

Profile: Marya (Key Stage 2)

Activity | Consecutive numbers

The focus of this activity is to identify and explain patterns that arise when adding together consecutive numbers.

Activity | Network Q Rally

Pupils are given a chart of prices for visits to the Network Q Rally. The task is to find various combinations of adult and child tickets that can be purchased with £200, using up as much of the money as possible.

Activity | Pentominoes

Pupils are asked to investigate how many different pentominoes they can create, and which of the pentominoes have line and/or rotational symmetry. Marya then continues her investigation by choosing one of the pentominoes, reflecting it in some of its sides, and finding the area and perimeter of the new shapes. She also investigates which pentominoes tessellate, and whether she can build new, larger pentominoes using some of the original pentominoes, though this work is not included here.

Activity | Match up

Pupils are given a page of simple fractions, decimals and percentages that they are to organise into equivalent sets. They can choose to use a calculator to check their work. They then calculate fractional and percentage parts of quantities and measurements generated by two sets of cards, one containing the original numbers and the other the quantities and measurements.

Consecutive Numbers

$$0 + 1 = 1$$

$$1 + 2 = 3$$

$$2 + 3 = 5$$

$$3 + 4 = 7$$

$$4 + 5 = 9$$

Adding two consecutive numbers makes an odd number

odd + even = odd

even + odd = odd

$$16 + 17 = 33$$

$$17 + 18 = 35$$

$$18 + 19 = 37$$

$$19 + 20 = 39$$

I think the pattern is double the first number and add one.

$$50 + 51 = 101, \quad 2 \times 50 + 1 = 101 \quad \checkmark$$

$$1 + 2 + 3 = 6$$

$$2 + 3 + 4 = 9$$

$$3 + 4 + 5 = 12$$

$$4 + 5 + 6 = 15$$

$$5 + 6 + 7 = 18$$

Adding three consecutive numbers makes a multiple of 3. It is 3 times the middle number.

$$19 + 20 + 21 = 60$$

$$20 + 21 + 22 = 63$$

$$21 + 22 + 23 = 66$$

I think this is because

$$\begin{aligned} 19 + 20 + 21 &= \widehat{20-1} + 20 + \widehat{20+1} \\ &= 20-1 + 20 + 20+1 \\ &= 3 \times 20 \quad \checkmark \end{aligned}$$

$$(0 + 1 + 2 + 3 = 6)$$

$$1 + 2 + 3 + 4 = 10 \quad (6) \text{ These are not multiples of 4, but}$$

$$2 + 3 + 4 + 5 = 14 \quad (8) \text{ if you take away 6 it gives the}$$

$$3 + 4 + 5 + 6 = 18 \quad (12) \text{ 4 times table.}$$

$$4 + 5 + 6 + 7 = 22 \quad (16) \text{ I think the tenth sum will be}$$

$$6 + 10 \times 4 = 46$$

$$10 + 11 + 12 + 13 = 21 + 25$$

$$= 46 \quad \checkmark$$

$$1 + 2 + 3 + 4 + 5 = 15$$

$$2 + 3 + 4 + 5 + 6 = 20$$

$$3 + 4 + 5 + 6 + 7 = 25$$

$$4 + 5 + 6 + 7 + 8 = 30$$

These are multiples of 5.

If you take away 10 it gives the 5 times table.

I think the 8th sum will be

$$10 + 8 \times 5 = 50$$

$$8 + 9 + 10 + 11 + 12 = 17 + 21 + 12$$

$$= 50 \quad \checkmark$$

I was right.

All the ticket prices are multiples of £7.50. They are one times, two times, three times and four times. I think there are lots of choices for different prices together.

I think there is always at least £5 left because that is the remainder when you divide £200 by £7.50. Whenever there is more than £7.50 left you can buy a child field ticket.

Network Q Rally		
Ticket Price	Adult	Child
Grandstand	£30	£22.50
Field	£15	£7.50

Up to 6 Adults can have Grandstand tickets.

Up to 13 Adults can have Field tickets.

Up to 8 Children can have Grandstand tickets.

Up to 26 Children can have Field tickets.

But I don't think there would be lots of children and only a few adults.

Adult Grandstand	6	5	4	3	2	1	0	£5 left over each time.
Adult Field	1	3	5	7	9	11	13	

Adult Grandstand	6	5	4	3	2	1	0
Child Grandstand	0	2	3	4	6	7	8
Money left over £	20	5	12.50	20	5	12.50	20

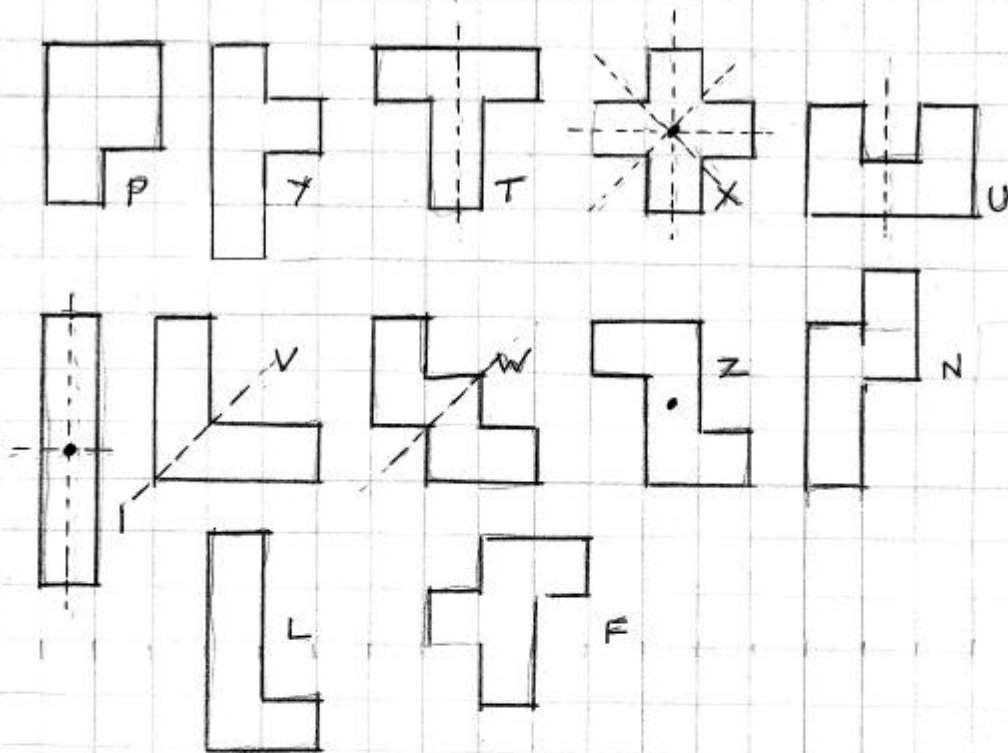
For £20 they could buy 1 Adult field or 2 Child field, with £5 left over.

For £12.50 they could buy 1 child field with £5 left over.

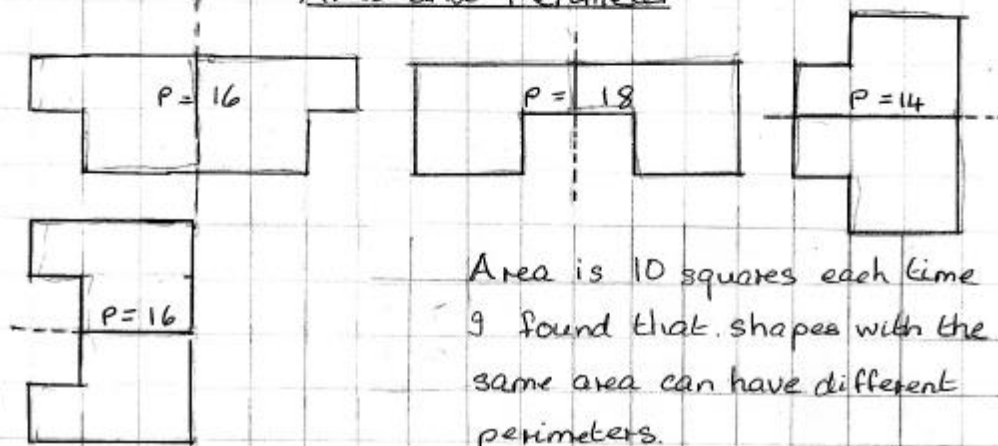
Adult Field	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Child field	0	2	4	6	8	10	12	14	16	18	20	22	24	26
£5 left each time.														

There are lots more choices choosing three or four different tickets, but I think there will always be £5 left.

Pentominoes



Area and Perimeter



Match Up

$\frac{1}{4}$	$\frac{2}{9}$	25%	0.25	$\frac{25}{100}$
$\frac{1}{2}$	$\frac{50}{100}$	50%	0.5	$\frac{5}{10}$
$\frac{3}{4}$	0.75	$\frac{75}{100}$	$\frac{6}{8}$	75%
$\frac{3}{10}$	$\frac{6}{20}$	30%	0.3	$\frac{30}{100}$
$\frac{2}{10}$	$\frac{20}{100}$	0.2	$\frac{1}{5}$	20%
0.1	$\frac{10}{100}$	$\frac{1}{10}$	$\frac{2}{20}$	10%

25% of a set of 36 marbles = 9 marbles

$\frac{6}{20}$ of a mass of 1 kg = 300 grams

10% of groceries costing £3.90 = 39p

$\frac{1}{4}$ of a plank of wood measuring 96cm = 24cm

0.75 of the cost of a ticket priced £2.40 = £1.80

$\frac{3}{4}$ of 1 hour 30 minutes = 1 hour $7\frac{1}{2}$ minutes