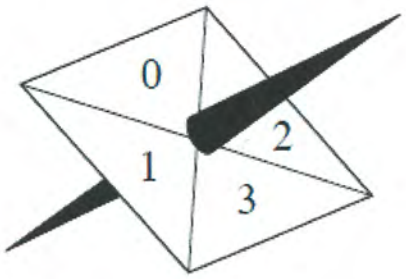
yellow and blue

(c) Find the probability of obtaining either GREEN or BLUE on the spinner. [2]

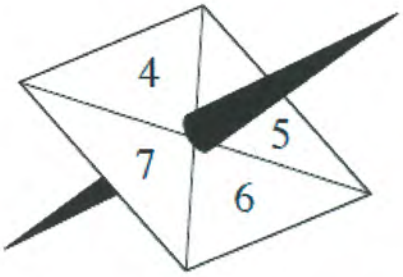
0·24 + 0·37 = 0·61

[redacted] – paper 1

Q3 Two square-shaped spinners A and B have numbers written on them.



Spinner A



Spinner B

In a game, a player spins both spinners and multiplies the two numbers showing on the spinners to get the score for the game.
For example, if the number on spinner A is 2 and the number on spinner B is 5, the player works out 2 × 5 = 10 and the player scores 10.

a) Complete the following table to show all the possible scores. [2]

Spinner B \ Spinner A	0	1	2	3
7	0	7	14	21
6	0	6	12	18
5	0	5	10	15
4	0	4	8	12

(b) (i) What is the probability that a player scores 0? $\frac{4}{16} = \frac{1}{4}$

(ii) What is the probability that a player does not score 0? [3]

$1 - \frac{1}{4} = \frac{3}{4}$

(c) A player wins a prize by getting a score of 8 or less.
Brian plays the game once. What is the probability that he wins a prize? [1]

$\frac{9}{16}$

~~November 2005~~ Pilot Paper 2

Q11 The table below shows the probabilities of selecting one ball at random from a bag of coloured balls.

Colour	Red	Black	Yellow	White	Purple
Probability	0·25	0·14	0·06	0·15	0·40

(a) Are there any balls of another colour in the bag? Give a reason for your answer. [2]

(b) What is the probability of selecting [4]

(i) either a yellow or a purple ball?

(ii) a ball of any colour other than white?

(a) 0.25
0.14
0.06
0.15
0.40
1.00

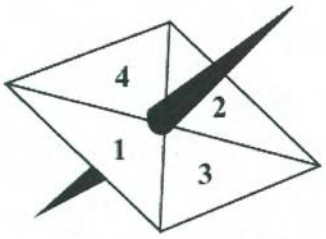
No, there are no other balls in the bag. All probabilities add up to 1. ✓

(b) (i) 0.46

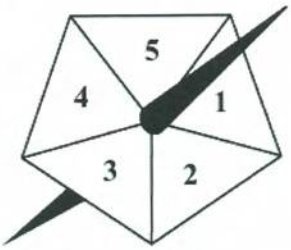
(ii) 1 − 0.15 = 0.85 ✓

6

10. A square shaped spinner has the numbers 1, 2, 3 and 4 written on it. Another spinner, in the shape of a regular pentagon, has the numbers 1, 2, 3, 4 and 5 written on it.



Square spinner



Pentagon spinner

In a game, a player spins both spinners and multiplies the two numbers showing on the spinners to get the score for the game.

For example, if the number on the square spinner is 3 and the number on the pentagon spinner is 2, the player works out $3 \times 2 = 6$ and the player scores 6.

(a) Complete the following table to show all the possible scores.

Pentagon spinner \ Square spinner	1	2	3	4
5	5	10	15	20
4	4	8	12	16
3	3	6	9	12
2	2	4	6	8
1	1	2	3	4

[2]

(b) (i) What is the probability that a player scores 4?

$\frac{3}{20}$

(ii) What is the probability that a player does not score 4?

$1 - \frac{3}{20} = \frac{17}{20}$

[3]

5

14th January 2015

Starter

$5 \times 3 = 15$ ✓
$4 \times 2 = 8$ ✓
$3 \times 1 = 3$ ✓
$2 \times 0 = 0$ ✓
$1 \times -1 = -1$ ✓
$0 \times -1 = 0$ ✓
$-1 \times -3 = 3$ ✓
$-2 \times -4 = 8$ ✓
$-3 \times -5 = 15$ ✓
$-4 \times -6 = 24$ ✓

$a + b = (10) * 2$ ✓
$ac = -18$ ✓
$b - c = -1$ ✓
$abc = 72$ ✓
$a + b + c = -1$ ✓
$bc^2 = -36$ ✓
$(bc)^2 =$
$a^2b^3 =$
$c(b-a) =$
$b^a =$

Algebra

a. $z + 5$ ✓

b. $8 + z$ ✓

c. $x - 7$ ✓

d. $12-x$ ✓

e. $y<9$ ✗

f. $3<y$ ✗

g. $z>11$ ✗

h. $5>z$ ✗

Do you know what went wrong here? ask me if you need help.

1. $w-6$ ✓

a. $w=x+7$ ✓

b. $(y=x+18)$ ✗ $x=y-18$ ✓

c. $(52=y+z)$ ✗ $y=52-z$ ✓

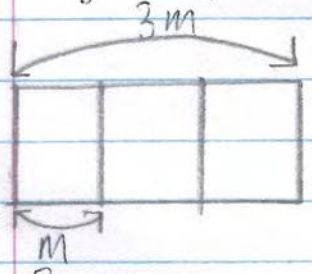
i. $4k=4\times k$ ✓

2. $7j=7\times j$ ✓

3. 8 w is (a) ✗ 8 groups of w ✓

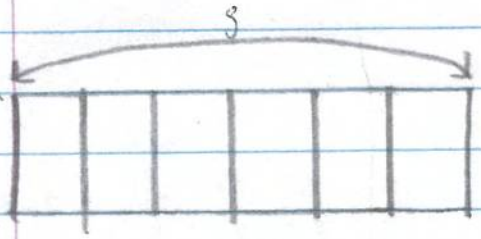
4. 5 groups of $y=5y$ ✓

1.



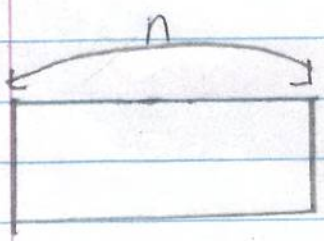
a. 3m

b. 36

2. 

a. $\frac{1}{6}$ of an s

b. 5

3. 

a. n-6

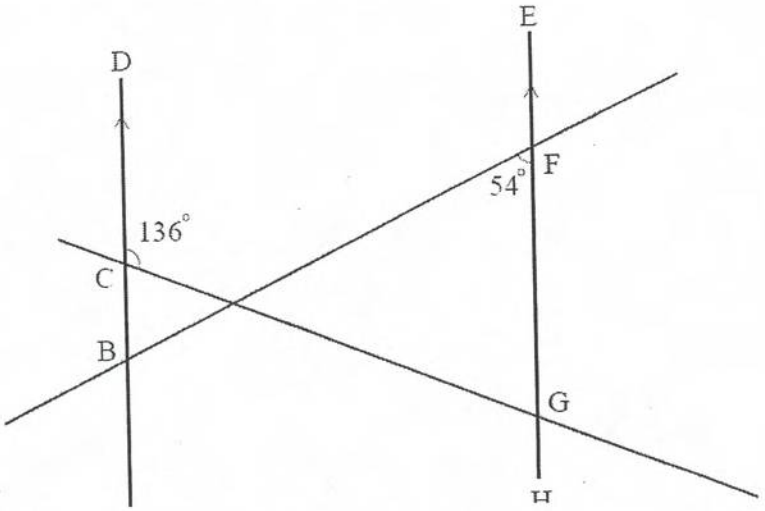
b. $\frac{1}{n}$ of n

c.

Homework

Stick this sheet in and answer the questions in your book. For each question give a reason for your answers

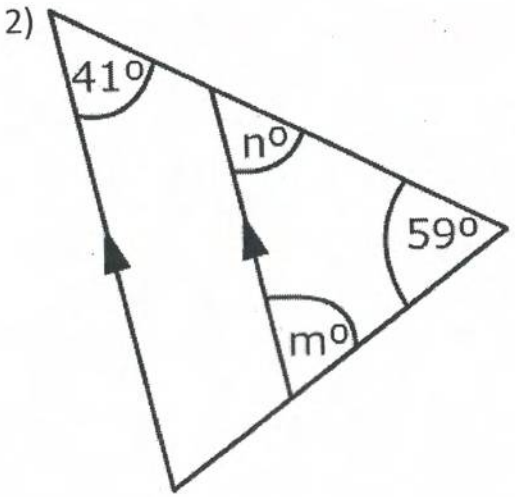
1)



a) Find the size of angle DBF

b) Find the size of angle HGC

2)



Find angles n and m

1. DBF° = 54° because it is an alternate angle with 54°.
HGC° = 136° because it is an alternate angle with 136°.

2. n° = 41° because it is a corresponding angle with 41°.
m° = 80° because a triangle has 180°.

10. $a = 64°$ because it is an opposite angle with $64°$.
$b = 64°$ because it is an alternate angle with $64°$.
$c = 116°$ because it is angles on a straight line with $b°$.

11. $a = 135°$ because it is an opposite angle with $135°$.
$b = 45°$ because it is angles on a straight line with $135°$.
$c = 135°$ because it is a corresponding angle with $a°$.
$d = 135°$ because it is an opposite angle with $c°$.

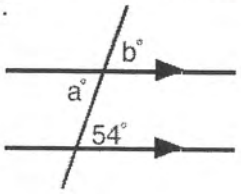
12. $a = 102°$ because it is an opposite angle with $102°$.
$b = 102°$ because it is a corresponding angle with $a°$.
$c = 78°$ because it is angles on a straight line with $b°$
$d = 78°$ because it is an opposite angle with $c°$.

L6 - Angle problems and properties of intersecting + parallel lines

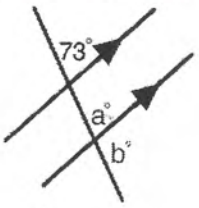
Homework

Find the missing angle for each of these diagrams

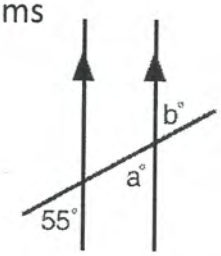
5).



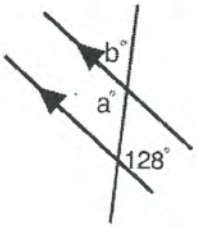
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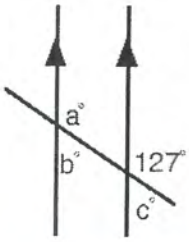
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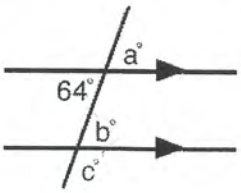
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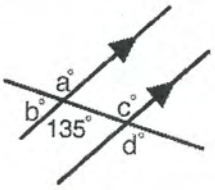
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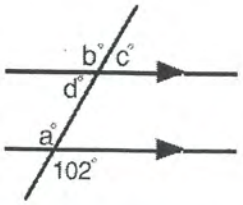
10).



11).



12).



5. a = 54° because it is an alternate angle with 54°.
b = 54° because it is a corresponding angle with 54°.

6. a = 73° because it is a corresponding angle wi 73°.
b = 107° because it is angles on a straight line with a°.

7. a = 55° because it is a corresponding angle with 55
b = 55° because it is an opposite angle with a°

8. a = 128° because it is an alternate angle with 128°
b = 52° because it is angles on a straight line wi a°.

9. a = 127° because it is a corresponding angle wi 127°.
b = 53° because it is angles on a straight line with a°.
c = 53° because it is a corresponding angle with b°.

Homework

Fill in the table. Remember to cancel fractions.

Fraction	Decimal	Percentage
$\frac{4}{5}$	0.8	80 %
$\frac{9}{10}$	0.9	90 %
$\frac{1}{4}$	0.25	25 %
$\frac{29}{50}$	0.58	58 %
$\frac{7}{8}$	0.875	87.5 %
$\frac{12}{25}$	0.48	48 %

In a school 39% of students come by bus.

$\frac{6}{25}$ Come by car and the rest walk.

What percentage walk to school?

Bus = 39%

Car = $\frac{6}{25} = \frac{24}{100} = 24\%$

L.O.5. Use equivalences between fractions + percentages

$$\begin{array}{r} 39 \\ +\ 24 \\ \hline 63\% \end{array}$$

$$\begin{array}{r} 100 \\ -\ 063 \\ \hline 037 = 37\% \end{array}$$

37% of the pupils walk to school.

Potatoes = 25

6 | 1 5 3 0

1.50 = 1-50 ✓

Potatoes = £1-50 per 6 Kg

4-73
+1-50
+0-47
£6·65 = Total amount Elliott pays. ✓

3. Day 1 = £44-80
Day 2 = £37-50 ✓
Day 3 = £37-50 ✓
£119·80 = Total amount Brian pays. ✓

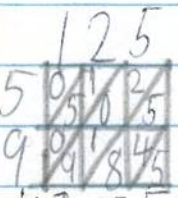
Well Done :), Keep it up!

B ~~Butler~~ Ben Butler

You should
a good understa
of decimals because
you got everyo
correct!

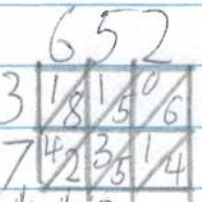
15/15

e.



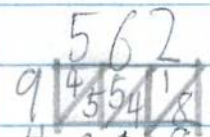
7 3 7 5 = 7-375 ✓

f.



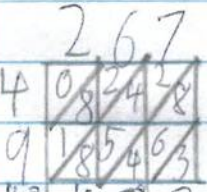
2 4 1 2 4 = 0-24124 ✓

g.



5 0 5 8 = 50-58 ✓

h.



1 3 0 8 3 = 130-83 ✓

Qx

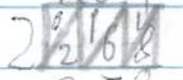
1.



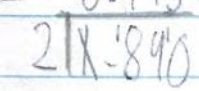
9 2 0 4 = 0.09204 ✓

2. Pears = 0-84 ÷ 2 = 0.42 = £0.42 per 0.5kg ✓

Grapes = 1.89 × 2 = 1.89 (Grapes)×



3 78 = 3.78 + 1.84 ÷ 2 = 0.945 = 0.95



3.78
+ 0.95
£4.73 ✓

Grapes = £4.73 per 2.5kg

Homework

1. Work out

a) 7 × 4.3 b) 5 × 3.16 c) 2.3 × 1.2

d) 7.2 × 42.5 e) 12.5 × 0.59 f) 0.652 × 0.37

g) 5.62 × 9 h) 26.7 × 4.9 i) 1.56 × 0.059

2. Elliott goes shopping.
He buys
0.5 kg of pears at £0.84 per kg.
2.5 kg of grapes at £1.89 per kg.
6 kg of potatoes at £0.25 per kg.

How much does he pay?

3. Brian hires a car for 3 days.
Tariffs are:
£44.80 for the first day and
£37.50 for each extra day.

How much does he pay?

1.a 43
7 | 28 | 21
30 1 = 30·1 ✓

b. 316
5 | 15 | 95 | 30
1580 = 15·8 ✓

c. 12
2 | 02 | 24
3 | 03 | 06
276 = 2·76

d. (7) × 425
7 | 28 | 14 | 35
2 | 08 | 04 | 10
3060 0 = 306 ✓

L5. Use understanding of place value to multiply whole numbers and decimals

Homework

17th September

✓ $3^4 \times 3^5 = 3^{9}$	✓ $6^6 \div 6^3 = 6^{3}$	✓ $(4^3)^2 = 4^{6}$
✓ $5^5 \times 5^8 = 5^{13}$	✗ $4^{14} \div 4^8 = 4^{6}$	✓ $(7^5)^5 = 7^{25}$
✓ $7^2 \times 7^7 = 7^{9}$	✓ $8^{14} \div 8^7 = 8^{7}$	✓ $(9^4)^6 = 9^{24}$
✓ $9^9 \times 9^8 = 9^{17}$	✓* $3^3 \div 3^6 = 3^{-3}$	✓ $(9^6)^9 = 9^{54}$

3-1

12/12

Well done

marked by Tom Davies

Homework

1. Work out an estimate for the value of

a) $\frac{547}{4.8 \times 9.7}$

b) $\frac{69 \times 398}{207}$

c) $\frac{7.5 \times 2.79}{2.71 + 3.19}$

d) $\frac{409 \times 5.814}{0.19}$

a. $\frac{547}{4.8 \times 9.7} = \frac{500}{5 \times 10} = \frac{500}{50} = 10$ ✓

b. $\frac{69 \times 398}{207} = \frac{100 \times 400}{200} = \frac{40,000}{200} =$ 00200 = 20

200 | 40,000

c. $\frac{7.5 \times 2.79}{2.71 + 3.19} = \frac{8 \times 3}{3 + 3} = \frac{24}{6} = 4$ ✓

d. $\frac{409 \times 5.814}{0.19} = \frac{400 \times 6}{0.2} = \frac{2,400}{0.2} = 12,000$ ✓

$\frac{70 \times 40}{200}$

L5 16. Qd.

Use rounding to estimate answers.

Yr 7 POS.

Learner Profile Mathematics Level 6

(Book 3)

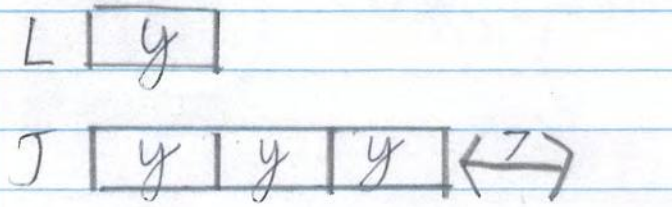
20th January 2015

Starter

1- 5 squared is 25 ✓
2- 12 in a dozen ✓
3- 6 zeros in a million ✓
4- 19 is a prime number ✓
5- 1 inch is 2.5 cm ✓
6- A trapezium has a set of parallel lines ✓
7- A decagon has 10 sides ✓
8- 12 months in a year ✓
9- Pentagons are not always tessellate ✓
10- Nine nines are 81 ✓

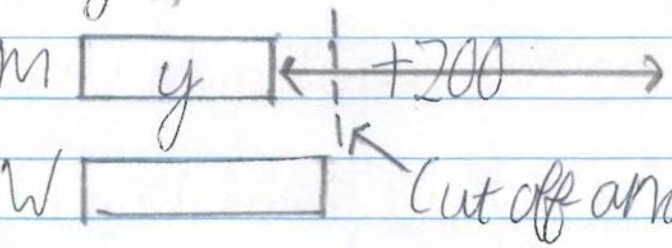
10/10

Algebra



$L = y$

$J = 3y + 7$



$M = y + 200 - \frac{1}{2}y + 100$

$W = \frac{1}{2}(y + 200)$

$60 \div 2 = 30 + 100 = 130$

$300 \div 2 = 150 + 100 = £250$

Term = Number and letter. eg. 2m
Equation = Has an = in it eg. $9x = 4$
Expression = A collection of terms. eg. $12g - 6m + 7$

1. $4x + 7x + 2y = 11x + 2y$ ✓
2. $3b + 7b + 2f + 9f = 10b + 11f$ ✓
3. $5b - 3b + 2ab = 2b + 2ab$ ✓
4. $8xy + 4y + 5xy - 2y = 13xy + 2y$ ✓
5. $12x + 7y - 2x + y = 10x + 8y$ ✓

5/5

21st January 2015

Multiplying Terms

1. $10a$ ✓
2. $21b$ ✓
3. $6c^2$ ✓
4. $20K^2$ ✓
5. $20ab$ ✓
6. $15mn$ ✓
7. $30gh$ ✓
8. $30mn$ ✓

Expand Brackets

$2(s+5) \neq (s+5)+(s+5)$

$4(a+3) = 4a+12$ ✓

1. $4(d+4) = 4d+16$ ✓
2. $4(q-5) = 4q-20$ ✓
3. $4(2t+3) = 8t+12$ ✓
4. $2(h+3) = 2h+6$ ✓
5. $4(n+4) = 4n+16$ ✓

6. $3(5b-3)=15b-9$ ✓

1. $b(b+5)=b^2+5b$

2. $3g(5g+3$

3. $c(d+9)=c$

1. $x(x-6)=$

2. $t(t+p)=t$

3. $f(f-6)=f^2-6f$ ✓

4. $4(5p+2)=20p+8$ ✓

16- expand a single bracket.
know that $a \times a = a^2$.

yr 8 pos.

Factorising

Put the brackets back in.

1. $3x+6=3(x+2)$

2. $8b+6f=2(4b+3f)$

1. $10b+25=(2b+5)$

2. $12d+15f=3(4d+5f)$

1. $6a+3b=3(2a+(b)$ ✓

2. $6p+12=6(1p+2)$ ✓

22nd January 2015

1. $4(g+3) = 4g + 12$ ✓
2. $b(2b+5) = 2b^2 + 5b$ ✓
3. $3d(8d+7f) = 24d^2 + 21df$ ✓

3/3

Factorising

1. $10ft + 5b = 5(2ft + b)$ ✓
2. $18s + 12 = 6(3s + 2)$ ✓
3. $14gh - 21 = 7(2gh - 3)$ ✓
4. $25c + 30b = 5(5c + 6b)$ ✓
5. $14a + 28b + 35 = 7(2a + 4b + 5)$ ✓

5/5

$y^2 - 3y = y(y - 3)$

$3d^2 - 7d = d(3d - 7)$

26th January 2012

(Expanding) ×

1. $4x + 6 = 2(2x + 3)$ ✓
2. $20y - 12 = 4(5y - 0.3)$ ✓
3. $10a + 14b = 2(5a + 7b)$ ✓
4. $12p + 8q - 20 = 4(3p + 2q - 5)$ ✓
5. $35r + 55s - 10t = 5(7r + 11s - 2t)$ ✓ 5/5

1. $15p + 10q - 25 = 5(3p + 2q - 5)$ ✓
2. $21r + 33s - 6t = 3(7r + 11s - 2t)$ ✓ 2/2

1. $2x^2 + 5x = x(2x + 5)$ ✓

1 (2. 3x) × $x^2 + 7x = x(x + 7)$ ✓

2. $3x^2 + 8x = x(3x + 8)$ ✓

27th January 2015

Starter

1. $4(b+6) = 4b+24$ ✓
2. $6(g-7) = 6g-42$ ✓
3. $4(2a+3) = 8a+12$ ✓
4. $b(b+3) = b^2+3b$ ✓
5. $f(2f-5) = 2f^2-5f$ ✓
6. $j(3j+2n) = 3j^2+2jn$ ✓
7. $\frac{1}{2}(15d-27) = 7.5d-13.5$ ✓ $\frac{1}{2}(6b+8) = 3b+4$ ✓ (8/8)
8. $\frac{1}{3}(15d-27) = 5d-9$ ✓

Brackets

$4(b-6)+3(b-2) = 7b-30$

1. $5(n+2)+3(n-6) = 5n+10+3n-18 = 8n+-8$ ✓
1. $4(w-5)+9(2w+8) = 4w-20+18w+72 = 22w+52$ ✓
2. $2(5b+6)+2(3b-2) = 10b+12+6b-4 = 16b+8$ ✓
3. $6(j+2)+j(j-4) = 6j+12+j^2-4j = 2j+12+j^2$ ✓ (3/3)

$3t+18 \ominus 5t \ominus 10$

On both

L6 Simplifying + expand a single bracket.

28th January 2015

Worded Problems

1. $8y - 7 - 3y \div 4 = (5y - 7) \div 4$ ✓

2. $4m + 2m = 6m$ kg ✓

3. $G = W$
   $M = W \times 4$
   $D = W \times 4 + 3$

   a. $W \times 4 + 3 = (W \times 7)$ ✓

   b. $(9 \times 7 = 63) \times 9 \times 4 = 36 + 3 = 39$ ✓

4. $16 \times m - 10 = 16m - 10$

   a. $16m - 10$ ✓

   b. 70 pens ✓

5. $m = b \div 2 = b/2$

   $b = \$p$

   $p = m + \$2$

   a. $(p) \times p/2 + 2$ ✓

   b. \$4.50 ✓

6. a. $4500 + 2400 = 6900 \div 3$

   b.

Looks like you got the hang with factoring - well done for persevering.

You have also done well with the worded problems.

Make sure you practise substitution next lesson.

3rd February 2015

Starter

$$\begin{array}{r} 156 \\ \times\ 4 \\ \hline 237 \end{array}$$

Test Revision

1. Basic use of the model method
2. Writing simple expressions eg. Take j from 17
3. eg. $n \xrightarrow{\times 2} 2n \xrightarrow{+5} 2n+5 \xrightarrow{\text{when } n=12} 29$
4. Expanding and factorising
5. Substitution
6. Wordy problems (6a)

8a (3c) $10q - 8q = 10 \times 20 - 8 \times 20 = 200 - 160 = 40$

b. $\frac{125-q}{7} = \frac{125-20}{7} = \frac{105}{7} = 15$

c. $\frac{11q}{4} + 25 = \frac{11 \times 20}{4} + 25 = \frac{220}{4} + 25 = 55 + 25 = 80$

d. $\frac{14q+80}{30} = \frac{14 \times 20 + 80}{30} = \frac{280+80}{30} = \frac{360}{30} = 12$

3a. $(x - 15) \div 3$

b. $(39-15) \div 3 = 24 \div 3 = 8$

4a. $(y+200) \div 2$

b. $(80+200) \div 2 = 280 \div 2 = 140$

1a. $r \times 3$

b. $r \times 3 - 4$

c. $5 \times 3 - 4 = 15 - 4 = 11$

2a. $x \times 2 + x$

b. $100 - x + x \times 2$

c. $100 - 15 + 15 \times 2 = 100 - 15 + 30 = 100 - 45 = 55$

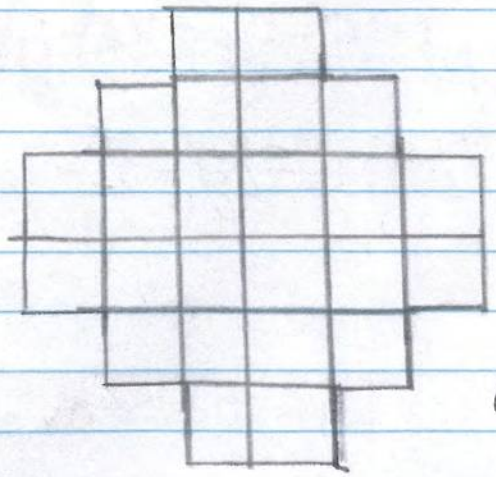
3a. $z \times 4$

b. $z \times 4 + 5$

c. $z + z \times 4 + z \times 4 * 5 = 3z \times 4 \times 4 + 5 = 3z \times 21$

9th February 2015

Starter



$94cm^2$

Solving Equations

1. $(n+4)\times 9 = 54 = 54\div 9 = 6 \times = 9n + 36 = 54 = 54-36 = 18 = 9n = 18 = 2 = n$

2. $(n-3)\times 3 = 18 = 3n - 9 = 18 = 18-9 = 2 = 3n = 2 \times$
   $(n-3)\times 3 = 18 = 3n - 9 = 18 = 18-9 = 9 = 3n = 18) \times$

3. $y \div 4 + 3 = 7 = 7-3 = y \div 4 + 4 = y \div 8 = 7$

   $6x + 7 = 4x + 19$ ⑦ △ ⑲

   $6x = 4x + 12$ ⑫

   $2x = 12$ ⑫

   $x = 6$ ⑥

1. $7x + 3 = 3x + 63 = 4x = 60 = 15 = x$

2. $5x - 11 = 2x + 16 = 5x = 2x + 27 = 3x = 27 = x = 9$

1. $3y + 4 = y + 38 \Rightarrow 3y = y + 34 \Rightarrow 2y = 34 \Rightarrow y = 17$ ✓

2. $7y - 6 = 2y + 29 \Rightarrow 7y = 2y + 35 \Rightarrow 5y = 35 \Rightarrow y = 7$ ✓

3. $3y + 3 = 35 - 5y \Rightarrow 3y = 32 - 5y \Rightarrow 8y = 32 \Rightarrow y = 4$ ✓

Well done.

10th February 2015

Equations

1. $6x + 14 = 4x + 38$ (=) ×

$6x = 4x + 52$

$2x = 52$

$x = 26$ × $x = 12$

2. $23 - 4x = 7x + 15$

$23 = 11x + 15$

$38 = 11x$ = $11 \overline{)38.00}$ $\quad 03.\dot{4}5$

$x = 3.\dot{4}5$ × $x = \frac{8}{11}$

3. $6 - 6x = 8x + 4$

$6 = 14x + 4$

$10 = 14x$ = $14 \overline{)10.00\,20\,60\,40\,120\,80}$ $\quad 00.\dot{7}1\,4285\dot{7}$

$x = 0.\dot{7}14285$ ×

Do you know what went wrong Lee?

3. $6 - 6x = 8x + 4$

$+6x$

$6 = 14x + 4$

-4

$2 = 14x$ = $14 \overline{)2.00\,20\,60\,40\,80\,120\,80}$ $\quad 0.\dot{1}42857\dot{1}$

$x = 0\dot{1}42857\dot{}$ ✓

1. $8x + 7 = 3x + 72$ -7

$8x = 3x + 65$ $-3x$

$5x = 65$ $\div 5$

$x = 13$ ✓

2. $9x + 17 = 3x + 53$ -17

$9x = 3x + 36$ $-3x$ ✓

$6x = 36$ $\div 6$

$x = 6$ ✓

learner realised mistake and laid out the work more clearly to ensure the same mistake was not repeated.

1. $5x + 3 = 3x + 11$ -3

$5x = 3x + 8$ $-3x$

$2x = 8$ $\div 2$

$x = 4$ ✓

✓

2. $7x + 7 = 5x + 11$ -7

$7x = 5x + 4$ $-5x$

$2x = 4$ $\div 2$

$x = 2$ ✓

3. $3x - 4 = 6x - 19$

$+19$

$3x + 15 = 6x$

$-3x$

$15 = 3x$

$\div 3$

$x = 5$ ✓

4. $7x - 2 = 4x + 10$

$+2$

$7x = 4x + 12$

$-4x$

$3x = 12$

$\div 3$

$x = 4$ ✓

5. $9x + 4 = 12x - 20$

$+20$

$9x + 24 = 12x$

$-9x$

$24 = 3x$

$\div 3$

$x = 8$ ✓

L6. Solve equations with unknown on both sides.

Yr 8 - POS.

11th February 201

Equations and Fractions

1. $\frac{1}{4} + \frac{1}{3} = \frac{3}{12} + \frac{4}{12} = \frac{7}{12}$ ✓

2. $\frac{1}{7} + \frac{1}{2} = \frac{2}{14} + \frac{7}{14} = \frac{9}{14}$ ✓

3. $\frac{2}{3} + \frac{1}{5} = \frac{10}{15} + \frac{3}{15} = \frac{13}{15}$ ✓

4. $\frac{5}{7} - \frac{1}{4} = \frac{20}{28} - \frac{7}{28} = (\frac{27}{28}) \frac{13}{28}$ ✓

5. $\frac{5}{6} + \frac{3}{4} = \frac{20}{24} + \frac{18}{24} = \frac{38}{24} = \frac{19}{12} = 1\frac{7}{12}$ ✓

$\frac{x}{4} + \frac{3}{8} = 5$

To make 5 I must add $\frac{5}{8}$ to $\frac{3}{8}$ aswell as another 4.

$\frac{2x}{8} + \frac{3}{8} = 5$

$4 = \frac{32}{8} + \frac{5}{8} = \frac{37}{8}$

$2x = 37 \div 2 = x = 18.5$

$\frac{2x}{4} + \frac{2}{5} = 5$

$\frac{10x}{20} + \frac{8}{20} = 5$

$\frac{10x + 8}{20} = 5$

$10x + 8 = 100$ -8

$10x = 92$ $\div 10$

$x = 9.2$

$\frac{x}{4} + \frac{3x}{8} = \frac{2x}{8} + \frac{3x}{8} = \frac{5x}{8} = 6 = 5x = 48 \div 5 = 9.2$

1. $\frac{f}{3} + \frac{2f}{9} = 10$ $\times 3$

$\frac{3f}{9} + \frac{2f}{9} = 10$

$\frac{5f}{9} = 10$ $\times 9$

$5f = 90$ $\div 5$

$f = 18$ ✓

solving algebraic fractions linking to equivalent fractions and +/− fractions

1. $\frac{x}{3} + \frac{1}{2} = 3$

$\frac{2x}{6} + \frac{3}{6} = 3$

$2x = 15$

$x = 7.5$ ✓

2. $\frac{x}{4} + \frac{2}{5} = 3$

$\frac{5x}{20} + \frac{8}{20} = 3$

$5x = 52$

$x = 10.4$ ✓

3. $\frac{x}{5} - \frac{1}{2} = 1$

$\frac{2x}{10} - \frac{5}{10} = 1$ → $\frac{2x}{10} = 1.5$ → $2x = 15$

$x = 7.5$

$2x = 5$

$x = 2.5 \times 7.5$

2/4

24th February 2015

Starter

1- 25, 26, 27, 28, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 = 45 full days ✓

2- $10 \times 10 = 100$ answer = 100 ✓

3- 67 ✓

4- £11 ✓

Equations and Fractions

1- $\frac{2x}{3} - \frac{2}{4} = 5$

$\frac{8x}{12} - \frac{6}{12} = 5$

$\frac{8x - 6}{12} = 5$

2- $3 - \frac{x}{2} = \frac{2}{3}$ ✗ $8x - 6 \equiv 60$

$8x = 66$

$x = \frac{66}{8}$

$8 \cdot 25$

2. $\frac{3}{1} - \frac{x}{2} = \frac{2}{3}$

$\frac{6}{2} - \frac{x}{2} = \frac{2}{3}$

$\frac{18}{6} - \frac{x}{6} = \frac{4}{6}$

$\left(\frac{18 - x = 4}{6 \quad 6}\right) \times \quad x = (-)14 \times$

3. $\frac{2x}{3} + 1 = \frac{7}{5}$

$\frac{2x}{3} + \frac{1}{1} = \frac{7}{5}$

$\frac{10x}{15} + \frac{15}{15} = \frac{21}{15}$

$10x = 6$

$x = 0.6 \checkmark$

You have made a few mistakes with these but you have the basic method correct.

4. $\frac{5x}{4} - \frac{2}{1} = (7) \frac{7}{1}$

$\frac{5x}{4} - \frac{8}{4} = \frac{28}{4}$

$5x = 36$

$x = \frac{36}{5}$

(x) ✗ 07·2
5|36·0

$x = 7.2$

A woman is 4 times older than her daughter. If the difference in their ages is 21, how old is the daughter?

$4x - x = 21$

$3x = 21$

$x = 7$ ✓

1. $6x + y = 53$ ✗ $x + x + 1 = 53$

$52 = 2x$ ✗ $2x + 1 = 53$

$x = 26$ ✗ $2x = 52$

$x = 26$

$26 + 27$ ✓

2. $6c + (6c)$ ✗ $4c + 0.2 \times 4 = 5.3$

$10c + 0.2 \times 4 = 5.3$

$10c + 0.8 = 5.3$

$10c = 4.5$, ✗ $c = 45$, $45 + 65$ ✓

L6. Formulate and solve simple linear equations

25th February 2015

Starter

97·5 ✓
591·6 ✓
8·3 ✓
2·7 ✓
174·0 ✓
7760·0 ✓
1·9 ✓
7·3 ✓
0·0 ✓
918·0 ✓

```
  0000·0
  0001·9
  0002·7
  0007·3
  0008·3
  0097·5
  0118·0
  0174·0
  0591·6
+ 7760·0
  8761·3 ✓
  1 3 4 3
```

Wordy Equations

1. $x + x + 4x + 2 = 168$

$3x + 3 = 168$

$x + 1 = 56$

$x = 55$, 55, 56, 57

2. $x + x + 1 + x + 2 + x + 3 = 170$

$4x + 6 = 170$

$4x = 164$

$x = 41$, 41, 42, 43, 44

3a. $n + 5 = 12$ ✓

(a+b) $n = 7$ ✓

4. $x - 5 = -2$ ✓

$x = 3$ ✓

5. $x \times 2 = -12$ ✓

$2x = -12$ ✓

$x = -6$ ✓

6. $x - 6 \times 5 = 19$ ✗ $5x - 6 = 19$

$x - 30 = 19$ ✓

$x = 49 \times 5 = x$

7. $8 - 2x - 8 = 10$

8a. $x \times 5 = 32x$

b. $5x = 32x$

9. $x + 6x = 70$ ✓

Classwork

26th February 2015

Inequality

$x \leq 7$

0 1 2 3 4 5 6 7 8 9 10



When inequality is included the circle is filled.

$x > 4$

0 1 2 3 4 5 6 7 8 9 10

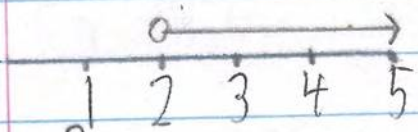


When the inequality is not included the circle is not filled

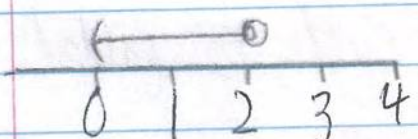
Classwork

Monday 2nd March 2015

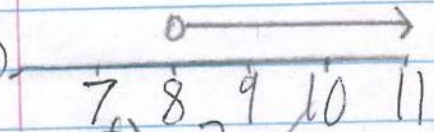
Inequalities

1. 

$n > 2$ ✓

2. 

$x < 2$ ✓

3. 

$T > 2 \times 2$ ✓

4. $c \leq 10$ ✓

5. $m < 3$ ✓

6. $e \leq 3$ ✓

7. $b \geq 10$ ✓

/

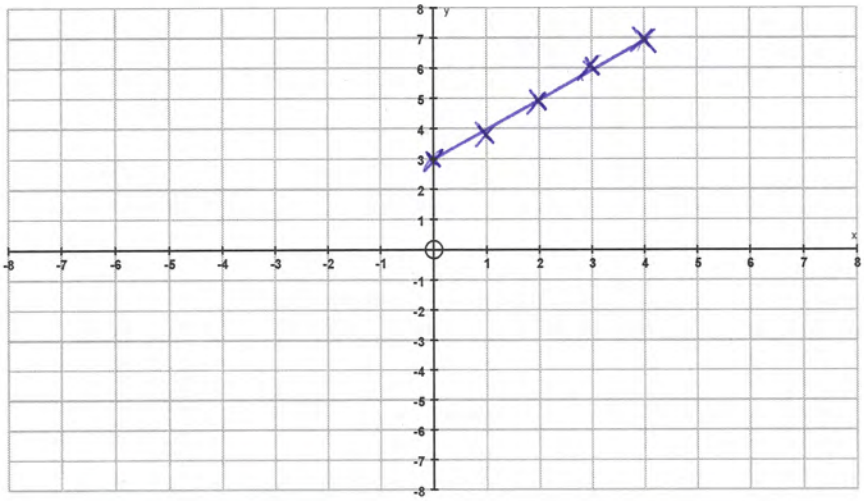
* You can solve inequations

* You can solve simple equations and ones with an unknown on both sides

? Some of the equations with fractions you have struggled with - we will have another look at this if you need to after the assessment

Drawing Linear Graphs (1)

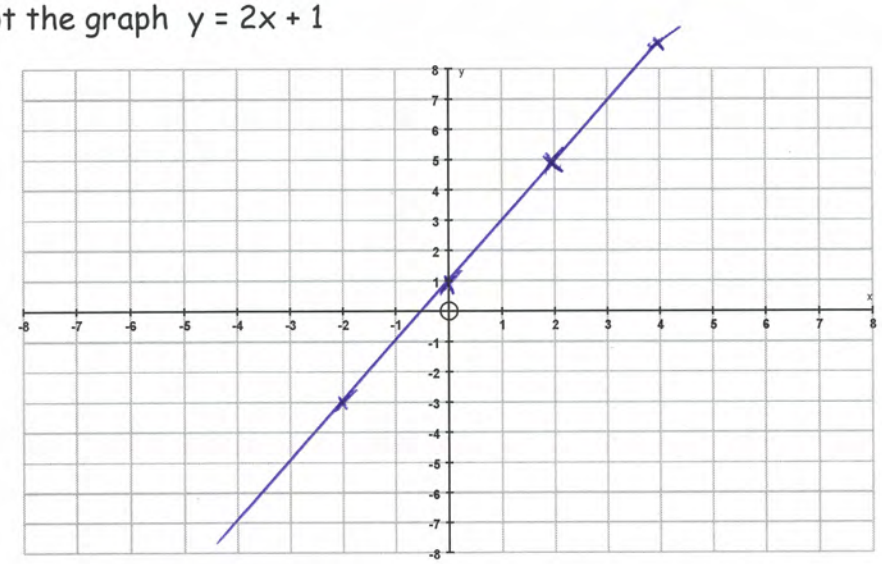
1. Plot the graph of $y = x + 3$



x	y
0	3
1	4
2	5
3	6
4	7

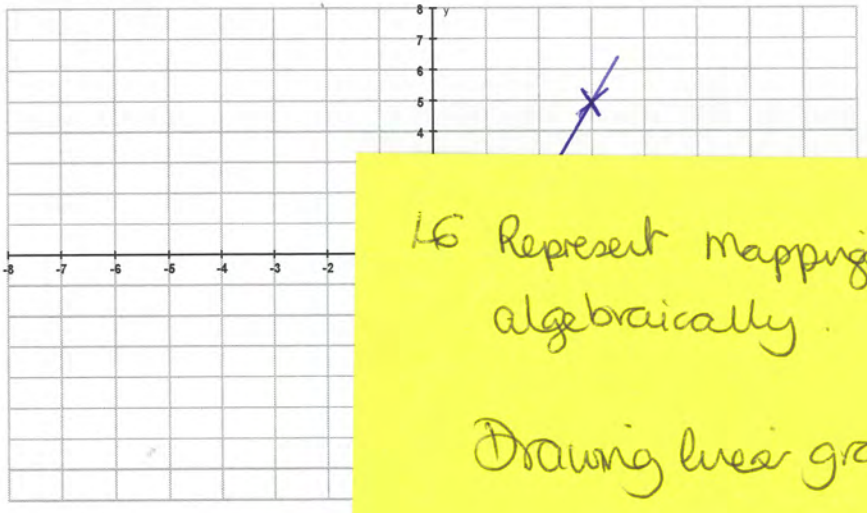
make the graph bigger

2. Plot the graph $y = 2x + 1$



x	y
-2	-3
0	1
2	5
4	9
6	13

3. Plot the graph $y = 3x - 4$



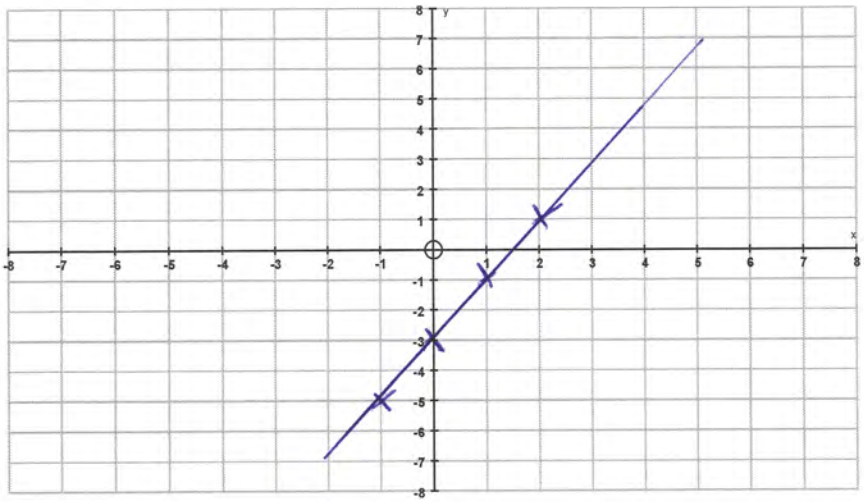
x	y
0	-4
1	-1

L6 Represent mappings expressed algebraically.

Drawing linear graphs.

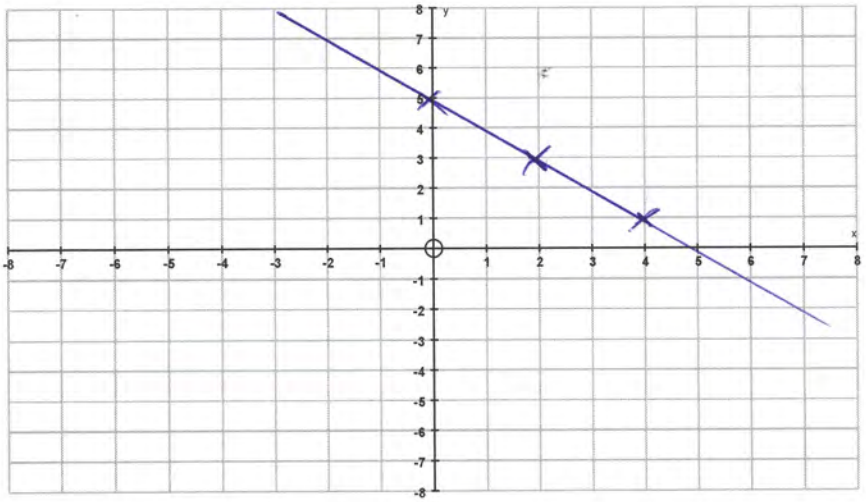
Drawing Linear Graphs (2)

4. Plot the graph of $y = 2x - 3$



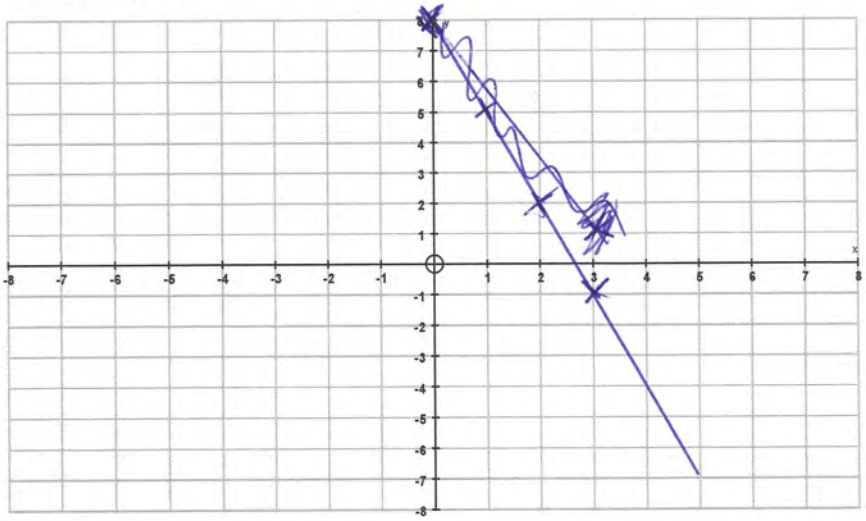
x	y
-1	-5
0	-3
1	-1
2	1

5. Plot the graph $x + y = 5$



x	y
0	5
2	3
4	1
6	?

6. Plot the graph $y = 8 - 3x$



x	y
0	8
1	5
2	2
3	-1

Classwork

Tuesday 10th March 20

Data

Qualitative Data

Words - names, favourite car, pets, etc.

Quantitative Data

Numbers - age, amount, etc.

Continuous Data

Can take any values - foot length, height, etc.

Discrete Data

Can only take set values. - shoe size, people in a room, etc

Primary Data

Collect data yourself.

Secondary Data

Use someone else's data.

Classwork

11th March 201

Starter

9	9	4	4	=26
4	9	4	3	=20
4	9	3	4	=20
3	9	4	4	=20
=20	=36	=15	=15	

Frequency Tables

Shoe Size	Tally
3 or below	
3½	
4	
4½	
5	
5½	
6	
6½	
7	
7½	
8	
8½	
9 or above	

Height (cm)	Tally
$130 \leq h < 140$	
$140 \leq h < 150$	
$150 \leq h < 160$	
$160 \leq h < 170$	
$170 \leq h < 180$	
$180 \leq h < 190$	
$190 \leq h$	

Temperature	Tally	Tally) Frequency
$10°C \leq t < 20°C$	𝍸	5
$20°C \leq t < 30°C$	𝍸 𝍸 𝍸 𝍸	20
$30°C \leq t < 40°C$	𝍸 𝍸 𝍸 𝍸 𝍸	35
$40°C \leq t < 50°C$	𝍸 𝍸 𝍸	28
$50°C \leq t < 60°C$	𝍸 𝍸	15
$60°C \leq t$ (✓)	𝍸	5
		100

LG Record continuous data + construct freq diagram.

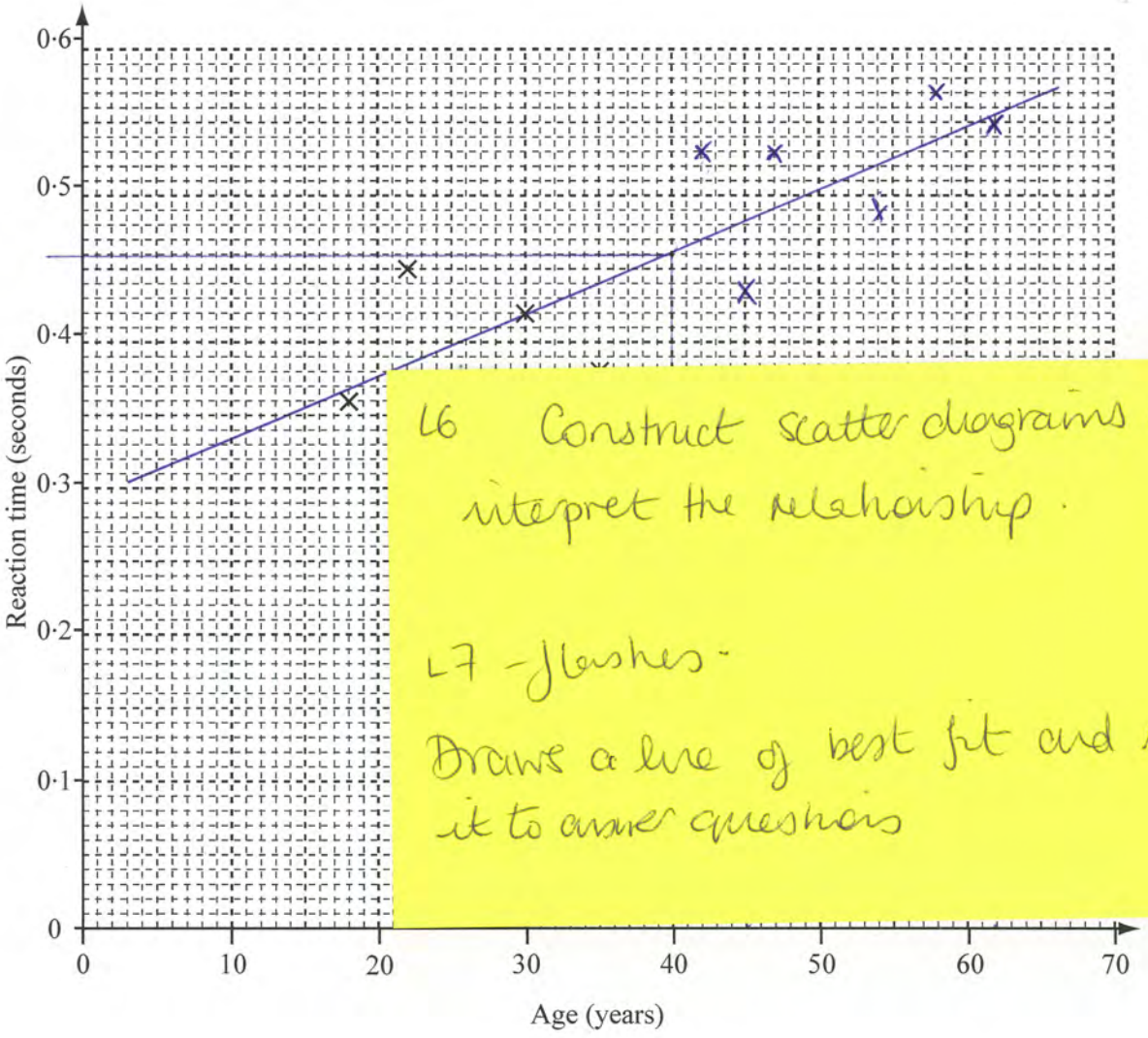
The modal temperature is between 30° and 40°c.



1. A student is investigating the relationship between a person's age and their reaction time. The table shows his results.

Age (years)	35	18	30	22	58	45	47	62	42	54
Reaction Time (seconds)	0.38	0.36	0.42	0.45	0.56	0.43	0.52	0.55	0.52	0.48

(a) On the grid below complete the scatter diagram.
The first four points have been plotted.



L6 Construct scatter diagrams and interpret the relationship.

L7 - Uses.
Draws a line of best fit and use it to answer questions

[2]

(b) Describe the correlation shown by the graph.

positive

[1]

(c) Draw a line of best fit and use it to estimate the reaction time of a person aged 40.

0.45 s

[2]

1

2. Researchers tested 10 cars.
They recorded the engine size in cubic centimetres (cc)
and the fuel consumption in miles per litre.
The scatter diagram shows the results.

(a) Draw a line of best fit.

[1]

(b) Another car has an engine size of 1600cc.

Use your line of best fit to estimate its fuel consumption.

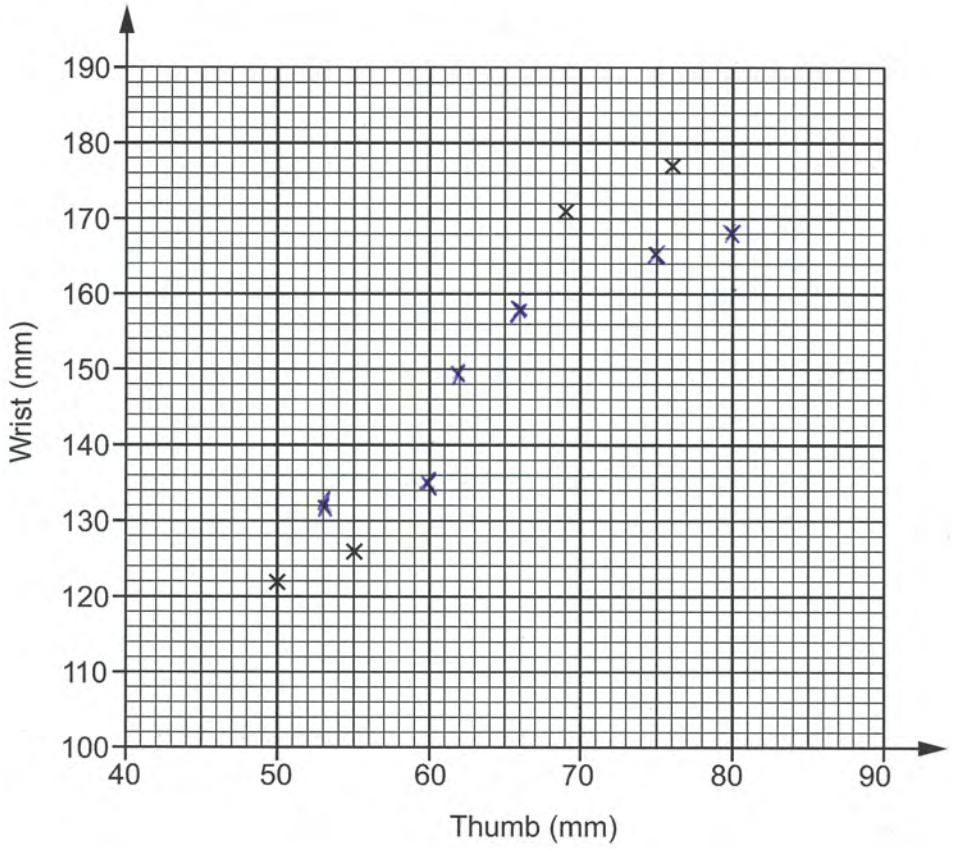
8.5 ..... miles per litre

[1]

3. The table shows the measurements in millimetres around the thumbs and the wrists of 10 people.

Thumb (mm)	69	76	50	55	75	80	66	53	60	62
Wrist (mm)	171	177	122	126	165	168	158	132	135	149

(a) Complete the scatter diagram below.
The first four points have been plotted for you.



[2]

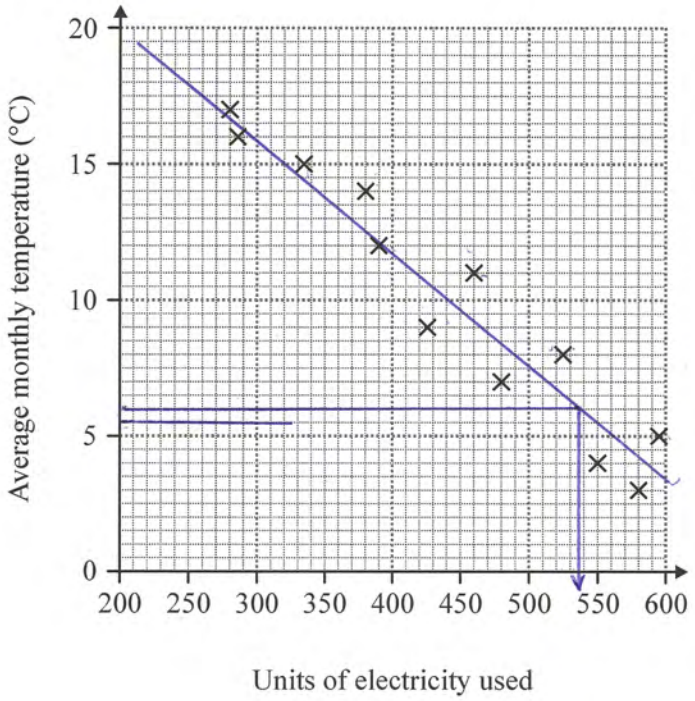
(b) What does the diagram show about the relationship between the thumb and wrist measurements?

positive relationship.

Could you say anymore about the relationship?

[1]

4. This scatter diagram shows the number of units of electricity used by a household in a month and the average monthly temperature (°C).



(a) Describe the correlation shown.

negative

[1]

(b) (i) Draw a line of best fit on the scatter diagram.

[1]

(ii) In another month the average temperature was 6 °C.

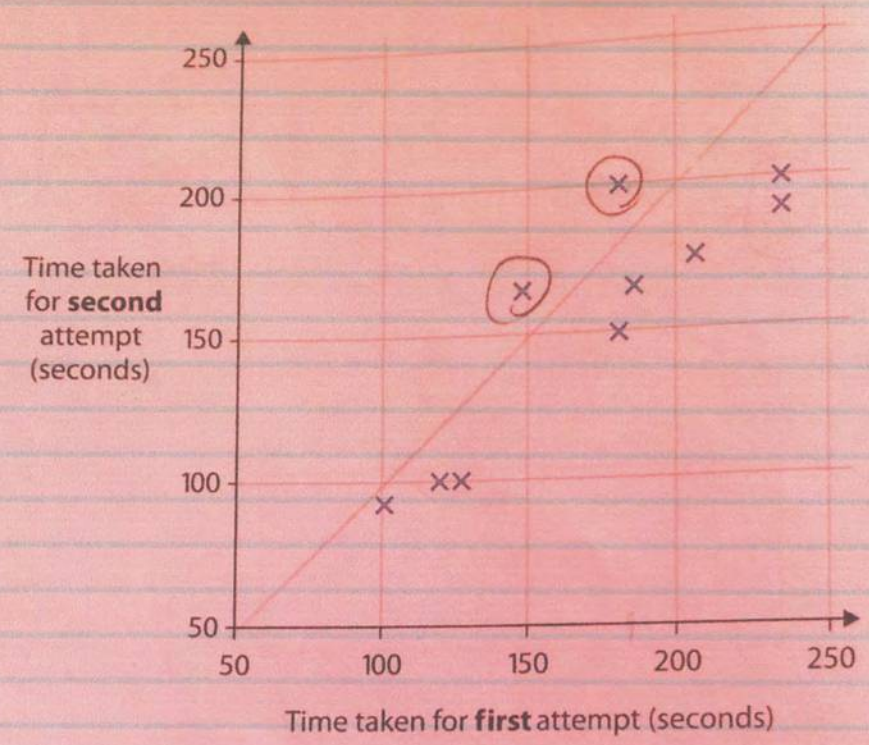
Use your line of best fit to estimate the number of units of electricity used.

635 units

[1]

18

Scatter diagram to show the reaction times of ten people



Circle the description below that describes the **correlation** between the first and second attempts.

positive negative none 100%

1m

How many of the ten people took **longer** on their second attempt than on their first attempt?

2 people

1m

L6 - Interpret piechart and L5 Scatter diagram.

19

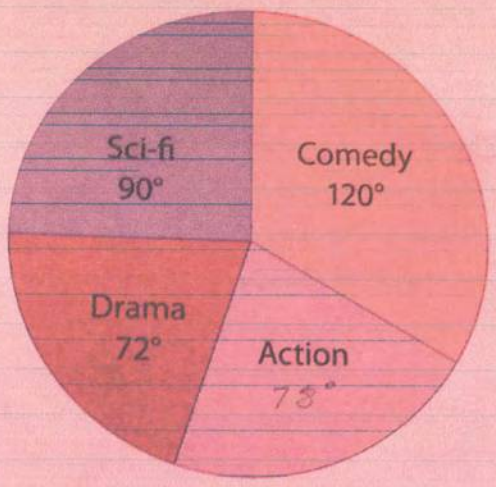
11 Change $6\frac{1}{8}$ kilograms to grams.

6125 grams

1m

12

Favourite type of film



Work out the missing angle for **action** films.

78 °

1m

20 people said their favourite type of film was **comedy**.

How many people were in the survey?

60 people

1m

$\frac{120}{360} = \frac{20}{60}$

TOTAL

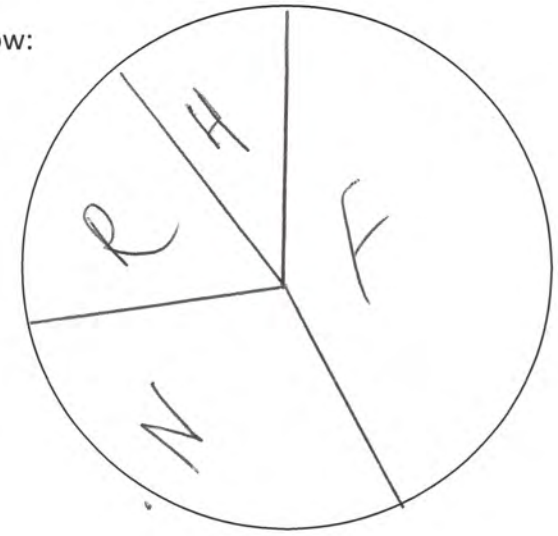
Pie Charts Worksheet

Name _____

Draw a pie chart to represent the data collected below:

Favourite Sport	Frequency	Degrees
Football	75 x2	= 150
Netball	55 x2	= 110
Rugby	30 x2	= 60
Hockey	20 x2	= 40
Total	180	**360**

$\frac{360}{180} = 2°$



Favourite Food	Frequency	Degrees
Cake	21 x6	= 126
Chocolate	15 x6	= 90
Crisps	14 x6	= 84
Fruit	6 x6	= 36
Vegetables	4 x6	= 24
Total	60	**360**

$\frac{360}{60} = 6°$



Favourite Drink	Frequency	Degrees
Coca Cola	26 x4	= 104
Coffee	1 x4	= 4
Juice	34 x4	= 136
Tea	14 x4	= 56
Water	15 x4	= 60
Total	90	**360**

$\frac{360}{90} = 4$

-6- Construct pie charts.

Pie charts

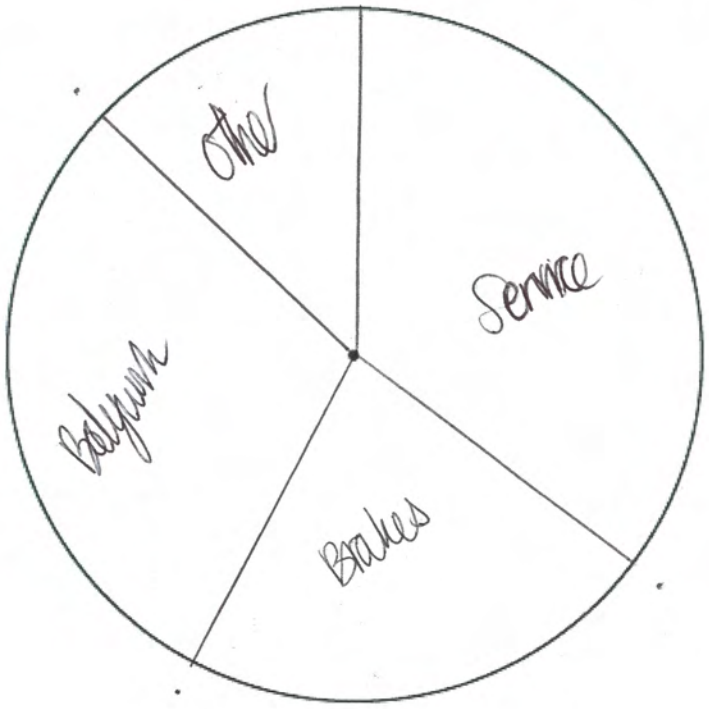
June 2009

Q1 A garage carries out a survey to find out the reason why 120 cars were brought into the garage.
The results were as follows.

Reason	Number of cars
Service	42
Brakes	27
Bodywork	35
Other	16

126
81
105°
48
120
360 ÷ 120 = 3

Draw a pie chart to illustrate these results. You should show how you calculate the angles of your pie chart. [4]



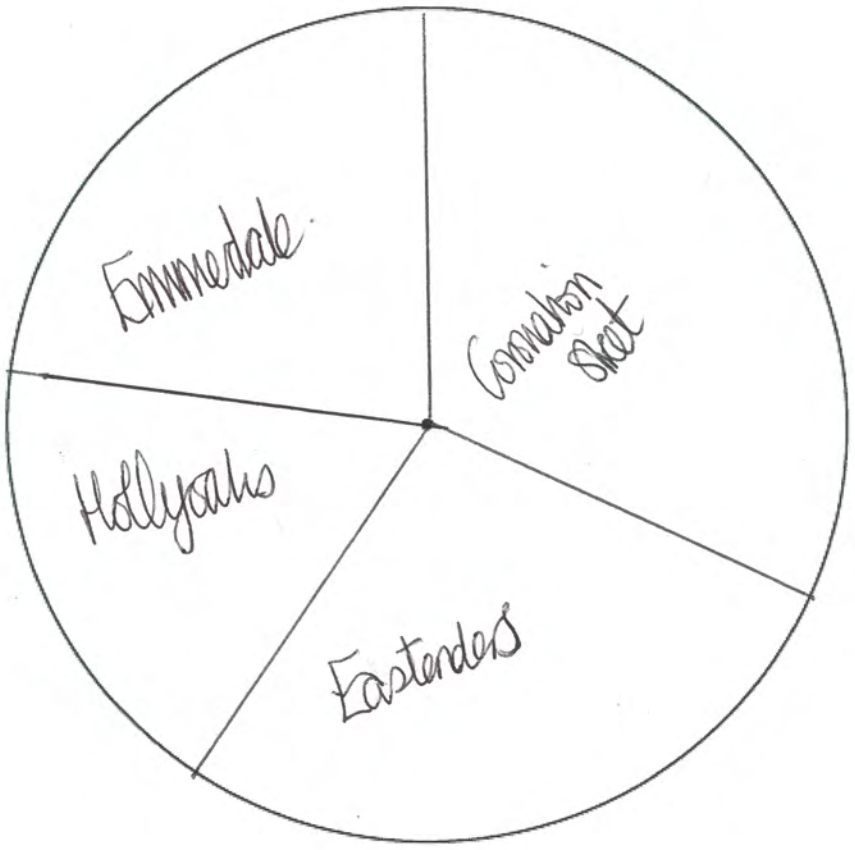
[redacted]

Q2 A sample of 120 pupils were asked to choose their favourite programme from Coronation Street, Eastenders, Hollyoaks and Emmerdale.
The table shows the results.

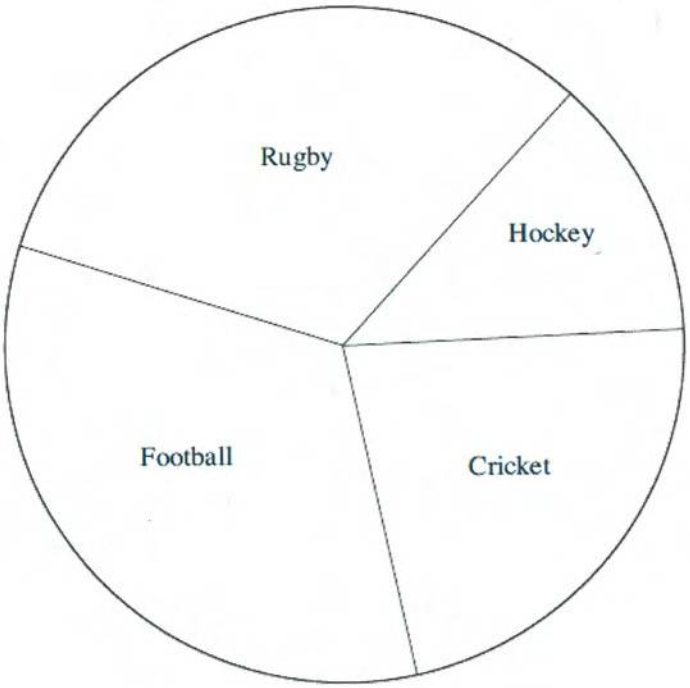
360 ÷ 120 = 3

Programme	Number of pupils	
Coronation Street	38 ×3	114
Eastenders	33 ×3	99
Hollyoaks	21 ×3	63
Emmerdale	28 ×3	84
	120	360

Draw a pie chart to illustrate this data. You should show how you calculate the angles of your pie chart. [4]



6. Bryn carries out a survey to find out which of Rugby, Hockey, Cricket or Football each of 144 students preferred.
He uses the data obtained to draw the following pie chart.



(a) What **fraction** of the students answered 'Hockey'?

$\frac{45}{360} = \frac{9}{72} = \frac{1}{8}$

[2]

(b) **How many** of the students answered 'Football'?

$\frac{120}{360} = \frac{1}{3}$

$\frac{1}{3}$ of 144 = 48

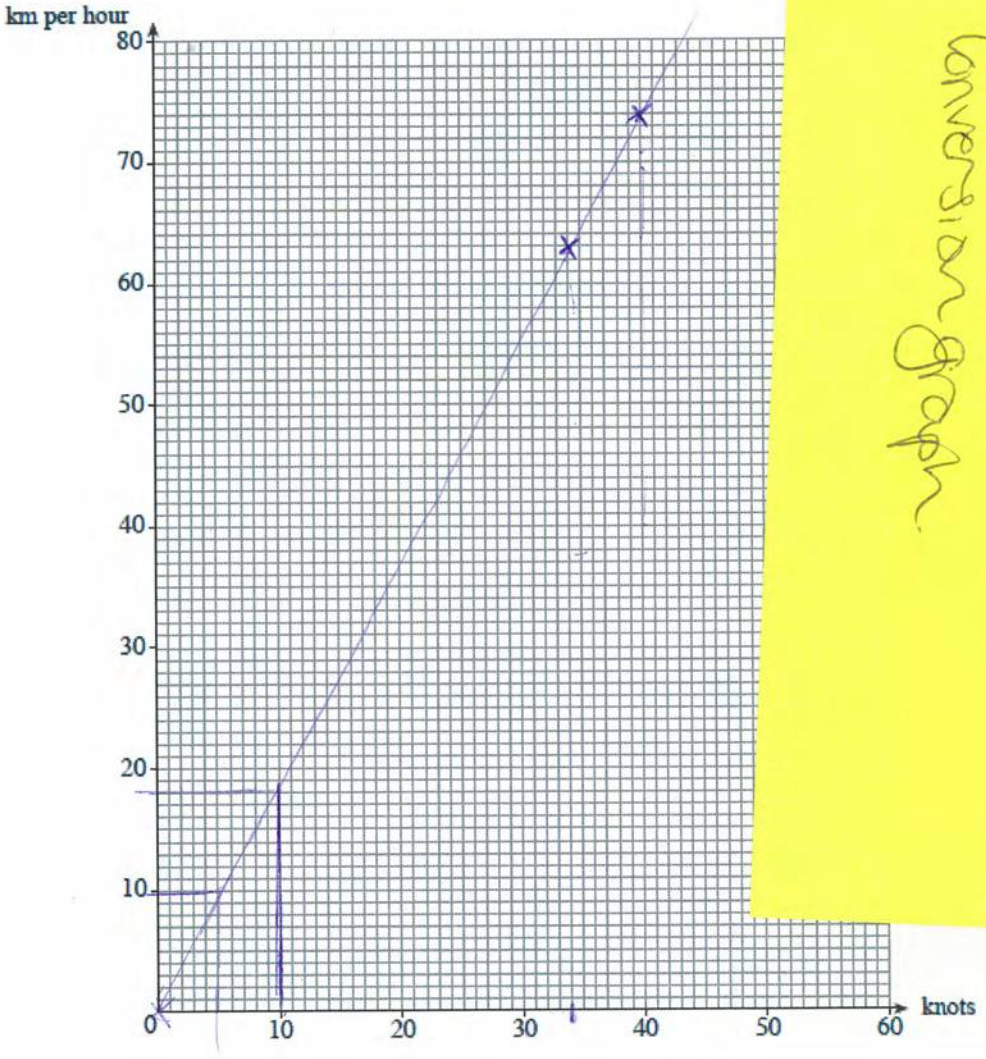
[2]

L5- Interpret pie charts.

9. *(a)* The knot is a unit used to measure the speed of ships and aircraft.
The table shows the number of knots and the number of km per hour for each of three speeds.

Knot	0	34	40
Km per hour	0	63	74

Use the data in the table to draw a conversion graph between km per hour and knots. [2]



L6 = L5 + Construct a variety of graphs and interpret.
Conversion graph.

(b) Find an estimate for 100 knots in km per hour.

10 knots = 18 km per hour

100 knots = 180 km per hour [2]

Classwork

12th March 201[illegible]

Mean, Median, Mode and Range

1, 2, 2, 3, 3, 3, 4, 4, 5, 5, 5, 5, 6, 6, 6

Mean = 4

Median = 4

Mode = 5

Range = 5

(4, 5, 6, 7, 8, 9, 10) (10, 10, 10, 10, 10, 10, 10)

Stem and Leaf diagrams

Key = 15|6 means 156 cm

Stem	Leaf
5	6 9
6	2 9 3 1 8 9
7	3 0 3 7 8
8	2

Stem	Leaf
15	6 9
16	1 2 3 8 9 9
17	0 0 3 3 7
18	2

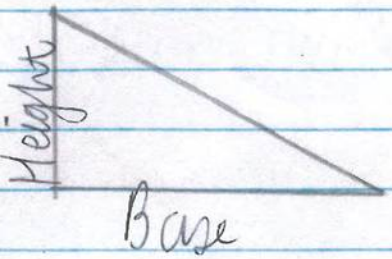
Classwork

16th March 2015

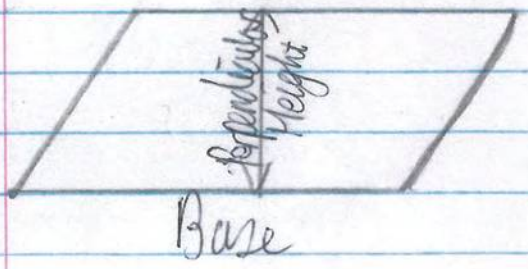
Area

Rectangle = BH (2)x

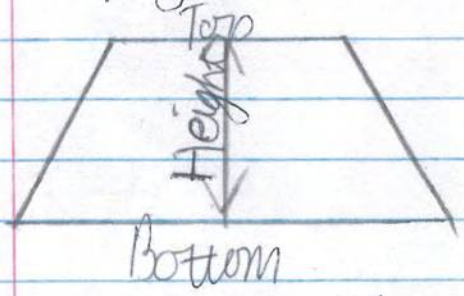
Triangle = $\frac{BH}{2}$ (2)x



Parallelogram = BH (2)x

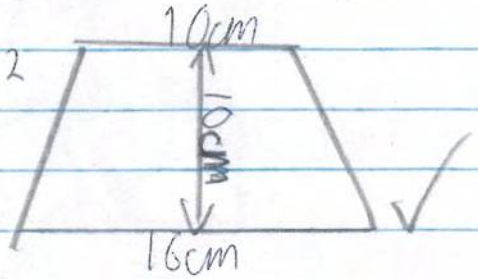


Trapezium = $\frac{B+I}{2} \times H$



1. 130 cm^2

(2)x



2. 24 cm^2

1. Rectangle = $BH = 63 m^2$ ✓

2. Triangle = $\frac{BH}{2} = 30 cm^2$ ✓

3. Square = $B^2 = 169 cm^2$ ✓

4. Parallelogram = $BH = 66 cm^2$ ✓

5. Parallelogram = $BH = 40 m^2$ ✓

6. Triangle = $\frac{BH}{2} = 56 cm^2$ ✓

7. Parallelogram = $BH = 52 km^2$ ✓

8. Parallelogram = $BH = 105 m^2$ ✓

Classwork

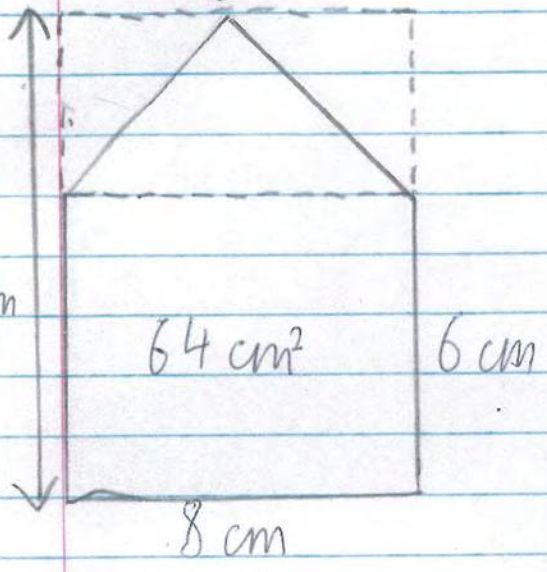
17th March 2015

Area

1. Triangle = 54 cm² ✓

2. Parallelogram = 30 m² ✓

3. Trapezium = 140 cm² ✓



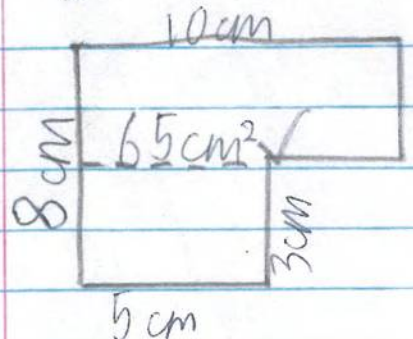
8 × 6 = 48

4 × 8 = 32

32 ÷ 2 = 16

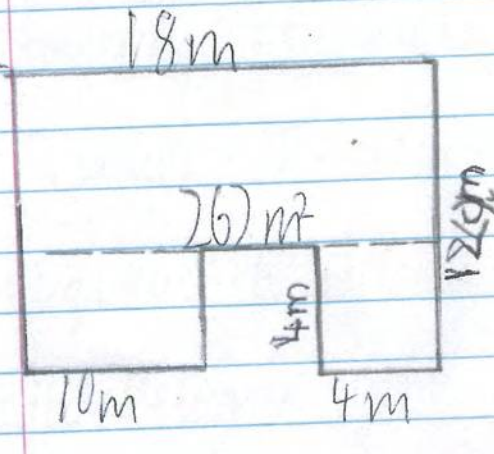
48 + 16 = 64

1.



3 × 5 = 15

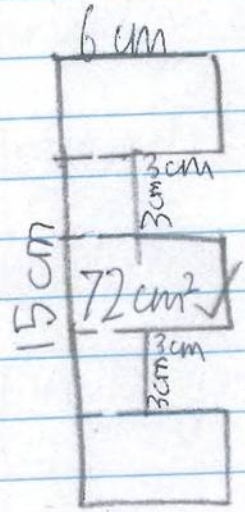
5 × 10 = 50

2. 

$4 \times 4 = 16m$

$4 \times 10 = 40m$

$18 \times 12 = 206m$

3. 

$6 \times 3 = 18$

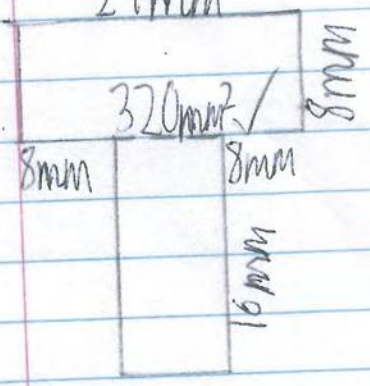
$18 \times 3 = 54$

$3 \times 3 = 9$

$9 \times 2 = 18$

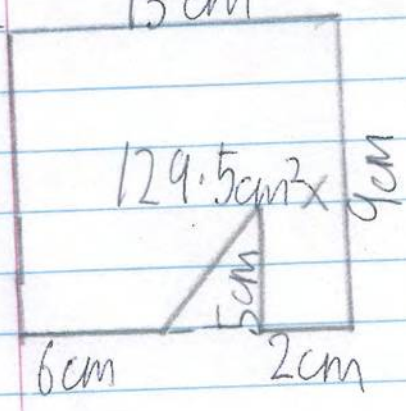
Find areas of rectangle + triangles (L5)

L5 + areas of compound shapes including triangles.

4. 

$24 \times 8 = 192$

$16 \times 8 = 128$

5. 

$13 \times 9 = 117$

$5 \times 5 = 25$

$25 \div 2 = 12.5$

(9.) Classwork

18th March 2015

Starter

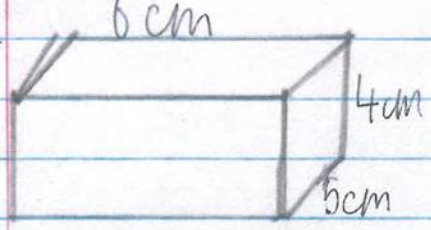
9. 239 mm^2 ✓

10. 57 m^2, 43.5 m^2

Volume

a. 125 cm^3 ✓

b.



120 cm^3 ✓

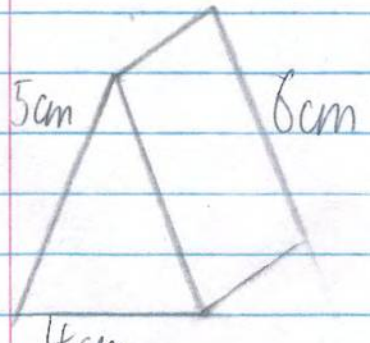
c. 40 cm^3 ✓

d. 384 mm^3 ✓

e. 180 m^3 ✓

f. 192 cm^3 ✓

6/6



$5 \times 4 \div 2 = 10 cm^2$ (Area) $10 \times 6 = 60 cm^3$ (Volume)

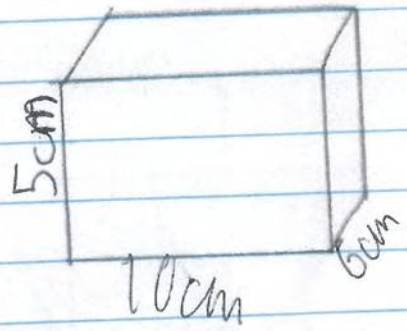
Classwork

24th March 2015

Assessment Revision

1. Area of shapes
2. Volume of cuboids
3. Mean, median, mode and range

1.



$300 cm^3$ ✓

2. $1.7 \times 2.3 \times 0.8 =$

		1	7
	2	0	4
	3	4	1
3	9	1	

	3	9	1
0	0	0	0
8	2	4	8
3	1	2	0.8

$3.128 cm^3$

3. $8 \times 6 = 48$

$480 \div 48 = 10$

$x = 10 cm$ ✓

1. Trapezium $= 99 m^2$ ✓

2. Rectangle $= 90 cm^2$ ✓

3. Triangle = 36 cm^2 ✓

4. Parallelogram = 60 cm^2 ✓

1. 10 cm ✓

2. 12.5 cm ✓

Classwork

25th March 2015

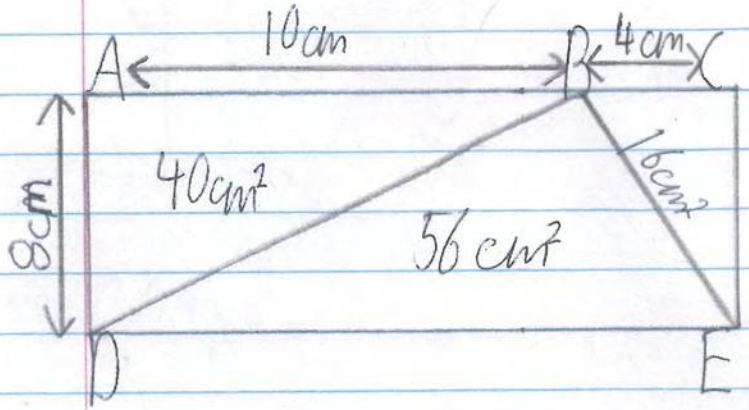
Revision

11+5=16

16÷2=8

(Perimeter = 8 cm²) Area = 32cm² ✓

Perimeter 22·6cm ✓



Height = 8cm ✓

Width = 14cm ✓

Cuboid

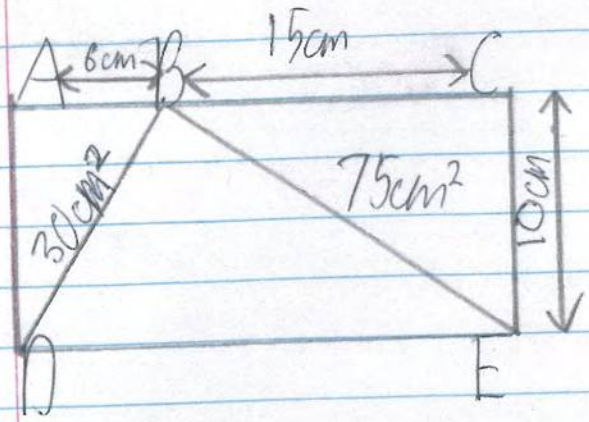
2x2=4

4x12=48cm³ ✓

Height = 6cm ✓

L5+. finding height + width from the area.

L5 Volume of cuboids.



Height = 10cm ✓

Perimeter = (10cm) 62cm ✓

1. 2, 6, 6, 10, 11

Mean = 7 ✓

Mode = 6 ✓

Median = 6 ✓

Range = 9 ✓

2. 2, 11, 12, 15, 15, 16, 22, 25, 26

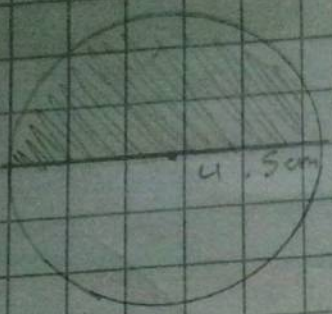
Mean = 144 ÷ 9 = 16 ✓

Mode = 15 ✓

Median = 15 ✓

Range = 24 ✓

h)



$A = 3.14 \times 4.5 \times 4.5 = 63.585 cm^2$

$\div 2 = 31.7925 cm^2$

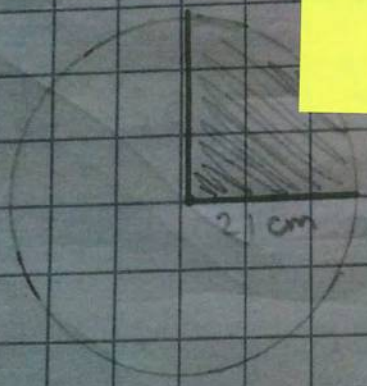
$C = 3.14 \times 9 =$

$\div 2 = 14.1$

$+ 9 = 23$

LG - Use formulae for finding circumferences and areas of circles, areas of plane rectilinear figures + volumes of cuboids.

i)



$A = 3.14 \times 21 \times 21 = 1384.74$

$\div 4 = 346.184 cm^2$

~~$+ 42 = 14536.77 cm^2$~~

+ 24 42 = 19.11 cm

i)



$A = 3.14 \times 4 \times 4 = 50.24$

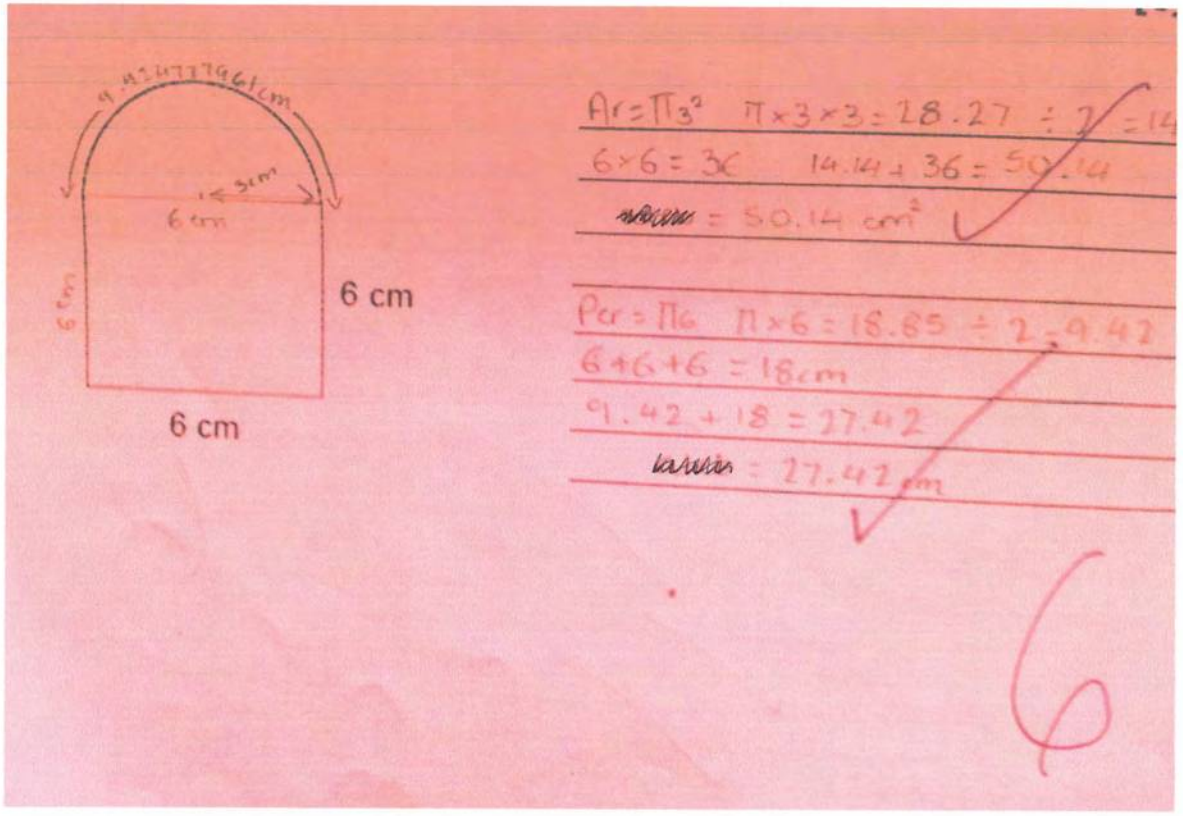
$\frac{3}{4} \circ 50.24 = 37.68 \text{ cm}^2$

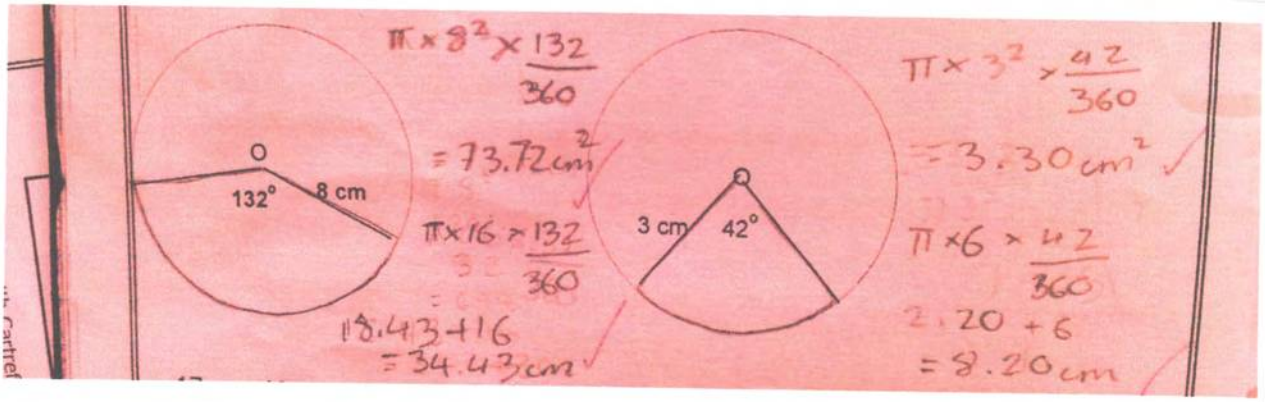
~~+ 8 = 45.68 cm~~

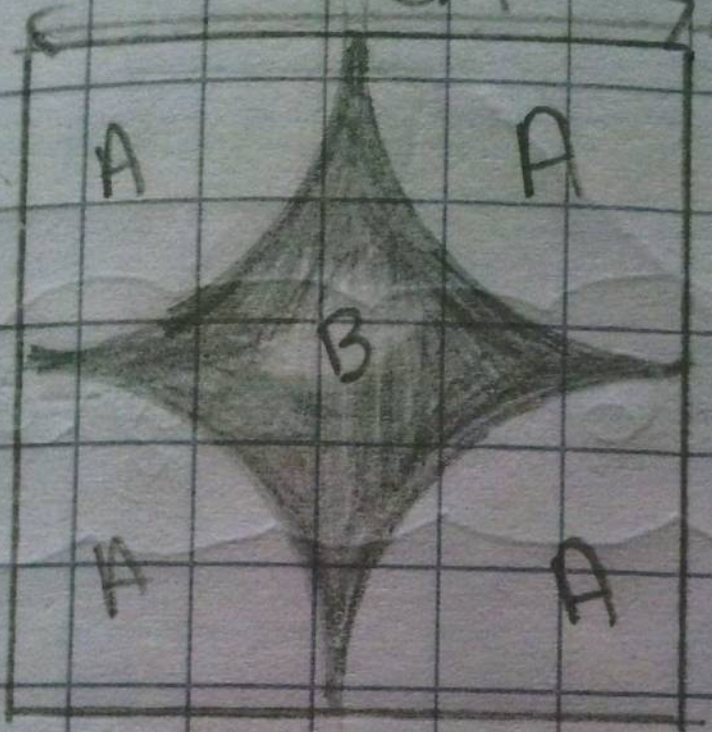
$C = 3.14 \times 8 = 25.12 \text{ cm}$

$\frac{3}{4} \circ 25.12 = 18.84$

+ 8 = 26.84 cm


9.42477796 cm
3cm
6 cm
6 cm
6 cm
Ar = π3² π×3×3 = 28.27 ÷ 2 = 14
6×6 = 36 14.14 + 36 = 50.14
= 50.14 cm²
Per = π6 π×6 = 18.85 ÷ 2 = 9.42
6+6+6 = 18cm
9.42 + 18 = 27.42
= 27.42 cm
6


O
132°
8 cm
π×8²×132/360
= 73.72cm²
π×16×132/360
18.43+16
= 34.43cm
3 cm
42°
π×3²×42/360
= 3.30cm²
π×6×42/360
2.20+6
= 8.20cm



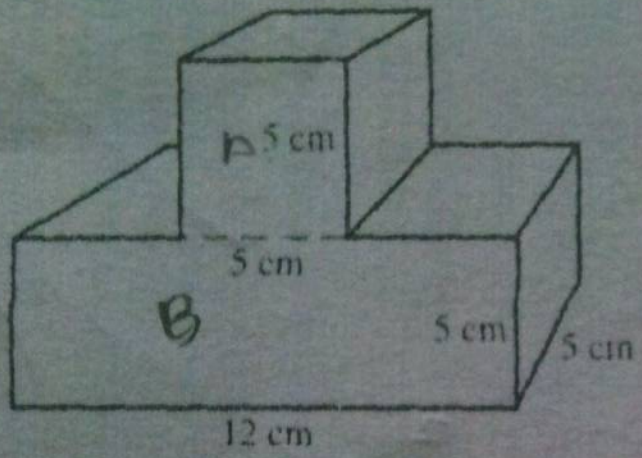
$$\frac{1}{4}\pi \times 5 \times 5$$

$$= 78.5\ cm^2$$

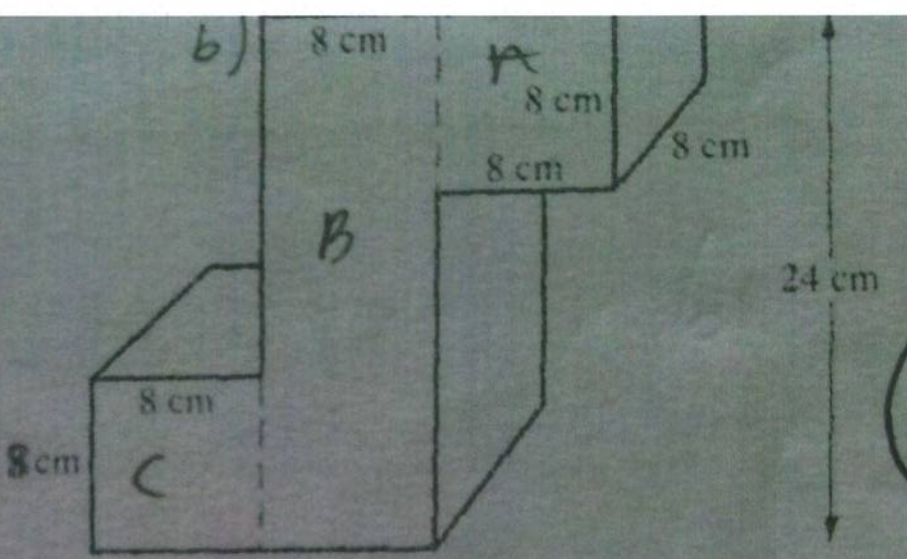
$$10^2 = 100\ cm^2$$

$$100 - 78.5 = 21.5$$

a



b)



5

a) (A) $5 \times 5 = 25$

(B) $12 \times 5 = 60$

$85 \times 5 = 425 \text{ cm}^3$

b) (A) $8 \times 8 = 64$

(B) $8 \times 24 = 192$

$8 \times 8 = 64 \text{ cm}^2$

320 cm^2

$320 \times 8 = 2560 \text{ cm}^3$

59

13th April 2015

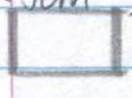
Classwork

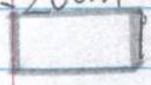
Speed

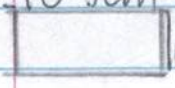
1. 240 miles ✓
2. 480 metres ✓
3. 840 kilometres ✓
4. 315 miles ✓
5. 10 kilometres ✓
1. 60 seconds ✓
2. 6 hours ✓
3. 1 hour 30 minutes ✓
4. 5 hours ✓
5. 21 seconds ✓

Classwork Tuesday 14th April 2015

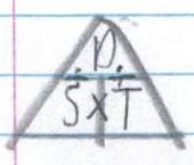
Starter

1. 5cm


2. 20cm


3. 10.5cm


Speed



1. 3hours at 48mph, 2hours at 53mph

a. 106 + 144 = 250miles ✓

b. 250 ÷ 5 = 50 ✓

2a. 235miles ✓

b. 5hours ✓

c. 235 ÷ 5 = 47mph ✓

3a. 216 ÷ 4 = 54mph ✓

b. 135 ÷ 54 = 2.5 (54 | 135.00) 2:30minutes = 6½ hours ×

Classwork Wednesday 15th April 20

Speed

1. 30 miles ✓

2. 4½ hours ✓

3.
a. 400 metres ✓
b. 1920 metres ✓
c. 4800 metres ✓
d. 28800 metres ✓

4. 8m/s ✓

5. ~~8 Km/h~~ 32 km/h ✓

6. 21 Km/h ✓

7. $50\overline{)137^{13}7^{3}5^{2}0}$ $00\,2{\cdot}75$ = 2¾ hours ✓

8.
a. 800 miles ✓
b. 50 miles ✓
c. 150 miles ✓
d. 1100 miles ✓

Travel Graphs

a. 10:15am - 10:30am and just before 12 noon ✓

b. 45 minutes ✓

c. 80 km ✓

d. 45 minutes ✓

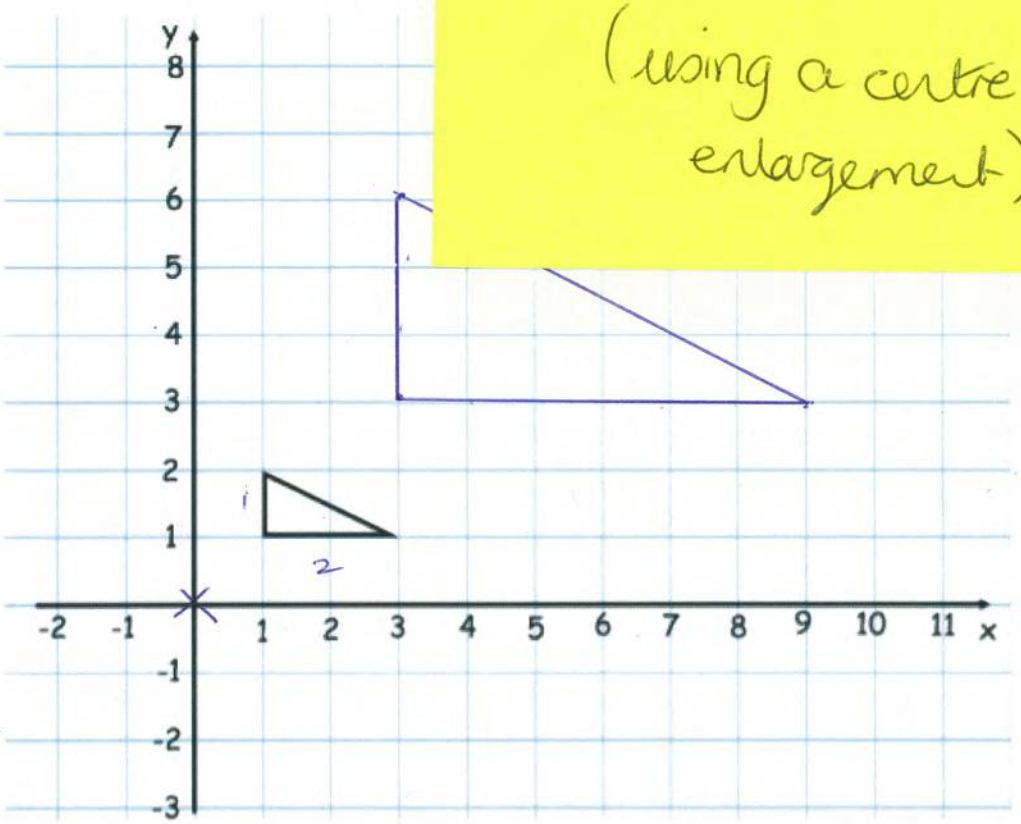
e. 46 km ✓

f. Approximately 12.75 km ✓

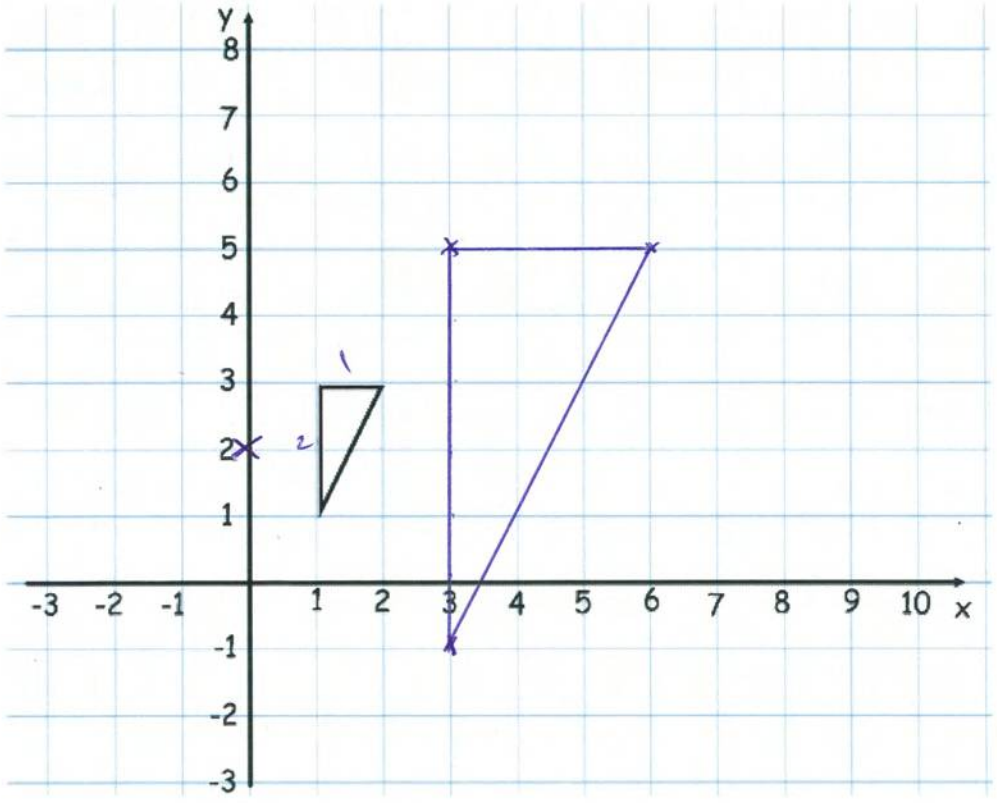
L6 Enlarge shapes by a positive whole number scale factor.
(using a centre of enlargement)

Exercise 1

1) Enlarge the triangle by



2) Enlarge the triangle with centre (0,2) and scale factor 3.

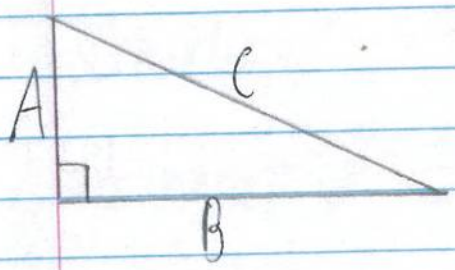


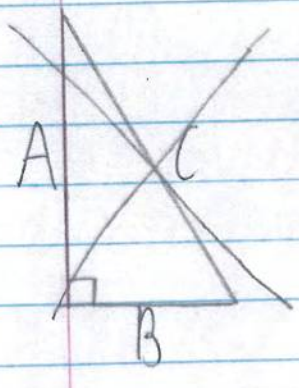
Classwork

27th April 2015

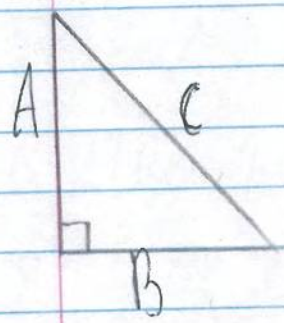
Triangles

1.

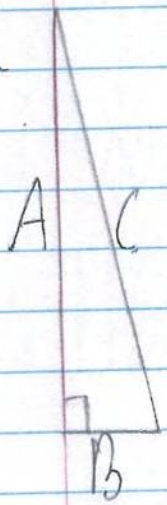




2.



3.

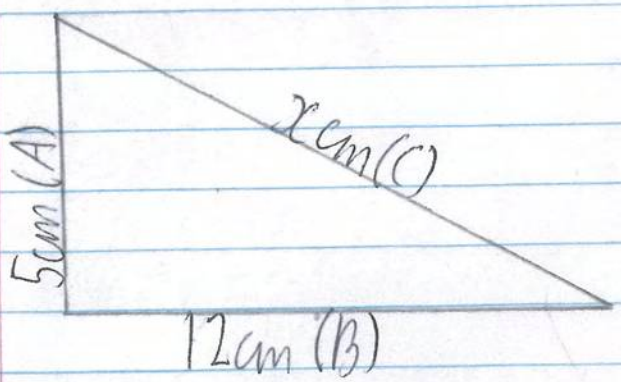


Pythagoras Theorem

$A^2 + B^2 = C^2$

$C = \sqrt{C^2}$

g.



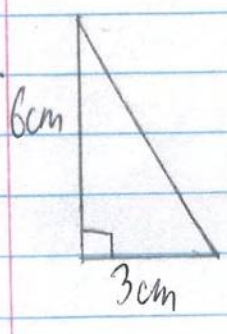
$5^2 = 25$

$12^2 (cm) = 144$

$144 + 25^{(2)} = 169$

$\sqrt{169} = 13 cm$

a.



$6^2 = 36$

$3^2 = 9$

$36 + 9 = 45$

$\sqrt{45}$

Classwork Tuesday 28th April 2015

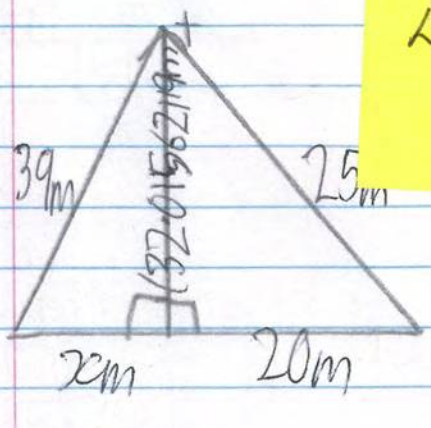
Pythagoras

1. $8^2 = 64$
$6^2 = 36$
$64 + 36 = 100$
$(100 \div 2 = 50)$ ✗
$x = 10\text{cm}$ ✓

2. $12^2 = 144$
$35^2 = 1225$
$144 + 1225 = 1369$
$\sqrt{1369} = x = 37$ ✓

3. $5^2 = 25$
$13^2 = 169$
$169 - 25 = 144$
$\sqrt{144} = x = 12$ ✓

L7. Use Pythagoras' theorem in 2D



$20^2 = 400$
$25^2 = 625$
$400 + 625 = 1025$
$\sqrt{1025} = 32.015621\ldots$
$39^2 = 1521$
$(1025 + 1521 = 2546)$ ✗ $1521 - 1025 = 496$
$\sqrt{496} = x = 22.3$ (Rounded to 1dp) ✓

$625 - 400 = 225$
$\sqrt{225} = 15$
$39^2 = 1521$
$1521 - 225 = 1296$
$\sqrt{1296} = x = 36$

3B

1a. $10^2 = 100$
$100 \times 2 = 200$
$\sqrt{200} = x = 14.1$ (Rounded to 1dp) ✓

b. $8^2 = 64$
$12^2 = 144$
$144 + 64 = 208$
$\sqrt{208} = x = 14.4$ (Rounded to 1dp) ✓

c. $10^2 = 100$
$24^2 = 576$
$576 + 100 = 676$
$\sqrt{676} = x = 26$ ✓
$y = 26$ ✓

d. $15^2 = 225$
$17^2 = 289$
$289 - 225 = 64$
$\sqrt{64} = x = 8$ ✓
$8 \times 2 = 16$
$y = 16$ ✓

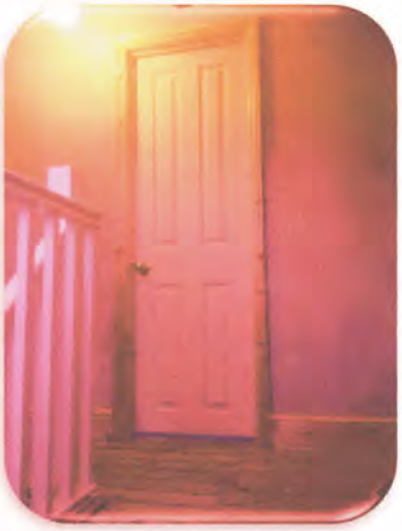
e. $20 - 15 = 5$
$5^2 = 25$
$12^2 = 144$
$144 + 25 = 169$

$\sqrt{169} = 13$
$x = 13\text{cm}$ ✓

5/5

f.

Task A: How long?



Imagine that you are the homeowner.

You are preparing to purchase and fit the skirting board and architrave yourself.

Both skirting board and architrave is purchased in lengths of 4.2 metres.

It is not enough to just know the total length of each that is needed. You need to know all the individual lengths that need to be cut.

- List all the lengths of architrave that are needed for the door frames.
- Find the total length of architrave required and calculate the minimum number of 4.2 metre lengths needed in this case.
- List all the lengths of skirting board that are needed.
- Find the total length of skirting board required and calculate the minimum number of 4.2 metre lengths needed in this case.

Remember

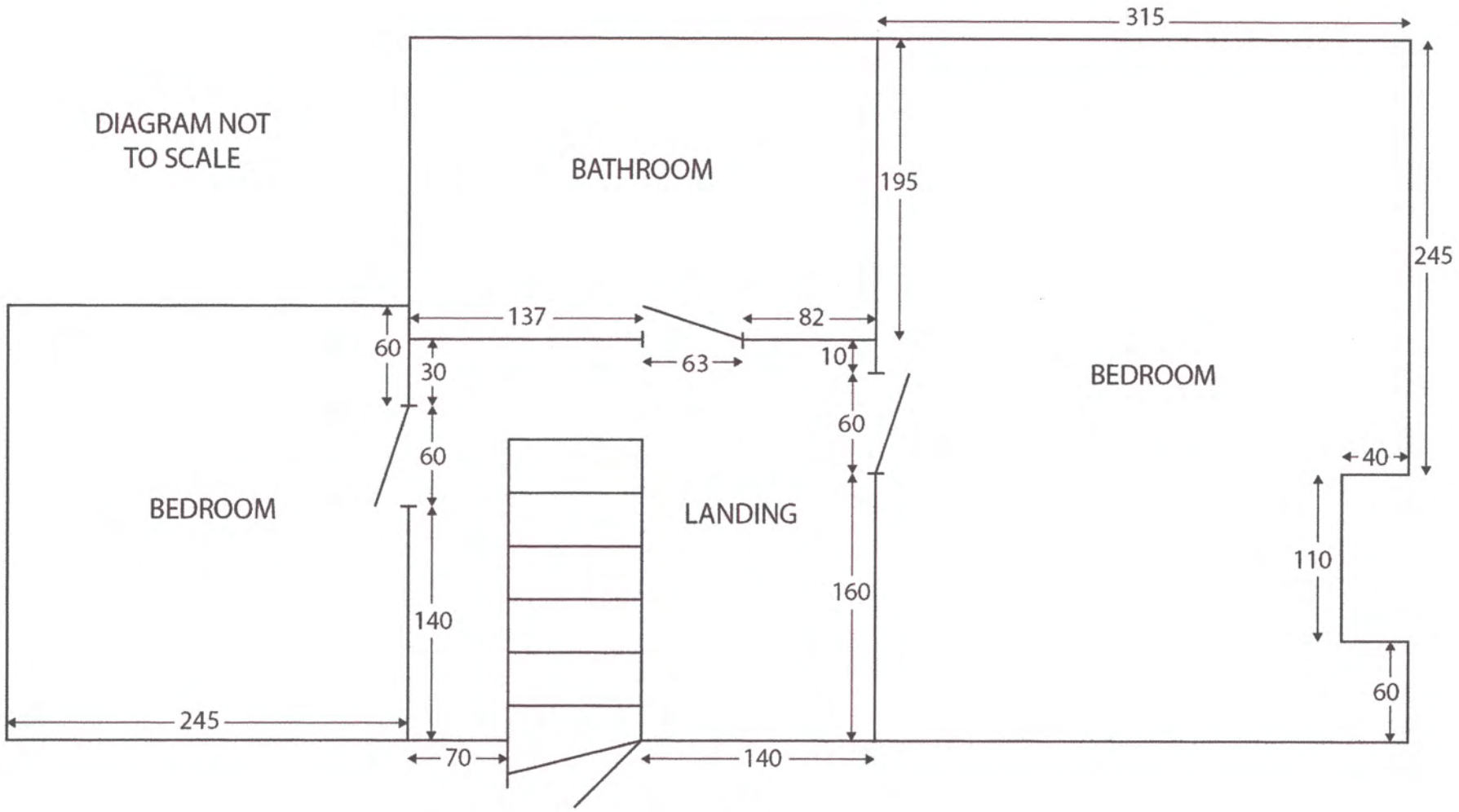
Architrave

- All the door frames are 195 cm tall
- One door frame is 63 cm wide
- Two door frames are 60 cm wide
- Architrave is 57 mm wide
- 6 mm of the door frame is left exposed when fitting the architrave
- It is purchased in lengths of 4.2 metres
- Required lengths of architrave are not to be made by joining shorter lengths

Skirting board

- It is fitted into a selection of internal and external corners
- It is not fitted on the exposed stone wall (245 cm length)
- It is not fitted around the stairs
- Skirting board is 20 mm deep
- It is purchased in lengths of 4.2 metres
- Required lengths of skirting board are not to be made by joining shorter lengths

The plan


DIAGRAM NOT
TO SCALE
BATHROOM
BEDROOM
BEDROOM
LANDING
315
195
245
137
82
63
60
30
10
60
60
40
110
160
140
60
245
70
140

L6 - Interpret, discuss + synthesise information presented in a variety of mathematical forms.

L5 - Convert one metric unit to another.

11th May 2015

athroom. Architrave width = 64.1

196.1 x 12 = 2353.2
61.1 x 4 = 244.4
64.1 x 2 = 128.2

2353.2 + 244.4 + 128.2 = 2725.8cm

1 pack of architrave = 420cm

2725.8 ÷ 420 = 7 (rounded)

7 packs of architrave are needed.

Skirting board = 245 + 260 + 245 + 140 + 60 + 282 + 195 + 195 + 137 + 82 + 137 + 82 + 10 + 160 + 140 + 70 + 140 + 30 + 315 + 195 + 10 + 160 + 315 + 60 + 40 + 110 + 40 = 3855cm

3855 ÷ 420 = 10 (rounded)

10 packs of skirting board are needed.

I need 10 packs of skirting board and 7 packs of architrave for the loft conversion.

Homework

Question 1

Expand these brackets

a) $2(x+3)$

b) $3(2x+4)$

c) $5(3p-2q)$

d) $4(x^2+2y^2)$

e) $r(r-r^2)$

Question 2

Factorise

a) $2x+4$

b) $2y+10$

c) $3x+12$

d) $3x-6$

e) $5x-15$

Question 3

Factorise

a) p^2+7p

b) x^2+4x

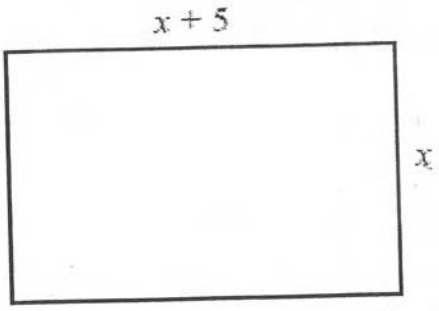
c) y^2-2y

d) p^2-5p

e) x^2+x

Question 4

The width of a rectangle is x centimetres.
The length of the rectangle is $(x+5)$ centimetres.



a) Find an expression, in terms of x, for the perimeter of the rectangle.
Give your answer in its simplest form.

Question 5

Sarah buys 6 cups and 6 mugs

A cup costs £x

A mug costs £$(x+3)$

a) Write down an expression, in terms of x, for the total cost, in pounds, of 6 cups and 6 mugs.

I6 formulate + solve equations.

1.a $2(x+3)=2x+6$ ✓

b. $3(2x+4)=6x+12$ ✓

c. $5(3p-2q)=15p-10q$ ✓

d. $4(x^2+2y^2)=4x^2+8y^2$ ✓

e. $r(r-r^2)=r^2-r^3$ ✓

2a. $2x+4=2(x+2)$ ✓

b. $2y+10=2(y+5)$ ✓

c. $3x+12=3(x+4)$ ✓

d. $3x-6=3(x-2)$ ✓

e. $5x-15=5(x-3)$ ✓

3.a. $p^2+7p=p(p+7)$ ✓

b. $x^2+4x=x(x+4)$ ✓

c. $y^2-2y=y(y-2)$ ✓

d. $p^2-5p=p(p-5)$ ✓

e. $x^2+x=x(x+1)$ ✓

4. $x+x+(x+5)+(x+5)=4x+10$ ✓✓ $\frac{3}{3}$

5. cup $=\pm x=x$
mug $=\pm(x+3)$

6 mugs $=6(x+3)$ ✓
6 cups $=6x$ ✓

Total cost = $6x + 6(x+3) = 6x + 6x + 18 =$
$12x + 18 = 6(2x+3)$ $\frac{3}{3}$ ✓✓✓ $\frac{20}{20}$ marked by [redacted]

well done keep it up

Good work [redacted].

Jack travels 120km in 2 hours. He stops at the services station for 2 hours. He then travels 30km in 2 hours. Letter D ✓	Jake runs 10m in 4 seconds. He then stops for 2 seconds He then runs 8m in the other direction. Letter I ✓	Isacc travels 60km in 1 hr 30 mins. He stops for 30 mins He then travels 40km in 30 mins Letter S ✓
Lydia is 25 miles from the station. In 10 minutes she travels 15 miles and then stops for 20 mins. The final 10 miles takes 30 mins. Letter C ✓	Mary travels 36 miles in 60 minutes. She then stops for 15 minutes She then travels 24 miles. Letter O ✓	In 3 hours Jordan travels 60km. He then stops for 1 hour His trip home takes 2 hours. Letter V ✓
Robyn travels 60 km in 1hr 30 mins. She stops for 1 hour. Her trip home takes 30 mins Letter E ✓	James starts 30 km from home. Within 15 minutes he is 12 miles from home so stops for 30 mins. It takes him 45 minutes to complete the journey Letter R ✓	

2·4 × 5 = 1·4 = 12m² (Wall wan

5 | 1 0 | 2 0
1 | 2·0

LS. Identify + obtain information to solve problems + check whether their results are sensible in the context of the problem.

2 × 0·9 = 0·9 = 1·8m² (Door)

2 | 0 | 1 8
0 | 1·8

1·6 × 1·2 = 1·6 = 1·92m² (Windo

1 | 0 1 | 0 8
2 | 0 | 1 2
0 1·9 2 m²

1·8 + 1·92 = 3·72

12 − 3·72 = 8·28m² (Wall without door and window)

Wall paper = £7·50 for 1m²

Wall = 8·28m²

9 × £7·50 = 7·50 = £67·50

9 | 5 4 | 7 0
6 | 7·50

Wall paper = £67·50 (£62·10 if you can buy exact quantity needed)

Door paint = £7 for 1L

1L = 4m²

Door paint = £7 for 4m²

Door = 1·8m²

Door paint = £7 (£3·15 if you can buy exact quantity needed)

Window blinds = £17 + £10 for 1m²

Window = 1·92m²

£10 × 2 + £17 = £37

Window blinds = £37 (£36·20 if you can buy exact quantity needed)

67·50
07·00
+ 37·00
111·50
1 2

It costs £111·50 to decorate the wall using wall paper, door paint and blinds. (£101·45 if you can buy the exact quantity needed)

L6 - Describe rule in algebra for the nth term where the rule is linear.

1) 2, ... 16 | 2n

2) 3 ... | 2n

3) 4, 7, 10, 13, 16 ... 19, 22, 25 | 3n + 1

4) 5, 8, 11, 14, 17 ... 20, 23, 26 | 3n + 2

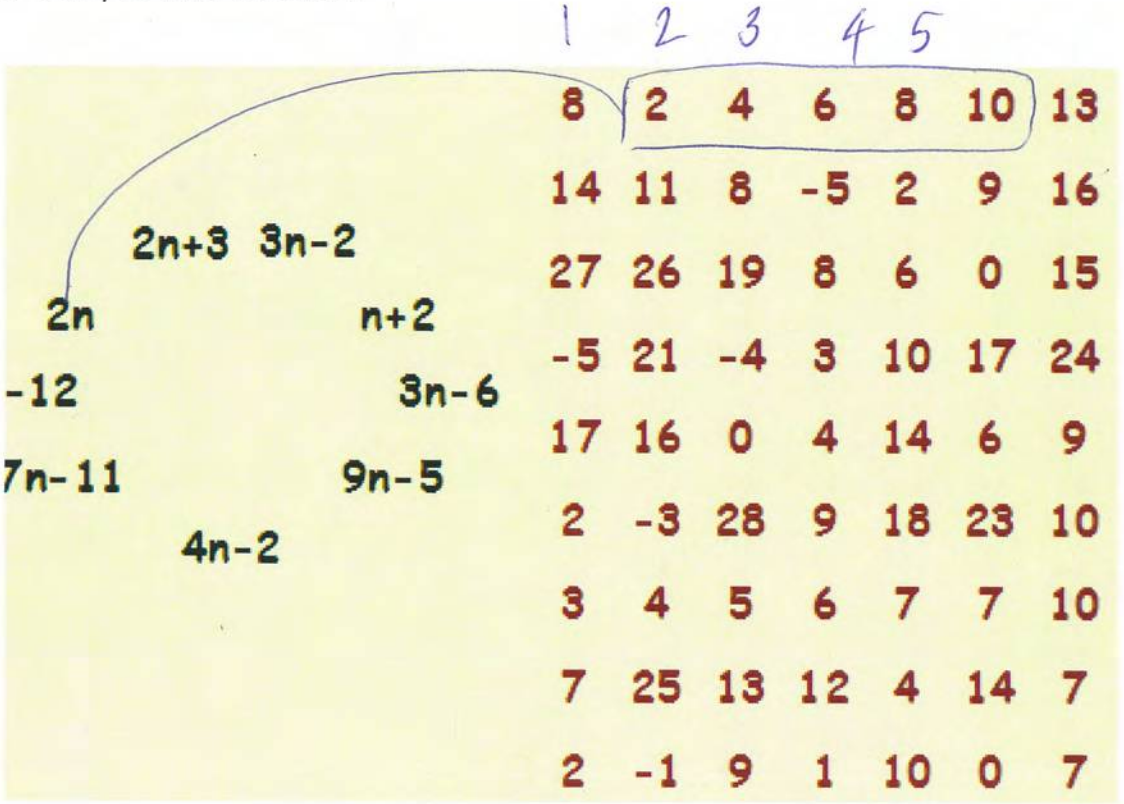
5) 7, 11, 15, 19, 23 ... 27, 31, 35 | 4n + 3

6) 2, 8, 14, 20, 26 ... 32, 36, 44 | 6n + -4

7) 7, 12, 17, 22, 27 ... 32, 37, 42 | 5n + 2

8) 24, 21, 18, 15, 12 ... 9, 6, 3 | 3n + 21

The first five terms for each nth term on the left can be found in the number jumble. Can you find them all?



Can you create your own number jumble?

	1	2	3	4	5
2n →	2	4	6	8	10
2n+3 →	~~5~~	~~7~~	9	11	13
3n-2 →	1	4	7	10	13
n+2 →	3	4	5	6	7
3n-6 →	-3	0	3	6	9

Please finish this.

5. Here are the first four terms of a sequence.

1	2	3	4
5	**8**	**11**	**14**

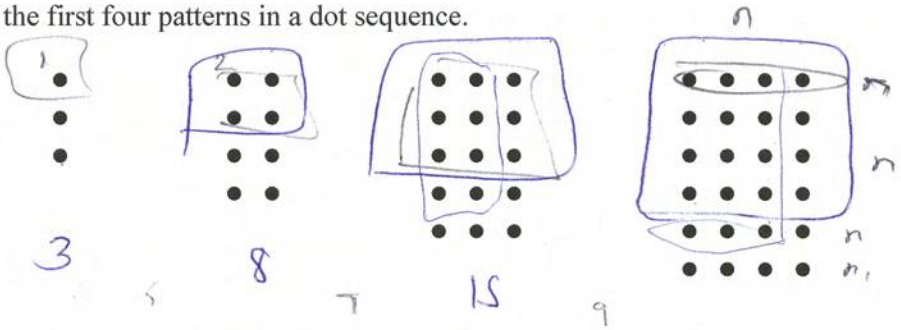
Write down the nth term of this sequence.

$3n - 2$

.....

[2]

6. (a) Here are the first four patterns in a dot sequence.



Pattern 1 Pattern 2 Pattern 3 Pattern 4

1 4 16 25

Explain why an expression for the number of dots in the nth pattern is $n(n + 2)$.

..... $n^2 + 2n$.

.....

[1]

more detail required

(b) Here are the first four terms of another sequence.

4 10 18 28

They may be written in the following way.

1×4 2×5 3×6 $4 \times \square 7$

Find an expression for the nth term of this sequence.

.....

[2]

7. The nth term of a number sequence is given by $6n - 1$.

Write down the first three terms of the sequence.

1 2 3

5, 11, 17

[2]

8. (a) Show that one solution of the equation $x^3 + 3x = 11$ lies between 1 and 2.

$x = 1.5$ $1.5^3 + (3 \times 1.5) = 7.875$ small

$x = 1.7$ $1.7^3 + (3 \times 1.7) = 10.013$ small

$x = 1.8$ $1.8^3 + (3 \times 1.8) = 11.232$ too much.

[1]

only needed one solution.

(b) Use trial and improvement to find this solution, correct to one decimal place.
You must show all your trials and their outcomes.

see part a.

1.8

[3]

9. (a) Show that one solution of the equation $x^3 - 5x - 8 = 0$ lies between 2 and 3.

2.5 $2.5^3 - (5 \times 2.5) - 8 = -4.875$

[1]

(b) Use trial and improvement to find this solution, correct to one decimal place.
You must show all your trials and their outcomes.

The one above is too small.

2.6 $= -3.424$ small

$2.7^3 - (5 \times 2.7) - 8 = -1.817$ small

$2.8^3 - (5 \times 2.8) - 8 = -0.648$ small

$2.9^3 - (5 \times 2.9) - 8 = 1.889$ big.

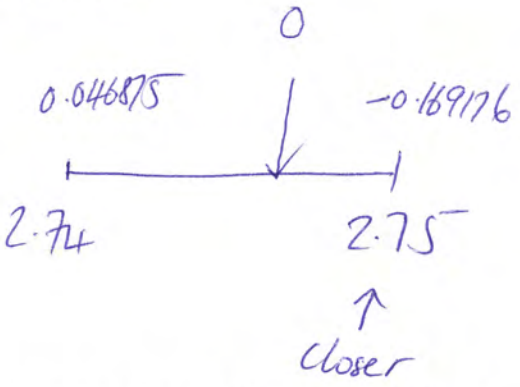
this is closest.

[3]

$= 0$

Show that the equation $x^3 - x - 18$ has a root between x = 2.7 and x = 2.8
Find the solution correct to 2.d.p

x	$x^3 - x - 18$	Too Big/Too Small
2.7	$2.7^3 - 2.7 - 18 =$ -1.017	too small.
2.8	$2.8^3 - 2.8 - 18 = 1.152$	too big
2.75	$2.75^3 - 2.75 - 18 = 0.046875$	too big.
2.74	$2.74^3 - 2.74 - 18 = -0.169176$	too small.



Q3
A solution of the equation $x^3 + 2x - 5 = 0$
lies between x = 1 and x = 2. Find this solution giving your answer correct to 1 decimal place.

1.5	$1.5^3 + (2 \times 1.5) - 5 = 1.375$	too big
1.4	$1.4^3 + (2 \times 1.4) - 5 = 0.544$	too big
1.3	$1.3^3 + (2 \times 1.3) - 5 =$ ~~1.20~~ -0.203	too small

Solution is $x = 1.3$

L6. Use trial + Improvement method to find a solution.

Q4

$x = 8.5$

$x = 8.4 \quad 8.4^2 + (8.4) = 18.$

$x = 8.5$

$2x^2 + 4x = 18$

$\downarrow$

$(2 \times x^2) + (4 \times x) = 18$

$x = 2$

$(2 \times 2^2) + (4 \times 2) = 16$

$x = 2.5$

$(2 \times 2.5^2) + (4 \times 2.5) = 22.5$

$x = 2.3$

$(2 \times 2.3^2) + (4 \times 2.3) = 19.78$

$x = 2.2$

$(2 \times 2.2^2) + (4 \times 2.2) = 18.48$

$x = 2.1$

$(2 \times 2.1^2) + (4 \times 2.1) = 17.22$

$x = 2.2$

Learner Profile Mathematics Level 6

(Book 4)

L6 formulate and solve a variety of linear equations,

Including unknowns on both sides, fractions (linked to equivalent fractions and adding/subtracting fractions)

MATHEMATICS

HOMEWORK BOOK

ALGEBRA 2 (I*)

L5 Identify + obtain information to solve problems.

Describe situations mathematically using symbols, by forming an equation and then solving it (≠L6)

1. Round 349.5367 to 2 decimal places. 349.54
2. Round 134.6912 to 1 decimal place. 134.7
3. Round 5321 to 1 significant figure. 5000
4. Round 23.67 to 1 significant figure. 20
5. Round 0.005678 to 2 significant figures. 0.0 × 0.00B7

Solving Equations

1. Solve the following equations.

a. $x + 3 = 12$ $x = 12 - 3$ $x = 9$

b. $e - 9 = 32$ $e = 32 + 9$ $e = 41$

c. $5x = 55$ $x = \frac{55}{5}$ $x = 11$

d. $\frac{n}{15} = 2$ $n = 2 \times 15$ $n = 30$

e. $\frac{32}{x} = -8$ $32 = -8x$ $\frac{32}{8} = -x$ $4 = -x$ $x = -4$

f. $x + 5x = 48$ $6x = 48$ $x = \frac{48}{6}$ $x = 8$

g. $2x + 5 = 9$ $2x = 9 - 5$ $2x = 4$ $x = 2$

h. $2p - 1 = 13$ $2p = 13 + 1$ $2p = 14$ $p = 7$

i. $3y - 8 = 22$ $3y = 22 + 8$ $3y = 30$ $y = 10$

j. $6 + 5y = 16$ $5y = 16 - 6$ $5y = 10$ $y = 2$

k. $\frac{k}{7} + 2 = 9$ $\frac{K}{7} = 9 - 2$ $\frac{K}{7} = 7$ $K = 7 \times 7$ $K = 49$

l. $\frac{m}{3} - 5 = 1$ $\frac{m}{3} = 1 + 5$ $\frac{m}{3} = 6$ $m = 6 \times 3$
$m = 18$

m. $7 + \frac{a}{2} = 10$ $\frac{a}{2} = 10 - 7$ $\frac{a}{2} = 3$ $a = 3 \times 2$
$a = 6$

n. $\frac{24}{c} + 9 = 13$ $\frac{24}{c} = 13 - 9$ $\frac{24}{c} = 4$ $24 = 4c$
$c = \frac{24}{4}$ $c = 6$

o. $6x + 2 = 5$ $6x = 5 - 2$
$6x = 3$ $x = \frac{3}{6}$ $x = 0.5$

Remember, to expand a single bracket you need to multiply the part outside the bracket by every term inside the bracket.

$3(x + 4) = 3x + 12$

p. $7 + 4m = -1$ $4m = -1 - 7$
$4m = -8$ $m = \frac{-8}{4}$ $m = -2$

q. $3(a + 5) = 33$ $3a + 15 = 33$ $3a = 33 - 15$
$3a = 18$ $a = \frac{18}{3}$ $a = 6$

r. $4(6y - 9) = -12$ $24y - 36 = -12$
$24y = -12 + 36$ $24y = 24$
$\frac{y = 24}{24}$ $y = 1$

s. $20 = -4(n - 3)$ $20 = -4n + 12$
$20 - 12 = -4n$ $8 = -4n$ $4n = -8$
$n = \frac{-8}{4}$ $n = -2$ $-2 = n$

1. $\frac{1}{2}-\frac{1}{4}$

$\frac{2}{4}-\frac{1}{4}=\frac{1}{4}$

2. $\frac{3}{5}-\frac{1}{7}$

$\frac{21}{35}-\frac{5}{35}=\frac{16}{35}$

3. $\frac{2}{9}+\frac{1}{4}$

$\frac{8}{36}+\frac{9}{36}=\frac{17}{36}$

4. $\frac{3}{4}+\frac{2}{3}$

$\frac{9}{12}+\frac{8}{12}=\frac{17}{12}=1\frac{5}{12}$

Solving Equations with Unknown on Both Sides

1. Solve the following equations.

a. $5x+3=4x+5$

$5x-4x=5-3$

$x=2$

b. $7n+2=n+8$

$7n-n=8-2$

$6n=6$

$n=1$

c. $4y-2=y+10$

$4y-y=10+2$

$3y=12$

$y=4$

Progress Point Check. Teacher ☐ Self ☐ Peer ☐	
Date 23/06/15 Effort Grade	
★ What Went Well	★ What Went Well
Used good accurate method to Solve Equations.	Worked questions were Solved well
Next Step Target	
fractions with ~~Decimals~~ algebraic Equations	
Now try this...	
$\frac{3}{10}+\frac{2+x}{5}=7$ $x=31-5$	$\frac{3}{10}+\frac{4+2x}{10}=\frac{70}{10}$ $\frac{7}{10}+\frac{2x}{10}=\frac{70}{10}-\frac{2x}{10}=\frac{63}{10}$
Student Comment	Teacher Comment

Complete the following table.

Fraction	Decimal	Percent
$\frac{7}{10}$	0.7	70%
$\frac{1}{2}$	0.5	50%
$\frac{3}{10}$	0.3	30%
$\frac{7}{100}$	0.07	7%
$\frac{3}{5}$	0.6	60%

Solving Inequalities

Solve the following inequalities and complete the sentences.

a. $3a \leq 21$

$a \leq \frac{21}{3}$ $a \leq 7$

If a is an integer, the greatest value of a is ..... 7 .....

b. $3t + 4 > 25$

$3t > 25 - 4$

$3t > 21$ $t > 7$

$t > \frac{21}{3}$

If t is an integer, the least value of t is ..... 8 .....

c. $4m - 3 < 17$

$4m < 17 + 3$

$4m < 20$

$m < 5$

If m is an integer, the greatest value of m is ..... 4 .....

d. $2q + 5 \geq 8$

$2q \geq 8 - 5$

$2q \geq 3$

$q \geq 1.5$

If q is a prime number, the least value of q is ..... 2 .....

d. $3a - 2 = 5a - 20$

$-2 + 20 = 5a - 3a$

$18 = 2a$

$a = 9$

e. $2q + 17 = 5q - 4$

$17 + 4 = 5q - 2q$

$21 = 3q$

$q = 7$

f. $2e + 7 = 16 - 4e$

$2e + 4e = 16 - 7$

$6e = 9$

$e = 1.5$

g. $20m - 15 = 18m - 7$

$20m - 18m = -7 + 15$

$2m = 8$

$m = 4$

h. $4v + 3 = 2v + 10$

$4v - 2v = 10 - 3$

$2v = 7$

$v = 3.5$

i. $7 - 3k = 2(k + 1)$

$7 - 3k = 2k + 2$

$7 - 2 = 2k + 3k$

$5 = 5k$

$k = 1$

j. $5(x + 3) = 2(x + 6)$

$5x + 15 = 2x + 12$

$5x - 2x = 12 - 15$

$3x = -3$

$x = -1$

b. Bicycles normally cost x pounds. However in a sale they are reduced by £20. If 3 bikes cost £75 in the sale, what is the normal cost of one bike?

$3(x - 20) = 75$

$3x - 60 = 75$

$3x = 75 + 60$

$3x = 135$

$x = 45$

Remember £

c. John is a years old. His brother is 6 years younger. His sister is 9 years older than John. If the sum of their ages is 48, find out old each of them are.

$a + (a - 6) + (a + 9) = 48$

$3a - 6 + 9 = 48$

$3a - 6 = 39$

$3a = 45$

$a = 15$

d. A pint of milk costs x pence. The cost of a carton of fruit juice is 10 pence more than the cost of a pint of milk. Sam pays £1.70 for three pints of milk and two cartons of fruit juice. Write down an equation and solve to find the cost of a carton of fruit juice.

$3x + 2(x + 0.1) = 1.70$

$3x + 2x + 0.2 = 1.70$

$5x + 0.2 = 1.70$

$5x = 1.50$

$x = 0.30$

Milk costs 30p

Juice = $x + 10$

$= 30 + 10$

$= 40p$

1. Find 50% of £90. £45
2. Find 25% of £36. £9
3. Find 10% of £7. 70p
4. Find 10% of £92. £9·20
5. A pair of trainers cost £45 in a shop. The shop is offering a 10% sale. What is the sale price of the trainers? £40·50

Forming Equations

1. Letting the unknown number be x, write each of the following as an equation and then find the value of the number.

   a. If I add 7 to twice a certain number and the result is 11, what is the number?

$$2x+7=11$$
$$2x=4$$
$$x=2$$

   b. I add seven to a number then multiply the result by 6. If I end with 51, what was the number I started with?

$$(x+7)\times 6=51$$
$$42+6x=51$$
$$6x=9$$
$$x=1.5$$

2. Write an algebraic equation and solve the equation for parts a, b, c and d.

   a. One number is three times another. If the sum of the numbers is 16, work out the numbers.

$$x+3x=16$$
$$4x=16$$
$$x=4$$

and 12

1. 240 ÷ 12 = 40
2. 93 ÷ 3 = 31
3. 64 x 0·1 = 6.4
4. 4 x 0·5 = 2
5. 287 ÷ 7 = 41
6. 213 x 0·01 = 2.13
7. 0·5 X 30 = 15
8. 9 x 0·2 = 1.8

OPTIONAL

Solving Equations involving Algebraic Fractions

Think about how you would add and subtract proper fractions.

1. Solve the following equations.

   a. $\frac{2}{5}+\frac{x+1}{5}=1$

$$\frac{2}{5}+\frac{x}{5}+\frac{1}{5}=1$$
$$\frac{3}{5}+\frac{x}{5}=1$$
$$\frac{x}{5}=1-\frac{3}{5}$$
$$\frac{x}{5}=\frac{2}{5}$$
$$x=2\times 5$$
$$x=2$$

   b. $\frac{x}{3}+\frac{4x}{3}=10$

$$\frac{5x}{3}=10$$
$$5x=10\times 3$$
$$5x=30$$
$$x=6$$

   c. $\frac{2}{3}+\frac{x+1}{9}=\frac{7}{9}$

$$\frac{6}{9}+\frac{x}{9}+\frac{1}{9}=\frac{7}{9}$$
$$\frac{7}{9}+\frac{x}{9}=\frac{7}{9}$$
$$\frac{x}{9}=\frac{7}{9}-\frac{7}{9}$$
$$\frac{x}{9}=0$$
$$x=0$$

d. $\frac{3}{4}+\frac{x+2}{8}=2$

$\frac{6}{8}+\frac{x}{8}+\frac{2}{8}=2$

$\frac{8}{8}+\frac{x}{8}=2$

$\frac{x}{8}=2-1$

$\frac{x}{8}=1$

$x=1\times 8$

$x=8$

e. $\frac{7}{10}-\frac{4+x}{5}=3$

$\frac{7}{10}-\frac{8+2x}{10}=\frac{30}{10}$

$7-8-2x=30$

$2x=-30-8+7$

$2x=-31$

$x=-15.5$

f. $\frac{x}{3}+\frac{x-2}{4}=3$

$\frac{4x}{12}+\frac{3x-6}{12}=\frac{36}{12}$

$4x+3x-6=36$

$7x=36+6$

$7x=42$

$x=6$

g. $\frac{1}{4}-\frac{3x+2}{7}=5$

$\frac{7}{28}-\frac{(12x+8)}{28}=\frac{140}{28}$

$7-12x-8=140$

$7-8-140=12x$

$12x=-141$

$x=\frac{-141}{12}$

$x=-11.75_x$ -12

h. $\frac{x}{7}+\frac{2x}{3}=-4$

$\frac{3x}{21}+\frac{14x}{21}=\frac{-84}{21}$

$17x=-84$

$x=\frac{-84}{17}$

$x=-4\frac{16}{17}=-4.941176470588235$ 8

Don't need decimals

i. $\frac{x}{4}+\frac{x-1}{6}=-3$

$\frac{3x}{12}+\frac{(2x-2)}{12}=\frac{-36}{12}$

$3x+2x-2=-36$

$5x=-36+2$

$5x=-34$

$x=\frac{-34}{5}$

$x=-6.8$ 9.6

j. $\frac{4x+19}{12}-\frac{1-x}{8}=\frac{13}{24}$

$\frac{8x+38}{24}-\frac{(3-3x)}{24}=\frac{13}{24}$

$8x+38-3+3x=13$

$8x+3x=13-38+3$

$11x=-22$

$x=$

Progress Point Check. Teacher ☐ Self ☐ Peer ☑ L·T Date 26th February. Effort Grade ☐	
★ What Went Well	★ What Went Well
You done good writing fractions in order	You had good multiplication and division of fractions
Next Step Target	
adding and subtracting fractions	
Now try this...	
$\frac{3}{4} + \frac{5}{12} = \frac{9}{12} + \frac{5}{12} = \frac{14}{12} = 1\frac{1}{6}$ ✓ $2\frac{1}{3} + 1\frac{3}{4} = 2\frac{4}{12} + 1\frac{9}{12} = 3\frac{13}{12} = 4\frac{1}{12}$ ✓	
Student Comment	Teacher Comment
I need to work on doing harder worded questions.	Try to correct number 6 on the worded + and - fractions.

6

HOMEWORK BOOK

FRACTIONS (H)

Implied at L6. +/-/x/÷ fractions including mixed numbers.

9

1. What number is three quarters of a million? 750,000 ✓
2. What number is twenty less than ten thousand? 9,980 ✓
3. Round 349.6262 to 2 decimal places. 349.63 ✓
4. Write in order: 0.2 $\frac{1}{4}$ 23% 0.02 0.02, 0.2, 23%, $\frac{1}{4}$ ✓
5. 20 - (12 ÷ 4) x 2 34 x 14

Improper Fractions and Mixed Numbers

1. Convert these improper fractions to mixed numbers.

a. $\frac{9}{2}$ $4\frac{1}{2}$ ✓ b. $\frac{4}{3}$ $1\frac{1}{3}$ ✓ c. $\frac{9}{7}$ $1\frac{2}{7}$ ✓

d. $\frac{20}{9}$ $2\frac{2}{9}$ ✓ e. $\frac{8}{5}$ $1\frac{3}{5}$ ✓ f. $\frac{9}{4}$ $2\frac{1}{4}$ ✓

g. $\frac{12}{5}$ $2\frac{2}{5}$ ✓ h. $\frac{80}{9}$ $8\frac{8}{9}$ ✓

2. Covert these mixed numbers to improper fractions.

a. $1\frac{3}{5}$ $\frac{8}{5}$ ✓ b. $4\frac{1}{2}$ $\frac{9}{2}$ ✓ c. $1\frac{2}{5}$ $\frac{7}{5}$ ✓

d. $4\frac{7}{8}$ $\frac{39}{8}$ ✓ e. $2\frac{1}{4}$ $\frac{9}{4}$ ✓ f. $2\frac{2}{3}$ $\frac{8}{3}$ ✓

g. $2\frac{4}{5}$ $\frac{14}{5}$ ✓ h. $7\frac{3}{7}$ $\frac{52}{7}$ ✓

g. $6 \div \frac{2}{3}$ 9 ✓ h. $3\frac{2}{7} \div 1\frac{1}{2}$ $2\frac{5}{21}$ ✓

3. You have to walk $1\frac{3}{4}$ km to school. How far have you walked when you are halfway?

$1\frac{3}{4} \times \frac{1}{2} = \frac{7}{4} \times \frac{1}{2}$ ✓

4. A recipe for 6 buns requires $1\frac{1}{2}$ kg of sugar. How much sugar is needed for 1 bun?

$1\frac{1}{2} \div 6 = \frac{1}{4}$ kg ✓

5. Jenny bought 5 m of ribbon and cut the ribbon equally into smaller pieces. Each ribbon was $\frac{5}{7}$ m long. How many pieces were there?

$\frac{5}{1} \times \frac{7}{5} = \frac{35}{5} = 7$ ✓

6. To find the area of a rectangle we need to multiply the length of the rectangle by its width.

Find the area of a rectangle that has a length of $1\frac{3}{5}$ m and a width of $3\frac{7}{9}$ m.

$\frac{8}{5} \times \frac{34}{9} = \frac{272}{45} = 6\frac{2}{45}$ ✓

7. $\frac{5}{8}$ of the people at a concert are female. $\frac{2}{7}$ of the females are children. What fraction of the total number of people at the concert are girls?

$\frac{5}{8} \times \frac{2}{7} = \frac{10}{56} = \frac{5}{28}$ ✓

10

1. Megan buys juice and biscuits. The juice costs £1.35, the biscuits cost £1.79. She pays with a £5 note. £1.86 ✓
   How much change should she get?
2. An apple costs 62 p. The local grocer is offering a sale of 3 for 2 on all fruit and veg.
   What is the cost of 12 apples? £4.96 ✓
3. Thomas Cook is offering an exchange rate of £1 = 1.12 euros.
   How many euros would I get for £6? 6.72 ✓

Multiplication and Division of Fractions

1. Evaluate the following, expressing your answer in the simplest form.

a. $\frac{1}{2}\times\frac{1}{2}$ $\frac{1}{4}$ ✓ b. $\frac{1}{2}\times\frac{2}{7}$ $\frac{1}{7}$ ✓ c. $\frac{5}{9}\times\frac{3}{4}$ $\frac{5}{12}$ ✓

d. $\frac{9}{10}\times\frac{2}{3}$ $\frac{3}{5}$ ✓ e. $\frac{2}{3}\div\frac{1}{3}$ 2 ✓ f. $\frac{5}{7}\div\frac{5}{14}$ 2 ✓

g. $\frac{2}{3}\div\frac{7}{12}$ $1\frac{1}{7}$ ✓ h. $\frac{7}{12}\div\frac{4}{9}$ $1\frac{5}{16}$ ✓

2. Evaluate the following, expressing your answer in its simplest form.

a. $5\times\frac{9}{10}$ $4\frac{1}{2}$ ✓ b. $\frac{2}{9}\times 3$ $\frac{2}{3}$ ✓ c. $1\frac{1}{2}\times\frac{6}{7}$ $1\frac{2}{7}$ ✓

d. $2\frac{4}{9}\times 4$ $9\frac{7}{9}$ ✓ e. $\frac{4}{5}\div 2$ $\frac{2}{5}$ ✓ f. $\frac{5}{7}\div\frac{10}{11}$ $\frac{11}{14}$ ✓

3. Write down the answer to $102 \div 8$ as a mixed number, giving your answer in its simplest form.

$12\frac{6}{8} = 12\frac{3}{4}$ ✓

4. Write these fractions in ascending order.

$6\frac{1}{2}, \frac{18}{5}, 3\frac{1}{4}, 5\frac{1}{3}, \frac{17}{3}$

$3\frac{1}{4}$ $6\frac{1}{2}$, $\frac{18}{5}$, $\frac{5}{3}$, $5\frac{1}{3}$, $\frac{17}{3}$, $6\frac{1}{2}$ ✓

5. Choose the correct symbol, <, > or = and write it in the ◯ to complete the following.

$4\frac{1}{4}$ < $\frac{19}{4}$ ✓ $2\frac{3}{5}$ = $\frac{13}{5}$ ✓ $3\frac{7}{8}$ > $30 \div 8$ ✓

1. Add or subtract mentally
   a. 456 + 251 707 / b. 246 + 199 445 / c. 324 - 89 235 / d. 567 - 99 468 /
2. Multiply or divide mentally
   a. 6 x 99 594 / b. 90 x 12 1080 / c. 400 ÷ 5 80 / d. 420 ÷ 6 70 /
3. What number is half of a million? 500,000 /
4. What number is one hundred less than twenty thousand? 19,900 /

Addition and Subtraction of Fractions

1. Evaluate the following, expressing your answer in the simplest form.

a. $\frac{1}{9}+\frac{5}{9}$ $\frac{2}{3}$ /

b. $\frac{7}{12}+\frac{11}{12}$ $1\frac{1}{12}$ X $1\frac{1}{2}$

c. $\frac{5}{8}-\frac{3}{8}$ $\frac{1}{4}$ X ✓ $\frac{2}{8}$

d. $\frac{3}{4}+\frac{5}{12}$ $1\frac{1}{6}$ X

e. $\frac{1}{8}+\frac{1}{6}$ $\frac{7}{24}$ /

f. $\frac{7}{8}-\frac{5}{6}$ $\frac{1}{24}$ ✓

g. $6\frac{2}{3}+5\frac{7}{12}$ $12\frac{1}{4}$ ✓

h. $5\frac{7}{12}-3\frac{4}{9}$ $2\frac{5}{36}$ /

2. Jane used $\frac{1}{2}$ of a piece of ribbon and her sister used $\frac{1}{3}$ of it. What fraction of the ribbon was used?

$\frac{1}{2}+\frac{1}{3}=\frac{3}{6}+\frac{2}{6}=\frac{5}{6}$ ✓

3. Joe painted $\frac{2}{5}$ of a fence and Bill painted $\frac{1}{3}$ of it. What fraction of the fence did the boys paint?

$\frac{2}{5}+\frac{1}{3}=\frac{6}{15}+\frac{5}{15}=\frac{11}{15}$ /

4. Mr Smith had $15\frac{3}{4}$ m of wire. He cut off a piece of wire $2\frac{4}{7}$ m long. How many metres of wire did he have left?

$\frac{63}{4}-\frac{18}{7}=\frac{441}{28}-\frac{72}{28}=\frac{369}{28}=13\frac{5}{28}$ /

5. John spent $\frac{1}{4}$ of his money on a pen, $\frac{1}{3}$ of it on books and $\frac{1}{6}$ of it on a magazine. What fraction of the money is left?

Spent $=\frac{1}{4}+\frac{1}{3}+\frac{1}{6}=\frac{3}{12}+\frac{4}{12}+\frac{2}{12}=\frac{9}{12}=\frac{3}{4}$

Left $=\frac{1}{4}$ /

6. Mrs Jones spends $\frac{1}{4}$ of her money in the market and $\frac{1}{3}$ of the remainder in a shop. What fraction of her money is left?

$1-\frac{1}{4}=\frac{3}{4}-\frac{1}{3}=\frac{9}{12}-\frac{4}{12}=\frac{5}{12}$ X

7. Joan spends $\frac{3}{8}$ of her salary every month. She gives her parents $\frac{2}{5}$ of the reminder and saves the rest. What fraction of money does she save every month?

$1-\frac{3}{8}=\frac{5}{8}-\frac{2}{5}=\frac{25}{40}-\frac{10}{40}=\frac{15}{40}=\frac{3}{8}$ /

12

8. A group of students went to a fast food restaurant.
   a. 2/5 of them bought a beef burger and 1/3 of them bought a chicken burger. The rest of them just bought drinks. What fraction of the group bought food?
   b. $\frac{3}{4}$ of those who bought a beef burger also bought chips.

   What fraction of the whole group bought beef burger and chips?

   Give your answer as a fraction in its simplest from.

a) $\frac{2}{5}+\frac{1}{3}=\frac{6}{15}+\frac{5}{15}=\frac{11}{15}$ /

b) $\frac{3}{4}$ of $\frac{2}{5}$

$=\frac{3}{4}$ of $\frac{8}{20}$

$=\frac{6}{20}$

$=\frac{3}{10}$ /

57.5%

L6 - Fractions.

LS - Identify + obtain information to solve problems.

Assessment 4A 23 questions; 40 marks

1) What fraction of the star is shaded?

Write your answer in its simplest form.

2) What must be added to $\frac{5}{9}$ to get $\frac{2}{3}$?

$\frac{1}{9}$

[1]

3) The mass of a basket of vegetables is $\frac{5}{6}$ kg. The basket has a mass of $\frac{1}{4}$ kg. Find the mass of the vegetables.

B $\frac{1}{4} = \frac{3}{12}$

BOV $\frac{5}{6} = \frac{10}{12}$

$\frac{10}{12} - \frac{3}{12} = \frac{7}{12}$

$\frac{7}{12}$ kg

[1]

4) Work out

(a) $\frac{3}{4} - \frac{5}{12} = (1) \times \frac{1}{3}$

$\frac{9}{12} - \frac{5}{12} = \frac{4}{12}$

(b) $\frac{7}{9} + \frac{4}{5} = \frac{35}{45} + \frac{36}{45} = \frac{71}{45} = 1\frac{26}{45}$

[2]

5) What must be subtracted from $3\frac{4}{5}$ to get $\frac{3}{10}$ $3\frac{4}{5} = \frac{19}{5} = \frac{38}{10} - \frac{3}{10} = \frac{35}{10} = 3\frac{5}{10}$

[1]

6) Tim had a wooden pole. $\frac{2}{5}$ of it was painted white and $\frac{1}{8}$ of it was painted blue.

The rest was painted yellow. What fraction of the pole was painted yellow?

$\frac{2}{5} + \frac{1}{8} = \frac{16}{40} + \frac{5}{40} = \frac{21}{40}$

$\frac{19}{40}$ painted yellow

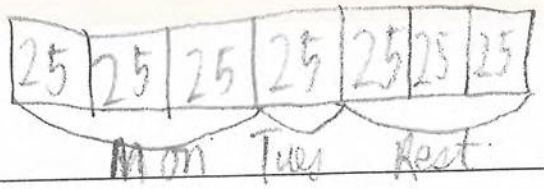
[2]

7) Shaun needs $\frac{3}{4}$ kg of butter to bake some cookies. He only has $\frac{1}{3}$ kg of butter. How much more butter does he need?

$\frac{1}{3}=\frac{4}{12}$ $\frac{3}{4}=\frac{9}{12}$ $\frac{9}{12}-\frac{4}{12}=\frac{5}{12}$ ✓

[2]

8) Claire read $\frac{3}{7}$ of a book on Monday. She read $\frac{1}{4}$ of the remainder on Tuesday. If she had 75 more pages to read, how many pages were there in the book altogether?



175 pages ×

[2]

9) Sue gave $\frac{1}{4}$ of her stickers to Erica and $\frac{5}{16}$ of her stickers to Carol. If Erica received 12 fewer stickers than Carol, how many stickers has Sue at first?

E $\frac{4}{16}$

C $\frac{5}{16}$ $\frac{1}{16}=12$

$12\times16=184$ stickers ×

[2]

10) Work out the following, giving your answers in their simplest form.

(a) $5\frac{3}{4}-2\frac{1}{5}=3\frac{11}{20}$ ✓

(b) $15\times\frac{2}{3}=\frac{2}{3}$ × 10

(c) $21\times2\frac{5}{14}=2\frac{5}{14}$ × $\frac{99}{2}$

(d) $\frac{2}{15}\times\frac{3}{4}=\frac{6}{60}=\frac{1}{10}$ ✓

[4]

11) Miss Lee had some sugar in a container. After she used $1\frac{3}{4}$ kg of it, she had $2\frac{2}{5}$ kg left. How much sugar was in the container at first?

$2\frac{2}{5}=\frac{48}{20}$ $1\frac{3}{4}=\frac{35}{20}$ $\frac{48}{20}+\frac{35}{20}=\frac{83}{20}=4\frac{3}{20}$ ✓

[1]

12) Joy has $3\frac{5}{6}$ m of ribbon. She gives $\frac{3}{5}$ of it to Jane. Find the length of Jane's piece of ribbon.

$3\frac{5}{6} = \frac{23}{6} \times \frac{3}{5} = \frac{69}{30} = 2\frac{9}{30}$ m

[1]

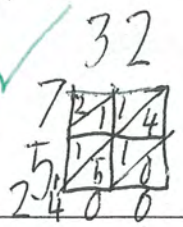
13) To find the area of a rectangle we need to multiply the length of the rectangle by its width.

Find the area of a rectangle that has a length of $1\frac{3}{5}$ m and a width of $3\frac{3}{4}$ m.

$1\frac{3}{5} = \frac{32}{20}$

$3\frac{3}{4} = \frac{75}{20}$

$\frac{32}{20} \times \frac{75}{20} = \frac{2400}{400} = \frac{24}{4} = \frac{6}{1} = 6$



[2]

14) A piece of wood measuring $\frac{5}{8}$ m is cut into 3 equal pieces. What is the length of each piece?

$\frac{5}{8} \div \frac{3}{1} = \frac{5}{8} \times \frac{1}{3} = \frac{5}{24}$

[1]

15) $\frac{1}{4}$ of the people at the beach are children. $\frac{2}{5}$ of the children are girls.

What fraction of the total number of people at the beach are girls?

$\frac{1}{4} \times \frac{2}{5} = \frac{2}{20} = \frac{1}{10}$

[1]

16) Work out the missing fraction in each box

(a) $4 \div \boxed{\frac{9}{10}}\boxed{\frac{1}{9}} = 36$

(b) $7 \div \boxed{\frac{3}{10}}\boxed{\frac{1}{3}} = 21$

[2]

17) Find the value of $21 \div \frac{7}{9}$

$\frac{21}{1} \div \frac{7}{9} = \frac{21}{1} \times \frac{9}{7} = \frac{189}{7} = 27$

[1]

18) Find the value of $\frac{4}{9} \div \frac{5}{12}$. Express your answer as a mixed number.

$\frac{4}{9} \div \frac{5}{12} = \frac{4}{9} \times \frac{12}{5} = \frac{48}{45} = 1\frac{3}{45}$

[2]

19) Work out 75 ÷ 9, giving your answer as a mixed number in its simplest form.

$$9\overline{)75.0^{5}50^{5}0} = 7.\dot{5} \quad \times \frac{75}{9} = 8\frac{3}{9} = 8\frac{1}{3}$$

[1]

20) Convert the following fractions to decimals

(a) $\frac{11}{20} = 0.55$ ✓

~~Now write 0.28 as a fraction~~

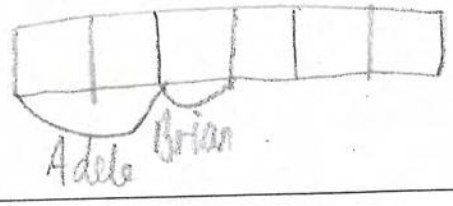
(b) $\frac{5}{8} = 0.125$ ✗ (1)

0.625

$$\frac{2.5}{4} = \frac{1.25}{2} = \frac{0.125}{1} = \frac{12.5}{100}$$

[4]

21) Adele was given $\frac{1}{3}$ of a pizza and Brian was given $\frac{1}{4}$ of what was left. The remainder was then shared equally among 5 girls. What fraction of the pizza did each of the girls get?

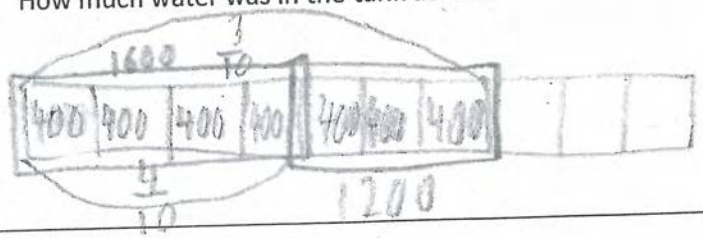


$\frac{1}{2} \times \frac{1}{5} = \frac{1}{10}$ ✗

[2]

22) A water tank was $\frac{2}{5}$ full of water. Helen poured 1200ml of water into the tank after which it became $\frac{7}{10}$ full.

How much water was in the tank at first?

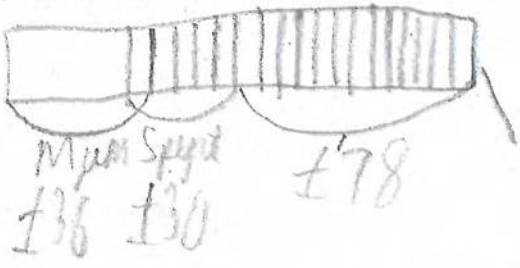


1600ml ✗

[1]

23) Carl gave $\frac{1}{4}$ of his money to his mother. He spent $\frac{5}{18}$ of the remainder on a wallet and 2 CDs and had £78 left.

The wallet cost 4 times as much a s a CD.



78÷13=6

1 block = 6 ✗

(a) How much money did Carl have at first? £144

5 5 5 5 5 5

(b) What was the cost of 1 CD?

£5

5 5

[3]

End of Assessment

(Blue = test corrections)

67%

32/48

Assessment 3A 21 questions; 48 marks Name: .....

Think about using a model for any questions marked **

Level	3	4	5	6	7

1) Write down the fraction of each shape that has been shaded.



4/7



2/5

2
[2]

2) Write down the next **six** fractions equivalent to $\frac{3}{5}$

$\frac{3}{5} = \frac{6}{10} = \frac{9}{15} = (\frac{18}{30} = \frac{60}{} = \frac{120}{} = 240) \times \frac{12}{20} = \frac{15}{25} = \frac{18}{30} = \frac{21}{35} = \frac{24}{40} = \frac{27}{45}$.

3
[3]

3) Fill in the missing numerators or denominators for the equivalent fractions below.

(i) $\frac{5}{8} = \frac{\boxed{20}}{32} = \frac{70}{\boxed{112}}$

(ii) $\frac{3}{7} = \frac{12}{\boxed{28}} = \frac{\boxed{27}}{63}$

2
[2]

4) Write the following fractions in their simplest form

(a) $\frac{15}{18} = \frac{5}{6}$

(b) $\frac{24}{32} = \frac{3}{4}$

2
[2]

5) Write the following mixed numbers as improper fractions.

(a) $4\frac{2}{3} = \frac{14}{3}$

(b) $1\frac{5}{7} = \frac{12}{7}$

2
[2]

6) Write the following improper fractions as mixed numbers.

(a) $\frac{7}{3} = 2\frac{1}{3}$

(b) $\frac{23}{5}$ $4\frac{3}{5}$

2
[2]

7) Write down the answer to 78 ÷ 9, giving your answer as a mixed number

$$9\overline{)78}\quad 08\tfrac{6}{9}$$

$8\frac{6}{9}$ ✓

2

[2]

8) Arrange the following fractions in ascending order. **You must show your workings out.**

$\frac{5}{8}$ $\frac{2}{3}$ $\frac{7}{12}$

$\frac{5}{8} = \frac{15}{24}$ 2

$\frac{2}{3} = \frac{16}{24}$ 3

$\frac{7}{12} = \frac{14}{24}$ 1

$\frac{7}{12}, \frac{5}{8}, \frac{2}{3}$ ✓

3

[3]

9) Calculate the following, draw a model if you need to.

(a) $\frac{1}{4}$ of 48 $24 = \frac{1}{2}$ $12 = \frac{1}{4}$ ✓	(b) $\frac{2}{3}$ of 21 $\frac{1}{3} = 7$ $\frac{2}{3} = 14$ ✓	(c) $\frac{3}{5}$ of 120 $\frac{1}{5} = 24$ $\frac{3}{5} = 72$ ✓
(d) $\frac{2}{7}$ of 84 $7\overline{)84}$ 12 $\frac{1}{7} = 12$ $\frac{2}{7} = 24$ ✓	(e) $\frac{3}{4}$ of 56 $\frac{1}{2} = 28$ $\frac{3}{4} = 42$ ✓ $\frac{1}{4} = 14$	(f) $\frac{5}{9}$ of 720 $9\overline{)720}$ 080 $80 \times 5 = 400$ ×

5

[6]

For questions 10 to 15 try to draw a model to help you find the answers.

10) $\frac{2}{5}$ of the workers in a factory are female. If there are 150 workers in the factory altogether, find the number of female workers.

$\frac{1}{5} = 30$ $\frac{2}{5} = 60$ ✓

L5 – Calculate fractional parts of a quantity or measurement

11) There are 32 children in a class. $\frac{5}{8}$ of

$\frac{1}{8} = 4$

=

12) Sam received £96. He saved $\frac{1}{8}$ of it and spent the rest of the money over 10 days. If he spent the same amount of money each day, how much did he spend each day?

$96 - 12 = 84$

$8\overline{)96}$ 12

$10\overline{)84.80}$ 08.40

£8.40 per day

2

[2]

13) Susan spent $\frac{7}{12}$ of her money and had £40 left. How much did she have at first?

$£40 = \frac{5}{12}$

$40 \div 5 = 8$

$\frac{1}{12} = £8$

$8 \times 12 = 96$

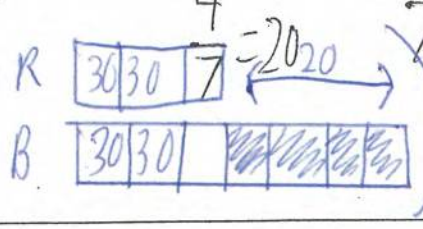
£96

2

[2]

14) A bookshop sold red files and blue files. There were 320 files altogether in the shop. After selling $\frac{4}{7}$ of the blue files and 20 of the red files there was an equal number of red and blue files left. How many files were sold?

	R	B
Start	160	160
1	140	140



045.714285
320.50 30 20 60 40

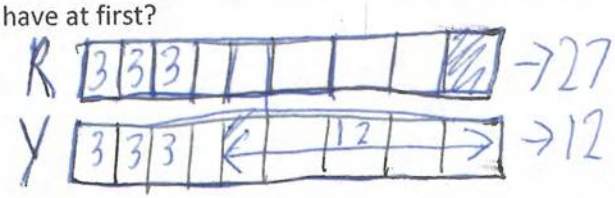
320 (300 without 20)

140 sold

0

[2]

15) John had some red and yellow balloons. After selling $\frac{1}{9}$ of the red balloons he has twice as many red balloons as yellow. If he has 12 more red balloons than yellow, how many red balloons and how many yellow balloons did he have at first?

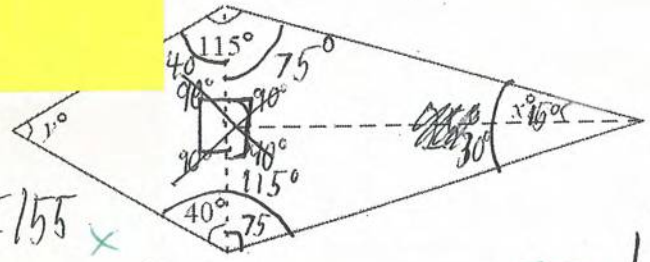


36

L6 - attempting to solve complex problems by breaking down into smaller tasks.

Correct in book, not so much correct on assessment

0 [2]

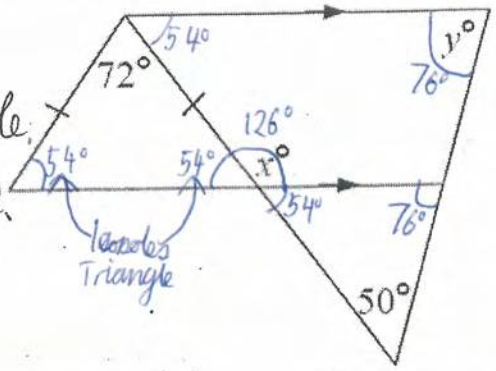


~~y = 80°~~ (100°) because 180° in a triangle. 40 + 115 = 155 ×

x = 15° because 180 ✓

1 (1) [2]

17) Find the value of the angles x and y in the diagram.



x = 72° (126°) because it's an alternate angle. ×

y = 130° (76°) because it's an allied angle.

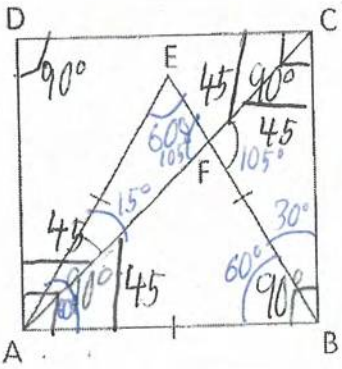
0 [2]

18) In the figure below ABCD is a square and ABE is an equilateral triangle.

Find

(a) ∠FAE = 15°

(b) ∠BFC = 105°

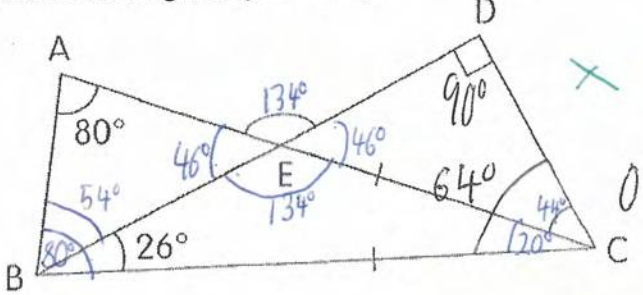


1 (1) [2]

19) In the figure (not drawn to scale), ABC is an isosceles triangle and BCD is a right-angled triangle.

Find

(a) ∠AED



0 [2]

(b) ∠DCE

79% (Rounded)

Assessment 1A 18 questions: 60 marks 57 45/57

Name: .....

Sat next to Luke Thomas.

Level	3	4	5	6	7

1) Fill in the blanks with figures (numbers)

(a) 79 042 = 70000 + 9000 + 40 + 2 ✓

(b) 8 000 000 + 40 000 + 300 + 5 = 8040305 ✓

[2] 2

2) (a) What is the difference between the 3rd multiple of 5 and the 5th multiple of 7? 20 ✓

(b) What is the sum of all the factors of 15? 24 ✓

[2] 2

3) Multiply or divide mentally

(a) 32 × 7 = 224 ✓ (b) 50 × 900 = 45000 ✓ (c) 6 × 700 = 4200 ✓

(d) 40 × 8 = 320 ✓ (e) 320 ÷ 4 = 80 ✓ (h) 2400 ÷ 600 = 4 ✓

[6] 6

4) Use a written method to work out

(a)
$$\begin{array}{r} 359 \\ \times\ 28 \\ \hline \end{array}$$

359

2 | 0 6 | 1 0 | 1 8

8 | 2 4 | 4 0 | 7 2

10052 ✓

(b) 14 | 8 4 2 3 2 ÷ → 0232 ✓

[3] 3

For Questions 5 to 10, circle the correct answer.

5) In 5 368 147, the digit 3 stands for

(i) 3 x 100 (ii) 3 x 1000 (iii) 3 x 10 000 (iv) 3 x 100 000 ✓

6) Find the value of 20 x 5 + 45 ÷ 5 – 20

(i) 9 (ii) 14 (iii) 89 ✓ (iv) 71

7) What is the best estimate for 800 x 397?

(i) 320 (ii) 3200 (iii) 32 000 (iv) 320 000 ✓

8) What is the best estimate for 28 000 ÷ 30

(i) 900 (ii) 9000 (iii) 10 000 (iv) 1000 ✗

9) What is the best estimate for 58·2 x 5·9

(i) 58 x 5 (ii) 58 x 6 (iii) 59 x 5 (iv) 59 x6 ✓

L6 – Solve complex problems by breaking down into smaller tasks.

4

(iv) 10 000 ✗

5 [6]

..... (to 2 significant figures)

[3]

12) **Problem Solving:** Solve the following worded problems; put your answers in a sentence.

(a) A table and 4 similar chairs cost £470.

The same table and 8 similar chairs cost £710.

Calculate the individual cost of a table and a chair.

470 = Table + 4 chairs
710 = Table + 8 chairs
060 = 1 chair ✓
710 + 230 = Table
−470 £240
£240 = 4 chairs

470
− 240
£230 table

One table and one chair would cost £290.

(2)

(b) Sally and Cerys had the same number of books. After Cerys gave 10 books to Sally, Sally had 3 times as many books as Cerys. How many books did each girl have to begin with?

Each girl started with 20 books ✓

Sally	Cerys
20	20
30	10

✓

(2)

(c) A domestic oil tank contains 150 litres of oil. A tanker lorry containing 3500 litres of oil arrives to make a delivery. After transferring some oil into the tank, the lorry contains 4 times as much oil as the tank. How many litres of oil did the tanker lorry transfer into the domestic tank?

The tanker transfered 725L of oil into the tank.

875
4 | 3500

875
- 150
725

580L

(d) Serena's father is 4 times as old as her. In 20 years time, he will be twice as old as her.
How old is her father now?

Serena's father is currently 40 years old.

10 → 40
+20 +20
30 60

[8]

---

13) Calculate the value of

(a) 8^2

8x8=64

(b) $\sqrt{121}$

?x?=121
10x10=100
(11x11)=121

[2]

14) Calculate the value of

(a) $3^3 \times \sqrt{16}$ (108)

3x3x3=27
4x4=16

(b) 2^5

2x2=4x2=8
x2=16x2=32

[2]

---

15) (a) Given that $12^3 = 1728$, write down the value of $\sqrt[3]{1728000}$.

[1]

12000
144,000,000

120

(b) The sum of 2 consecutive square numbers is 145. What are the numbers? 72+73

144000000

2x2x2x3 2³x3²

2x2=4x2=8
x3=24x3=72

72
36
18
9
3 3

73

72
5184

73
5329

[1]

(c) Write 784 as a product of its prime factors. Hence write down the square root of 784. $= 2^4 \times 7^2$

yr 7 POS - order of operations.

yr 7/8 POS - +/−/×/÷ negative nos.

yr 8 POS - Repeated powers.

$\times 2 \times 2 \times 37 = 2^5 \times 37$

37

32 | 0 9 2 1

2 | 0 6 1 4 $= 1184$

1 1 8 4

[3]

(c) $\frac{11^8 \times 11^3}{11^7} =$ 11⁴

[4]

17) Calculate the following

(a) 18 − 29 = −11 (b) −13 + 47 = 34 (c) −5 − 36 = −41 (d) 13 − (−8) = 21

(−54)

(e) −3 − (−9) = 6 (f) −3 × 18 = 54 (g) −180 ÷ (−6) = 30 (h) −5 × (−16) = 80

(i) 280 ÷ (7 − 11) = −70 (j) −9 × (−4) = 36 (k) ..... × 4 × (−7) = 84

[11]

18) Calculate the following

a) 32 − 12 ÷ 3 28 b) 5 + 5 × 5 ÷ 5 10

c) Calculate 5 x 4 + 5 x 8 60

Calculate 5 x (4 + 8) 60

What can you conclude about 5 x 4 + 5 x 8 and 5 x (4 + 8)? They both make the same answer.

d) Evaluate 17 x 87 + 17 x 13 17×(87+13) 1700

17

8 7 | 0 8 5 6

0 4 9

1 4 7 9

17

1 3 | 0 1 0 7

0 3 2 1

2 2 1

1479

+0221

1700

1 1

[6]

Work on working

L6 Formulate equations

Substitute

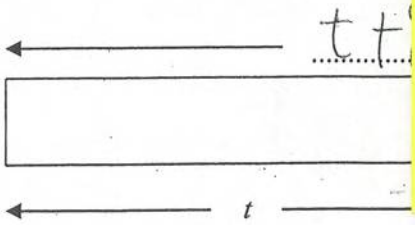
Simplify

Expand.

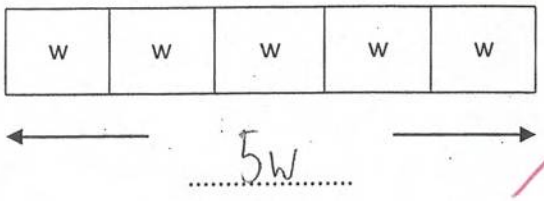
Assessment 5A 19 questions; 58 marks

1) Write an algebraic expression that represe

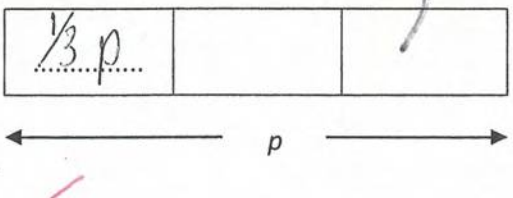
(a)



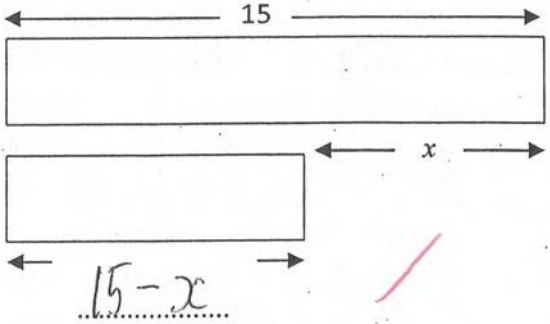
(b)



(c)



(d)



5

[5]

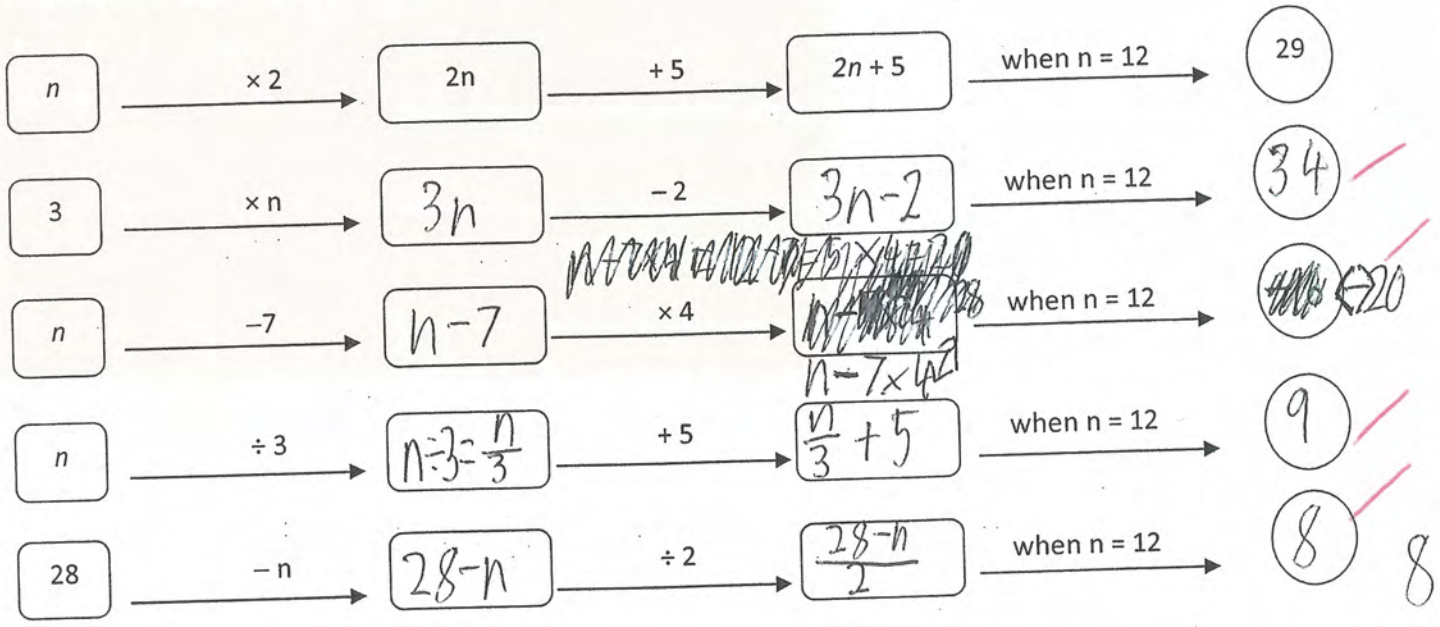
2) Write an algebraic expression for each of the following

a) Add 8 to q $q+8$	b) 12 more than a $a+12$	c) Subtract 6 from x $x-6$
d) Subtract w from 5 $5-w$	e) 11 less than t $t-11$	f) z less than 9 $9-z$
g) multiply a by 3 and then add 5 to the result $a\times3+5$	h) subtract 3 from t and then multiply the result by 7 $(t-3)\times7$	i) add 4 to p and then divide the result by 9 $(p+4)\div9$

9

[9]

3) In each box, find the expression in terms of n. For the circles on the right, find the value when n = 12.



[8]

4) Kathy is *p* years old. Her father is twice as old as her. What will her father's age be in 3 years time?

(i) (*p* + 3) years (ii) (2*p* – 3) years (iii) (2*p* + 3) years (iv) (3*p* +3) years

[1]

5) Find the value of 15 – 2*v* when *v* = 4.

(i) 7 (ii) 8 (iii) 11 (iv) 13

[1]

6) Simplify 6*a* + 17 – 3*a* – 10

(i) 3*a* – 7 (ii) 3*a* + 7 (iii) 9*a* + 7 (iv) 9a + 27

[1]

7) Find the value of $18-\frac{3d}{2}$ when *d* = 4.

(i) 12 (ii) 13 (iii) 17 (iv) 30

[1]

8) Simplify 11*y*+7z – 9*y* – 4z 2y + 3z

[1]

9) Mrs Jones bought *s* metres of ribbon. She used 3 metres of ribbon to decorate some presents. How much ribbon had she left in terms of *s*? s-3

[1]

10) Jimmy spent £ x a week for 3 weeks and had £12 left. How much did he have at first in terms of x?

£3x + £12

1

[1]

---

11) (a) Expand $3(y + 7)$ 3y + 21

(b) Expand $5(2a - 3)$ 10a − 15

(c) Factorise $7p + 35$ 7(p+5)

(d) Factorise $8x^2 - 4x$ 4x(2x−1) x(8x−4) ½

[4] 3½

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12) There were 36 k apples in a box. Karen used one third of them to make apple pie. Express the number of apples left in terms of k.

⅓ 36k 24k

0

[1]

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13) A t-shirt costs £ b. A pair of jeans costs twice as much as the t-shirt. A belt costs £8 less than the t-shirt.

How much does it cost Peter if he buys all three items? Give your answer in terms of b in its simplest form.

b + b x 2 + b − 8 = 3b x 2 − 8 = 6b − 8

4b − 8

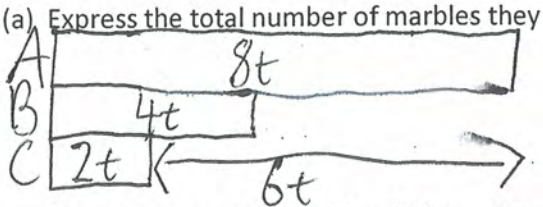
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[3]

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14) Ali has twice as many marbles as Billy. Billy has twice as many marbles as Charlie and Ali has 6t more marbles than Charlie.

(a) Express the total number of marbles they have in terms of t.



14t

(b) Find the number of marbles Ali has when $t = 7$.

8 x 7 = 56

4

[4]

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15) I have a number. If I double it, and I find ⅓ of it, the difference will be 10z. Two times a number is greater than $\frac{1}{3}$ of the number by 10z. Find the number in terms of z.

z x 2 = 2z

z x ⅓ = ⅓z

6z x 2 = 12z

6z x ⅓ = 2z

6z

2

[2]

---

16) Simplify the following expressions

(a) $32p - 15q - 15p + 11q$

17p − 26q
17p − 4q ½

(b) $7a + 2b - 4a - b$

3a + b ✓

1½

[2]

---

17) Expand and simplify

(a) $5(4a + 3b) + 2(3a - b)$ $20a + 15b + 6a - 2b = 26a + 13b$ ✓

(b) $2r - 3s - 5(r - s)$ $2r - 3s - 5r - 5s = -3r - -2s = -3r + 2s$ ✓ 4

[4]

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18) Simplify

(a) $\frac{1}{3}(a+2)+\frac{1}{4}a$ $= \frac{1}{3}a + \frac{1}{3}2 + \frac{1}{4}a = \frac{7}{12}a + \frac{1}{3}2$ ✓

$\frac{1}{3} = \frac{4}{12}$ (2)

$\frac{1}{4} = \frac{3}{12}$

(b) ~~$\frac{4m+3}{2} - \frac{2m+1}{3}$~~

2

[4]

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19) Given that $a = 4$, $b = -2$ and $c = 7$, evaluate the following.

(a) $abc = 4 \times -2 \times 7 = -8 \times 7 = -56$ (b) $ac + b = 4 \times 7 + -2 = 28 - 2 = 26$ (c) $\frac{4a-3b}{2a+b} = \frac{4\times4-3\times-2}{2\times4+-2}$ ✓ (2)

$= \frac{16--6}{8+-2}$

$= \frac{16+6}{8-2} = \frac{22}{6}$ ✓ (2)

$\frac{11}{3}$

(d) $\sqrt{c^2 - 2ab} = \sqrt{7^2 - 2 \times 4 \times -2} = \sqrt{49 - 8 \times -2} = \sqrt{49 - -16} = \sqrt{49+16}$

$= \sqrt{65}$ ✓ (1)

✓ (2)

[7]

Level 6: Learner profile

The materials in this folder consist of a learner profile which is judged to show the characteristics of a learner's standards of attainment which, overall, are at level 6. The commentary should enable the reader to see why the learner profile has been given a best-fit level 6.

The level of detail exemplified here in the commentary is intended to give a good sense of how a best-fit level can be fully justified, in the case of learner profiles. For in-school awarding of best-fit levels at the end of a key stage and in-school moderation, it is still necessary for the teacher to justify that the range of work required is covered and the appropriate standard reached to award a best-fit level. How this is demonstrated is for each school to determine.

A learner profile will typically contain the work of one pupil from across the range of the subject and provide sufficient evidence to enable a judgement to be made on the level which best fits the standard represented in the profile. A learner profile should be as straightforward as the pupil's book or books which show evidence of the characteristics of levels and relevant attainment target(s). Other work which would give the complete picture of a pupil's standards might include a theme/topic book, audio visual recordings, reading record. A commentary on the learner profile will make clear how, on balance, the best fit judgement has been reached and why it is not at the level above or below if it is borderline. The commentary will signpost where the evidence of achievement at a particular level can be seen in the exercise book or other original material produced in the year.

Mathematics: Learner profile

Level 6

Comment	Source	Reference
In the 'Big Calculations' task, the learner is able to identify and obtain information in order to calculate how many seconds there are in a year. This level 5 characteristic is also evident throughout the algebra and fraction work whereby the learner regularly identifies and obtains information to solve problems.	Book 2	p5-6
When expressing a number as a product of its prime factors, the learner makes general statements of his own based on his evidence and concludes that, if the powers are even then the number must be a square number.	Book 2	p24
Within the context of angle properties and parallel lines at level 6, the learner solves complex problems by breaking them down into smaller tasks and provides some justification.	Book 2	p51-52
In the 'loft conversion' task, the learner is able to interpret, discuss and synthesise the information provided in order to work out how much architrave is required. The learner works systematically without teacher input.	Book 3	p70–72
Within the number strand it is evident that level 4 and level 5 number work is sustained throughout, which then feeds into the demand of the level 6 work. There is regular practice of multiplying and dividing whole numbers and decimals.	Book 2 Book 3	p21 and 35 p70
The learner shows evidence of understanding the four operations in negative numbers which is subsequently used in solving equations, simplifying algebraic expressions and BODMAS involving powers and brackets.	Book 2	p7 ff
There is extensive evidence of work involving fractions, including the four operations, equivalences and mixed numbers to top heavy fractions at level 6. During work on adding and subtracting mixed numbers, the learner realises that his original method is not working and calls on his prior knowledge of mixed numbers and top heavy fractions in order to solve the problems correctly.	Book 2	p61

The learner calculates a percentage increase or decrease by using the multiplier method which shows a thorough understanding of this topic and the demand of level 6.	Book 1	p27
Within the algebra strand, when given word problems, the learner identifies and obtains information to solve the problems before forming and solving a variety of linear equations. The equations include those with brackets, an unknown on both sides and fractions linking to the work on equivalent fractions and adding/subtracting fractions.	Book 3	p17-18
There is extensive evidence of algebraic work at level 6: expanding brackets, simple factorising, simplifying expressions (involving negative numbers), simple substitution and drawing linear graphs by mapping algebraically, which again shows a comprehensive understanding of this work.	Book 3	p7 p28-29
Within the shape strand the learner recaps enlarging shapes by a positive whole number scale factor. This is characteristic of level 6. The learner knows the properties of quadrilaterals and is beginning to use them to classify quadrilaterals. However, in order to secure level 6 further evidence of the learner using properties of quadrilaterals to solve problems is required.	Book 3	p64
Within the measures strand there is extensive evidence of level 6 work. The learner builds on his skills of angle properties, which confidently leads to using the properties of intersecting and parallel lines at level 6.	Book 2	p51-52 p78
The work on area and volume consolidates understanding at level 5 and leads onto area and circumference of circles which is characteristic of level 6.	Book 3	p 55-58
There is evidence of level 6 within the data strand. The learner starts by using the probability scale from 0 to 1 moving on to the demand of level 6 by identifying all outcomes when dealing with a combination of 2 experiments. The learner answers correctly GCSE past paper questions on finding and justifying probabilities at the demand of level 6.	Book 2	p67-74

In terms of graph work, while there is no evidence that the learner has collected data, various graphs have been constructed and interpreted meeting the demand of both levels 5 and 6.	Book 3	p32–44

Best-fit level: Summary

The collection of work reflects evidence from across the skills and range of the mathematics programme of study.

Both level 5 and 6 criteria were considered for this profile. Three exercise books, assessments and homework tasks are included in this collection of work.

Based on the evidence available the learner demonstrates performance beyond level 5 and nearly all of the level 6 criteria. Therefore the best-fit judgement is level 6. However, to strengthen this, additional work based around rich investigational tasks will ensure the learner is given opportunities to provide mathematical justifications to support their conclusions.