



# Mathematics Challenge 2014

25<sup>th</sup> January 2014

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**YEAR 3**

**Model Answers**

We provide these model answers of our CWN: Mathematics Challenge 2014 exam to help parents.

Please note that for some problems there are more than one possible answer.

Some questions are open ended.

We strongly advise all children to practise the papers and think hard before looking at the answers provided.

Full answers and explanations will be provided on our feedback sessions.

In general, we expect units, directions, sensible answers and reasons in all questions.

**Q1)** Here are two classes of stamps:  
Stamp A costs 60p  
Stamp B costs 50p.

Stamp A:  
(1<sup>st</sup> class)



60p

Stamp B:  
(2<sup>nd</sup> class)



50p

Jim posts a parcel. It costs £2.10.

He uses four of these stamps.

How many stamps of each class does he use?

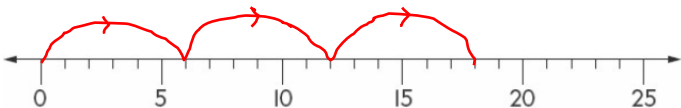
Stamp A: 1

Stamp B: 3

(1 mark)

**Q2)** John worked out the answer to  $6 \times 3$  on a number line.

Show (using hops) how John could have worked out the answer on this number line.



(1 mark)

**Q3)** Use the following digits to complete the calculations below:

2 5 7 1

You may use each digit more than once.

$$\boxed{7} + \boxed{1} \boxed{8} = \boxed{2} \boxed{5}$$

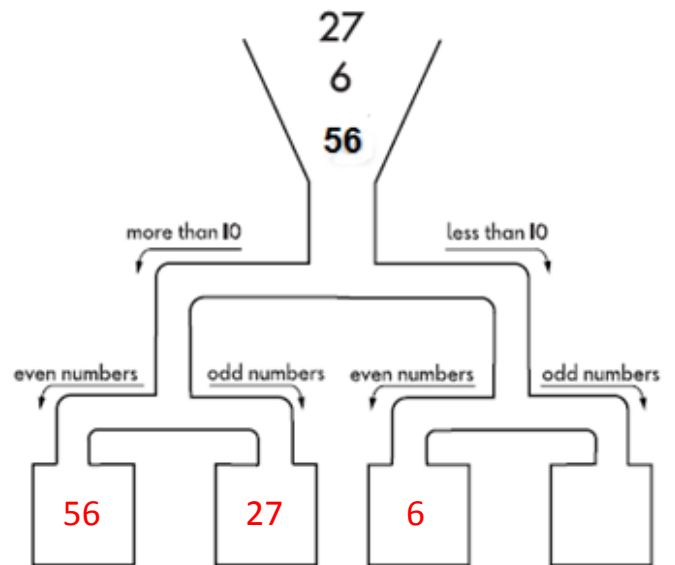
$$\boxed{2} \boxed{5} \times \boxed{3} = \boxed{7} \boxed{5}$$

or  $\boxed{1} \boxed{7} \times \boxed{3} = \boxed{5} \boxed{1}$

(2 marks)

**Q4)** Here is a way to sort numbers.

Sort them using following criteria.



(3 marks)

**Q5)** Dan the detective looked for a number.



Dan found a two-digit odd number. One of its digits was half the other. The number was less than 50.

What number did Dan find?

Answer: 21

(1 mark)

**Q6)**

**(a)** Ten children can fit in one van. There are 64 children going on a trip. How many vans are needed?

7

(1 mark)

**(b)** Ten pence is needed to buy a banana. John has 64 pence. How many bananas can he buy?

6

(1 mark)

**Q7)**

**(a)** Take five coins: 1p, 2p, 5p, 10p, 20p.

Put them in a row using these clues.

- The total of the first three coins is 27p.
- The total of the last three coins is 31p.
- The last coin is double the value of the first coin.

Answer:

5p , 2p , 20p , 1p , 10p

(2 marks)

**(b)** Take six coins: two 1p, two 2p and two 5p.

Put them in a row using these clues.

- Between the two 1p coins there is one coin.
- Between the two 2p coins there are two coins.
- Between the two 5p coins there are three coins.

Answer:

2p , 5p , 1p , 2p , 1p , 5p

or in reverse order:

5p, 1p, 2p, 1p, 5p, 2p

(2 marks)

**Q8)** Sort and place the following numbers in the diagram below:

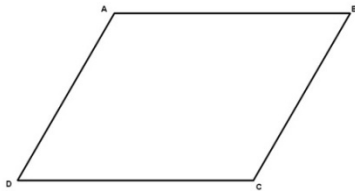
0, 1, 10, 100, 1000, 120

	odd	not odd
a 3-digit number		100 120
not a 3-digit number	1	0 10 1000

(1 mark)

**Q9)**

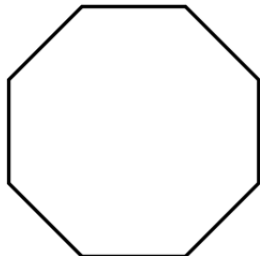
(a) How many lines of symmetry has a **general** parallelogram?



Answer: 0

(1 mark)

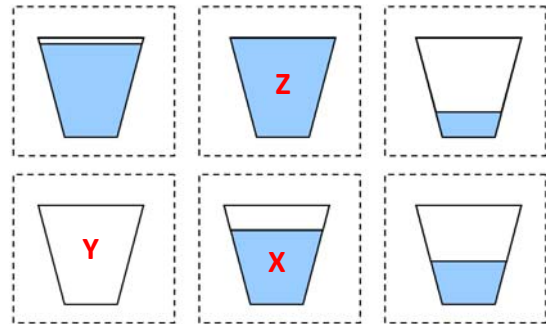
(b) How many lines of symmetry has a **regular** octagon?



Answer: 8

(1 mark)

**Q10)** Label the cup that is **just above** half full as **X**, the **empty** cup as **Y** and the **full** cup as **Z**.



(1 mark)

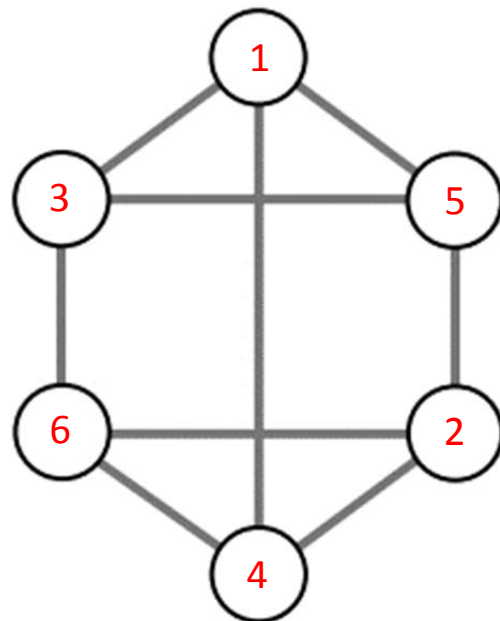
**Q11)** Use each of the numbers 1 to 6 only **once**.

Write one number in each circle.

Numbers next to each other must not be joined. For example, 3 must not be joined to 2 or 4.

1 2 3 4 5 6

Accept any rotation of these numbers that satisfies the criteria. For example:



(2 marks)

**Q12)**

(a) Circle the number that is **closest** to 700.

750    **672**    651    69    770

(1 mark)

(b) **Estimate**    82 x 28

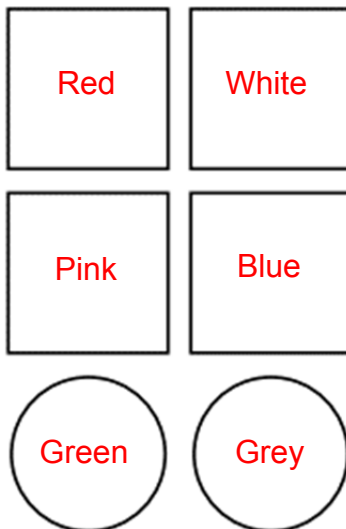
2400

(1 mark)

**Q13)** Using the clues below, **write** the colour of each shape.

Clues:

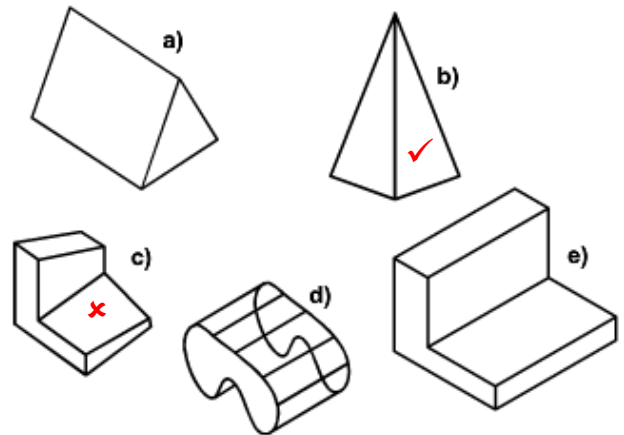
- Red is not next to grey.
- Blue is between white and grey.
- Green is not a square.
- Blue is on the right of pink.



(2 marks)

**Q14)**

Here are some 3D shapes:



(a) Tick (✓) the shape(s) that are pyramids.

(1 mark)

(b) Put a cross (X) over the shape(s) that are neither pyramid nor prism.

(1 mark)

**Q15)**

(a) Circle the number(s) which gives remainder 2 when divided by 7

7, **9**, 11, 13, 15, 17

(1 mark)

(b) Which of the following are **cardinal** numbers?

Tick the correct answer(s). There may be more than one.

- Twenty-six
- Twenty-sixth
- Thirty-eight
- Fifteen
- 15<sup>th</sup>
- Eleven

(1 mark)

(c) Which of the following are **ordinal** numbers?

Tick the correct answer(s). There may be more than one.

- Eighth
- Eighty
- 8<sup>th</sup>
- Eighteen
- Eight hundred

(1 mark)

**Q16)**

(a) Write suitable numbers in each box to make this correct.

Any valid answer, for example:

$$\boxed{1} \times \boxed{1} = \boxed{1} \div \boxed{1}$$

(1 mark)

(b) Which number makes the equation true?

$$416 + 239 = \boxed{137} + 518$$

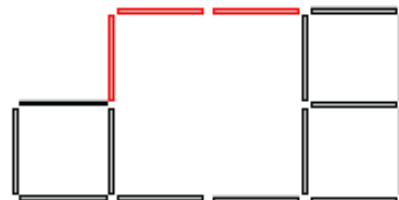
(1 mark)

**Q17)** We have taken 16 matchsticks and have arranged them into five squares, like this:



Now find a way of **moving** (not removing) just 3 matchsticks so that you're left with **exactly four squares**. Draw the final shape.

Any valid answer, for example:



(2 marks)

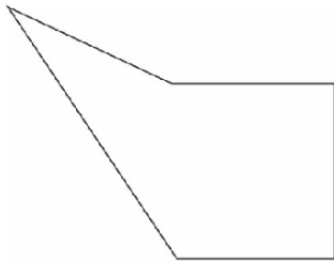
**Q18)** A good person had fallen into a pit that was 60 meter deep. To his horror, there was a person already in the pit who was naughty.

Each day the good person climbed 3 meters, but the naughty person pulled him down 2m at night.

How many days did it take for the good person to escape from the pit?

59 days  
(1 mark)

**Q19)** Look at this shape and its internal angles.



(a) How many acute angles does it have?

1 (1 mark)

(b) How many obtuse angles does it have?

1 (1 mark)

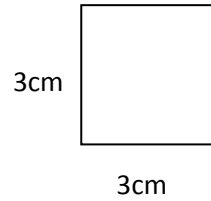
(c) How many reflex angles does it have?

1 (1 mark)

(d) How many right angles does it have?

2 (1 mark)

**Q20)** Jane says the following square has 9 square centimetre area.



John says this has 900 square millimetre area.

Who is right?

Both of them (1 mark)

Why?

1 cm = 10 mm  
 $\therefore 3 \text{ cm} \times 3 \text{ cm} = 30 \text{ mm} \times 30 \text{ mm}$   
 $\therefore 3 \text{ cm} \times 3 \text{ cm} = 900 \text{ mm}^2$

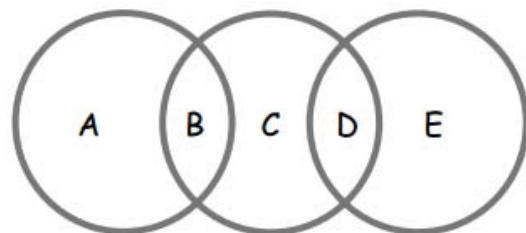
(1 mark)

**Q21)** Use each of the numbers 1 to 5 only once.

1 2 3 4 5

Replace each letter by one of the numbers.

Make the **total** in each circle the same.





Write down the digits you used:

A: 5                      B: 1  
 C: 3                      D: 2  
 E: 4  
 or A: 4, B: 2, C: 3, D: 1, E: 5

(1 mark)

**Q22)** Complete the table:

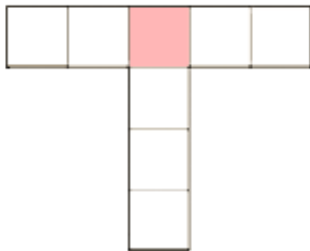
	number of faces	number of edges
 cuboid	6	12
 square-based pyramid	5	8

(2 marks)

**Q23)**

(a) Shade **half of one quarter** of this shape.

Only 1 square must be shaded, for example:



(1 mark)

(b) Which fraction is less?

$\frac{1}{3}$

$\frac{1}{7}$



Tick (✓) the correct answer:

1/3

1/7

neither, they are equal

(1 mark)

**Q24)** Choose the appropriate unit of measure from the list below to complete each sentence.

litre (l) , millilitre (ml) ,  
Kilogram (Kg) , gram (g) , meter (m)

(a) I can measure the capacity of a bucket in **litres (l)**.

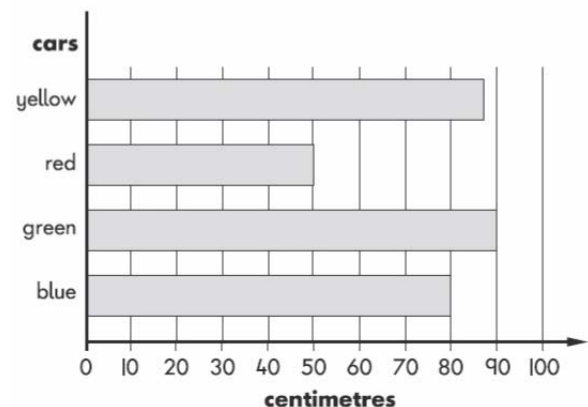
(b) Mum gives medicine using a **millilitre (ml)** teaspoon.

(c) I measure my weight in **kilograms (kg)** using a bathroom scale.

(3 marks)

**Q25)** Your classmates rolled toy cars down a slope. Some cars rolled further than others.

How far the cars rolled



(a) Which coloured car rolled the furthest distance?

**green**

(1 mark)

(b) How much further did the green car roll than the red ?

**40 cm**

(1 mark)