

Carys: Foundation Phase

Are the statements always true, sometimes true or never true?

If two even numbers are added together the total is an even number.

$6+6=12$ - even
 $4+4=8$ - even AT
 $100+100=200$ - even

If two odd numbers are added to an even number the total is an odd number.

$6+3+3=12$ - even
 $5+5+2=12$ - even NT
 $6+5+5+6=18$ - even

If three even numbers are added together the total is an even number.

$6+6+6=18$ - even
 $4+6+6=16$ - even AT
 $6+6+7=19$ - odd
 $100+2+6+15=123$ - even

If three odd numbers are added together the total is an odd number.

$3+3+3=9$ - odd
 $4+3+3=10$ - even
 $11+11+11=33$ - odd
 $1111+1=1112$ - even AT

If an odd number is multiplied by an odd number you get an odd number.

$3 \times 3 = 9$ - odd
 $1 \times 1 = 1$ - odd
 $5 \times 5 = 25$ - odd NT

If an odd number is subtracted from an even number you get an even number.

$5-2=3$ - odd
 $3-2=1$ - odd NT
 $7-4=3$ - odd
 $6-3=3$ - odd
 $8-1=7$ - odd
 $26-9=17$ - odd

If two even numbers are added to an odd number the total is an even number.

$3+6+4=13$ - odd
 $150+1,000+1,000=2,151$ - odd
 $15+15+15=45$ - odd NT

If an even number is halved you get an odd number.

$\frac{1}{2} 100 = 50$ - even
 $\frac{1}{2} 11,000 = 5,500$ - even ST
 $\frac{1}{2} 12,000 = 6,000$ - even
 $\frac{1}{4} 10 = 2.5$ - odd
 $\frac{1}{2} 6 = 3$ - odd

Pupils had to work in pairs, taking statements from the middle of the table and deciding whether they were always true, sometimes true or never true. There was no supporting apparatus available to the class. Carys was able to clearly explain how she worked through the task and knew that she needed to try several calculations for each statement before she could decide whether it was always, sometimes or never true. Although she initially evaluated the top right-hand statement incorrectly she was able to correctly evaluate it after a prompt from the teacher; otherwise all statements are correctly interpreted and evaluated.

Investigating odd numbers

1 3 5 7 9

Choose any pair of odd numbers to add. Try a few examples.
What do you notice?

$$\begin{array}{l} 3+5=8 \quad 9+5=14 \quad 9+9=18 \quad 7+9=16 \\ 7+5=12 \quad 1+3=4 \quad 1+1=2 \quad 3+3=6 \quad 5+5=10 \\ 7+1=8 \quad 7+3=10 \end{array}$$

that all of them end in even numbers

Now choose 3 odd numbers to add. Try a few examples. What do you notice?

$$\begin{array}{l} 5+9+3=17 \quad 9+9+9=27 \quad 7+7+7=21 \\ 3+3+3=9 \quad 5+5+5=15 \\ 1+1+1=3 \quad 9+9+7=25 \end{array}$$

that they are all odd

What about adding 4 odd numbers together? What do you notice?

$$\begin{array}{l} 9+9+9+9=36 \\ 1+1+1+1=4 \\ 3+3+3+3=12 \end{array}$$

they are all even

$$5+5+5+5=20$$

Have you noticed a pattern? Can you predict what might happen if you add 5 odd numbers? I think it will be odd because five is odd.

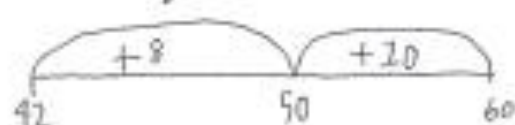
Reasoning about numbers

In each case choose a number that could reasonably be correct.

Then explain why you chose that number.

$19 \times 5 =$	84	<u>95</u>	93
It's 95 because it ends in a five or 0 when you count in fives.			
$19 \times 2 =$	35	33	<u>38</u>
It's 38 because if counting in 2s it should be even.			
$19 \times 10 =$	<u>190</u>	185	192
I think it's 190 because when you count in tens its all ways ends in a 0.			
$28 + 38 =$	63	<u>66</u>	70
It's because $8 + 8 = 16$			
$47 + 45 =$	90	95	<u>92</u>
It's 92 because $5 + 7 = 12$			

$$42 + \boxed{18} = 60$$



$$51 + \boxed{19} = 70$$



$$67 + \boxed{13} = 80$$



$$83 + \boxed{17} = 100$$



$$57 + \boxed{13} = 70$$



5 pairs of socks = socks altogether

6 pairs of socks = socks altogether

If I have 11 socks, how many pairs of socks would I have?
 There would be 5 pairs of socks and one sock left over.

9 pairs of socks = socks altogether

10 pairs of socks = socks altogether

If I have 19 socks, how many pairs of socks would I have?
 there are nine pairs of socks and one sock left. I would have nineteen socks altogether.

6 pairs of socks = socks altogether

7 pairs of socks = socks altogether

If I have 13 socks, how many pairs of socks would I have?
 There are 6 pairs of socks and one sock left. I would have 13 socks together.

There would be 5 pairs of socks and one sock left over.

+9 +9 18

+10 +10

There are nine pairs of socks and one sock left. I would have nineteen socks altogether.

There are 6 pairs of socks and one sock left. I would have 13 socks together.

Carys worked quickly and confidently through the task, without the use of any practical equipment, and clearly explained her understanding when questioned. For example, when explaining that there would be 9 pairs of socks and 1 sock left over if there were 19 socks altogether, she said 'I already know that 9 pairs of socks is 18 socks and 10 pairs of socks is 20 socks, so there must be 9 pairs of socks with 1 sock left as there aren't enough socks to make 10 pairs. I would need 1 more sock as you need 2 socks for a pair.'

Problem solving with halves and quarters (2)

- 1) I have 24 sweets in a bag. I share them with my friend. How many do we get each?

$$\frac{1}{2} \text{ of } 24 = 12 \quad \checkmark$$

- 2) Tom has 30 marbles. He loses half of them in a game. How many does he have left?

$$\frac{1}{2} \text{ of } 30 = 15 \quad \checkmark$$

- 3) Dad made 28 buns. He put half away in a tin. How many buns are left?

$$\frac{1}{2} \text{ of } 28 = 14 \quad \checkmark$$

- 4) 16 children went to a party. One quarter of them don't like pizza. How many children is that? So how many DO like pizza?

$$\frac{1}{4} \text{ of } 16 = 4 \text{ so } 12 \text{ like pizza} \quad \checkmark$$

- 5) There were 40 chocolates in a box. We ate one quarter of them. How many are left now?

$$\frac{1}{4} \text{ of } 40 = 10 \text{ so } 30 \text{ are left} \quad \checkmark$$

- 6) There are 32 balloons in a packet. We blew up half of them. How many is that?

$$\frac{1}{2} \text{ of } 32 = 16 \quad \checkmark$$

- 7) Mum bought 12 apples. When she got home, she found that a quarter of them were bad. How many good apples were there?

$$\frac{1}{4} \text{ of } 12 = 3 \text{ so } 9 \text{ are good} \quad \checkmark$$

- 8) There are 24 footballs in the basket. One quarter of them are flat. How many are not flat?

$$\frac{1}{4} \text{ of } 24 = 6 \text{ so } 18 \text{ are blown up} \quad \checkmark$$

- 9) 16 cars are in the car park. $\frac{1}{4}$ of them are red. How many cars are not red?

$$\frac{1}{4} \text{ of } 16 = 4 \text{ so } 12 \text{ are not red} \quad \checkmark$$

- 10) There are 20 children in Class 2. One quarter of them wear glasses. How many children don't wear glasses?

$$\frac{1}{4} \text{ of } 20 = 5 \text{ so } 15 \text{ don't wear glasses} \quad \checkmark$$

My grandmother gave me £5 for the sweet shop and I bought 3 bags of sweets for 60p each and 2 lollies for 20p each. How much will it cost me in total? How much change will I get back?

$$\begin{array}{r} 3 \times 60p = \pounds 1.80 \\ 2 \times 20p = \pounds 0.40 \\ \hline \pounds 2.20 \end{array}$$

$$\pounds 5.00 - \pounds 2.20 = \pounds 2.80$$

Mum buys some pizzas for my party and cuts each one into quarters. If she buys 6 pizzas, how many pieces is that? If there are 8 children at the party, how many pieces do they each eat?

8 children

$$\textcircled{\cdot} \textcircled{\cdot} \textcircled{\cdot} \textcircled{\cdot} \textcircled{\cdot} \textcircled{\cdot} \textcircled{\cdot} \textcircled{\cdot} = 3 \text{ each}$$

6 pizzas



$$6 \times 4 = 24 \text{ pieces}$$

so they get 3 pieces each

How many more apples are needed when you buy 6 bags of 5 apples and you need 32 apples for a school trip?

$$6 \times 5 = 30$$

$$32 - 30 = 2$$

I need 2 more apples

Pupils were given several tasks to choose from and Carys chose this task. The questions were written down for her.

I have £1.00 to spend. I buy a mix of ice creams (10p), lollies (5p) and ice pops (2p).

Show 3 different ways of spending exactly £1.00.

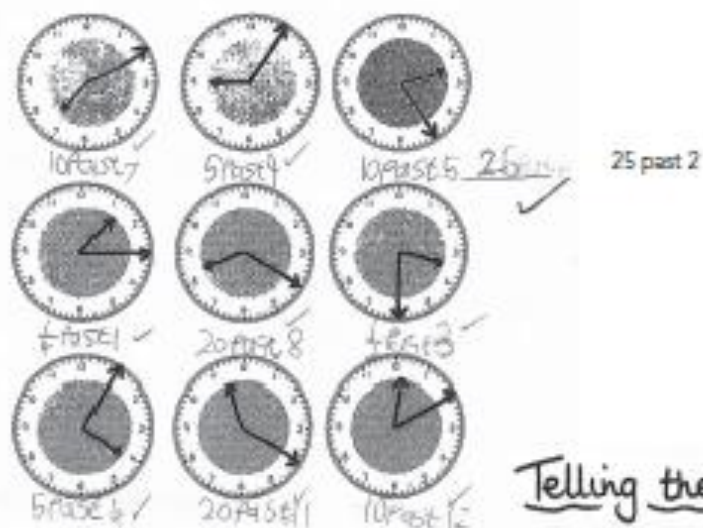
7 ice creams (10p each) = 70p
4 lollies (5p each) = 20p
5 ice pops (2p each) = 10p
70p + 20p + 10p = £1.00

6 ice creams (10p each) = 60p
5 ice pops (2p each) = 10p
6 lollies (5p each) = 30p
60p + 10p + 30p = £1.00

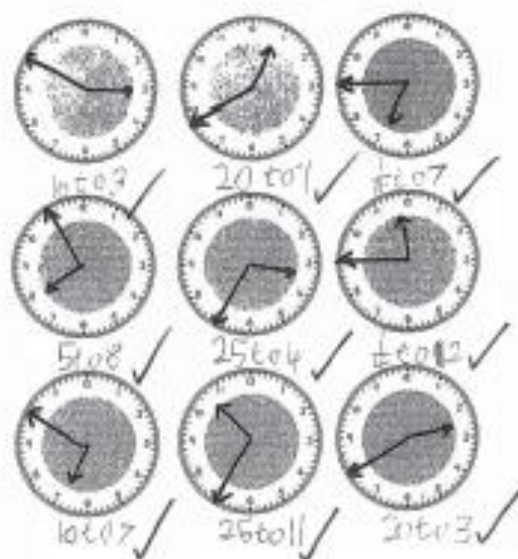
5 ice creams (10p each) = 50p
6 lollies (5p each) = 30p
10 ice pops (2p each) = 20p
50p + 30p + 20p = £1.00

Can I tell the time to 5 minutes?

- Look at the long hand first....
- How many minutes past?

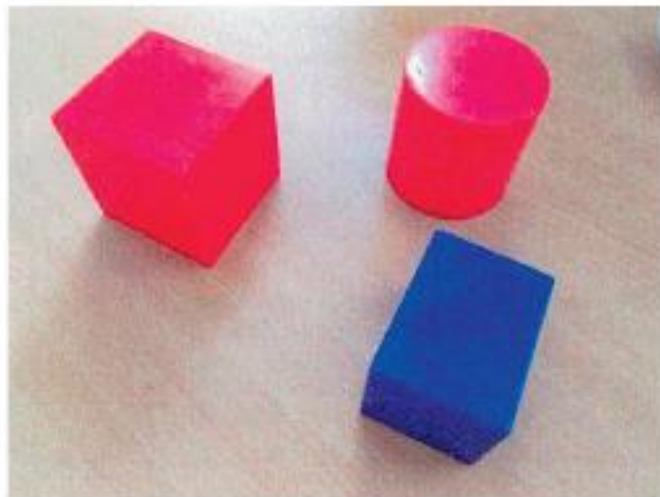


Telling the time "to" the hour



The cube has 8 vertices and so does the cuboid but the cylinder as none.
 The cuboid have 12 edges and the cube has 12 aswell
 The cylinder has 2 edges and its curved and the others have all straight edges.
 The cube has square faces there are six of them
 The cuboid has 2 square faces and 4 rectangle faces.

The cube has 8 vertices and so does the cuboid but the cylinder as none.
 The cuboid have 12 ~~faces~~ edges and the cube has 12 ~~as well~~ as well
 The cylinder has 2 edges and its ~~curved~~ curved and the others have all straight edges.
 The cube has square faces there are six of them
 The cuboid has 2 square faces and 4 rectangle faces



Pupils were working in a group of 4, to encourage interactive discussion about the shapes, but then worked independently to record statements about the shapes.

The teacher observed the pupils' discussion, the way they handled shapes and counted the properties. The pupils also used shape language confidently and corrected each other if the wrong terminology was used. This is Carys' recorded evidence.