Mathematics Challenge 2015

by

Children's Well-wishers Network (CWN)

YEAR 3

Mark Scheme

Q1) Complete:

(a)

$$\begin{array}{r} 7\ \boxed{0}\ 7 \\ +\ \boxed{9}\ 9\ 9 \\ \hline 1\ 7\ 0\ 6 \end{array}$$

(1 mark)

(b)

$$\begin{array}{r} 4\ 9\ 5 \\ -\ 1\ \boxed{7}\ 6 \\ \hline \boxed{3}\ 1\ 9 \end{array}$$

(1 mark)

Q2) Multiplying by 100 always appends two zeros on the right.

Is the above statement right or wrong?

Wrong

(1 mark)

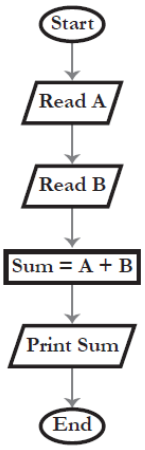
If wrong, give an example.
If correct, write "Not Applicable".

Many possible decimal numbers.

E.g: 2.5

(1 mark)

Q3) The following is an example of a flowchart to solve the problem:



Finding sum of 845 and 247

Start
|
A= 845
|
B= 247
|
Sum= 845+ 247
|
Sum= 1092
|
End

"Find the sum of 845 and 247"

(a) What are the **inputs** of this problem?

845 and 247

(1 mark)

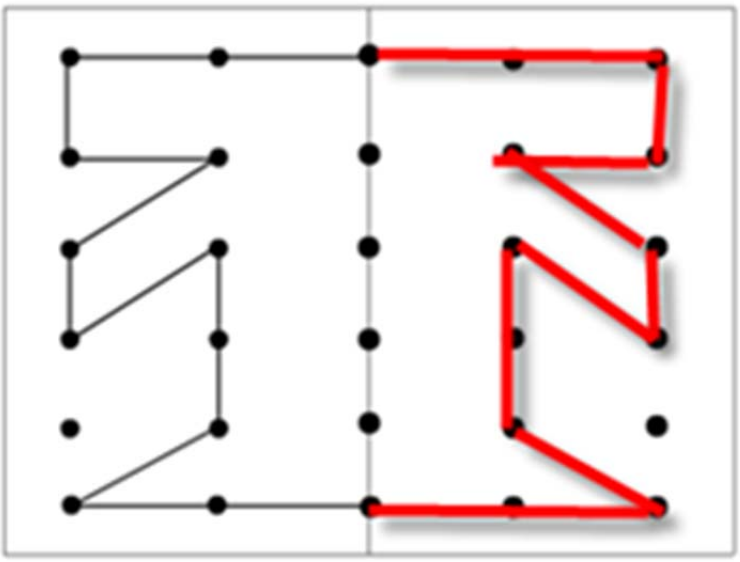
(b) What is the **output** of the problem?

1092

(1 mark)

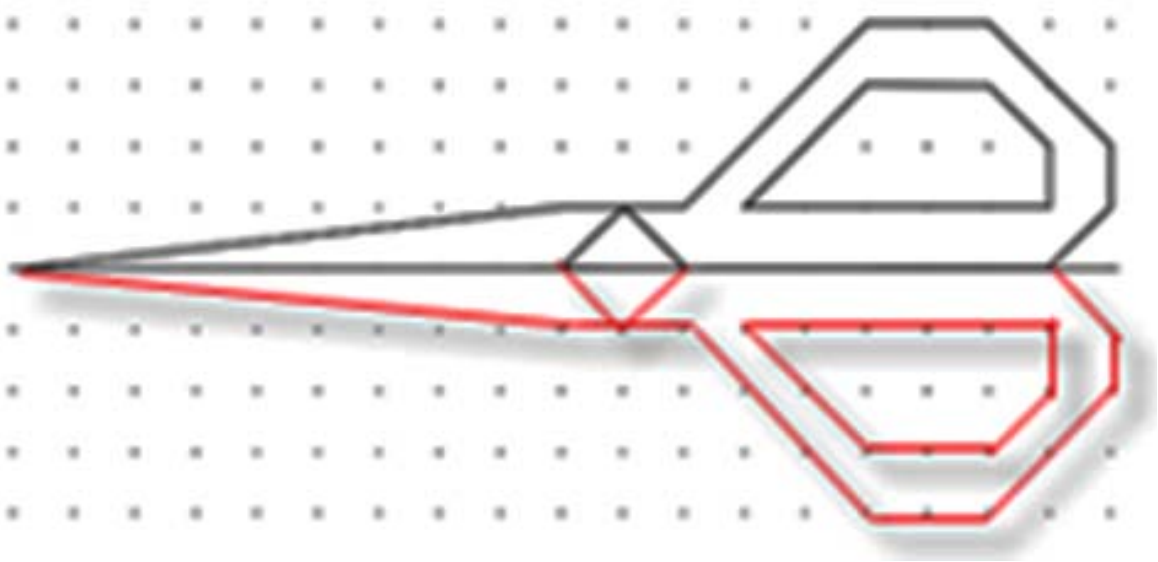
Q4)

(a) Complete the diagram using the vertical line of symmetry. Use a ruler.



(1 mark)

(b) Now complete the following diagram using the horizontal line of symmetry. Use a ruler.



(1 mark)

Q5) Your mum wishes to make a cake for your birthday party. She can buy sugar only in kilograms (kg).

A cake for 4 people needs 6 kg of sugar.

You have invited 26 people for your party.

How much of sugar does she need to buy?

Show how you work it out.

4 : 6 kg

2 : 3 kg

26: 39 kg

Answer: 39 kg

(2 marks)

Q6)

(a) A toy cost £36 each in my local store. The shopkeeper says if I buy one I can buy another for only $\frac{7}{9}^{th}$ of the normal price.

How much would a second toy cost?

£28

(1 mark)

(b) Order the fractions in increasing value order:

$$\frac{1}{10}, \quad \frac{1}{5}, \quad \frac{1}{3}$$

$$\frac{1}{10}, \frac{1}{5}, \frac{1}{3}$$

(1 mark)

Q7)

(a) A set of pencils cost £3.00.

Gemma saves 25 pence a week from her pocket money.

How many weeks does it take her to save enough money to buy the pens?

12

(1 mark)

(b) If she saves 20 pence a week will it take more weeks or less?

Cross-out the word that is not correct.

More ~~/ Less~~

(1 mark)

Q8) Mum wants to buy a bag of rice.

(a) If a bag of rice costs £3.98 estimate how much would it cost for 8 bags.

£32 or £31.84

(1 mark)

(b) She gives £50 to the shopkeeper to buy 8 bags of rice.

If each bag of rice has been marked as $1\frac{1}{4}$ kg what is the total weight of the rice she bought?

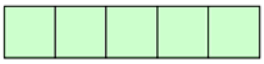
10 kg

(1 mark)

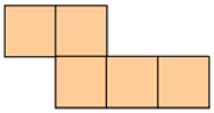
Q9) Here are two pentominoes labelled **A** and **B**.

Each tiny square is a square of 1 unit of length.

A



B



Name two features that are similar in these two pentominoes.

1. Perimeter

2. Area (or number of squares)

(2 marks)

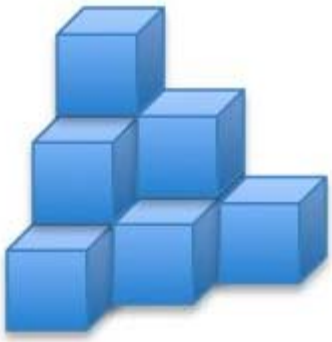
Q10)

(a) Looking from the top of this pyramid how many rings can be viewed?

6

(1 mark)

(b) This pile is made from 3 layers of cubes.

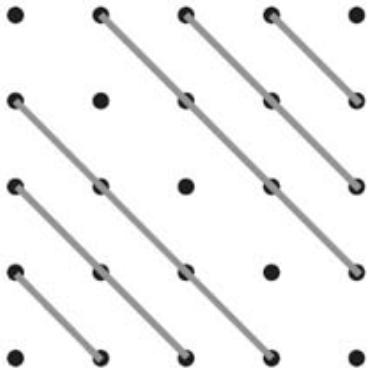


How many cubes are there?

10

(1 mark)

Q11)



(a) How many pairs of **parallel lines** are shown in the above diagram?

15

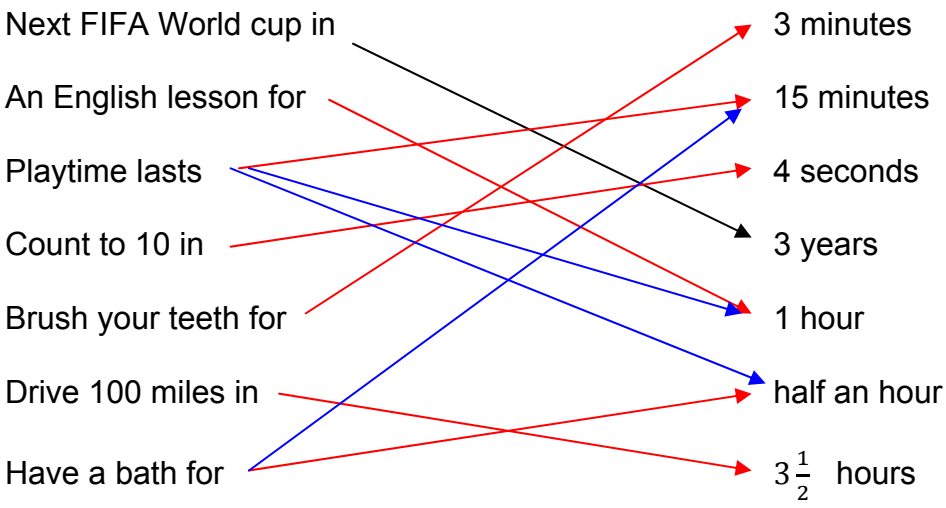
(1 mark)

(b) How many pairs of **perpendicular lines** are shown in the diagram?

None

(1 mark)

Q12) Draw a linking line from the event to the most appropriate **duration**.
The first one is done for you.



(½ x 6 = 3 marks)

Q13) A route planner says from Heathrow to Clapham is 17 miles and from Clapham to Heathrow 16 miles.

Could it be correct?

Yes

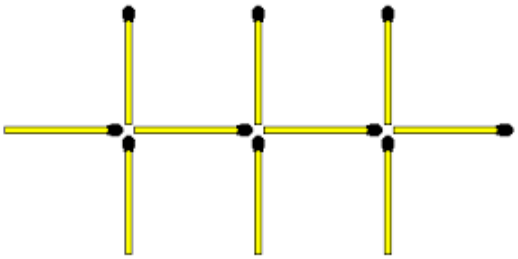
(1 mark)

Why?

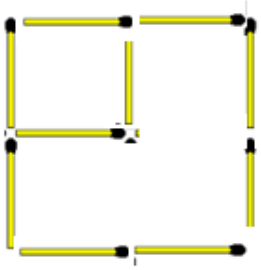
Accept any sensible answer, for example:
The routes could be different due to one-way roads.

(1 mark)

Q14)

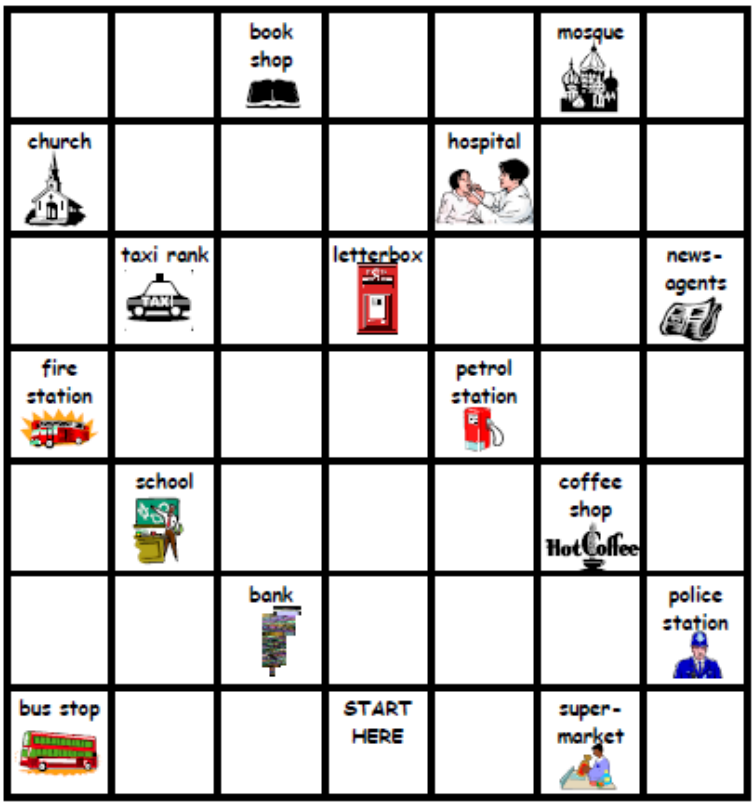


There are no squares in the above matchstick arrangement.
Move 4 matchsticks to form 2 squares.
The 2 squares don't have to be equal in size.
Draw the final shape.



(1 mark)

Q15)



(a) Describe the compass direction of the police station from the letterbox.

South-East **(1 mark)**

(b) From the start, go NORTH 4 squares and then go 3 squares to the EAST. Where are you now?

Newsagents **(1 mark)**

Q16) Which number comes next in this sequence:

1, 5, 3, 0, 4, 5, 6

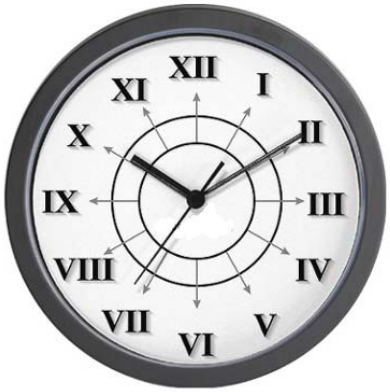
(½ mark)

Why?

First digit of next multiple of 15

(½ mark)

Q17) This traditional Roman numeral clock with 3 hands shows the current time:



What would be the time after 3 hours 55 minutes?

2:05

Or 5 past 2
Or 14:05

(1 mark)

Q18)

(a) There are 3 numbers.

Taking in pairs their SUMs are 5, 7 and 10.

What are those 3 numbers?

6 , 4 , and 1.

(1 mark)

(b) John thought of three numbers. He paired them in three different ways and multiplied them to find the product. The products were 15, 24 and 40.

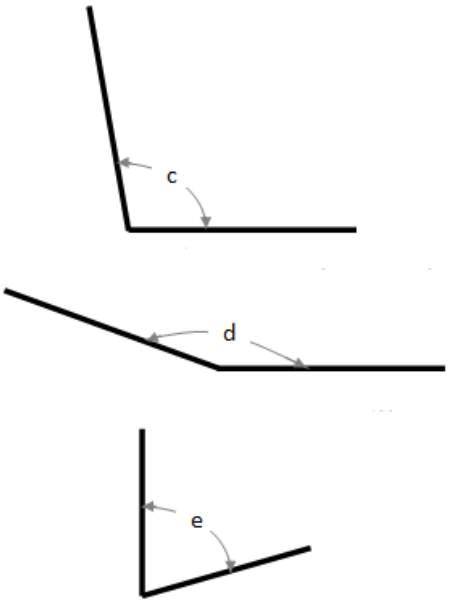
What were the numbers?

3 , 5 , 8.

(1 mark)

Q19)

(a) Estimate the angles c , d, and e.



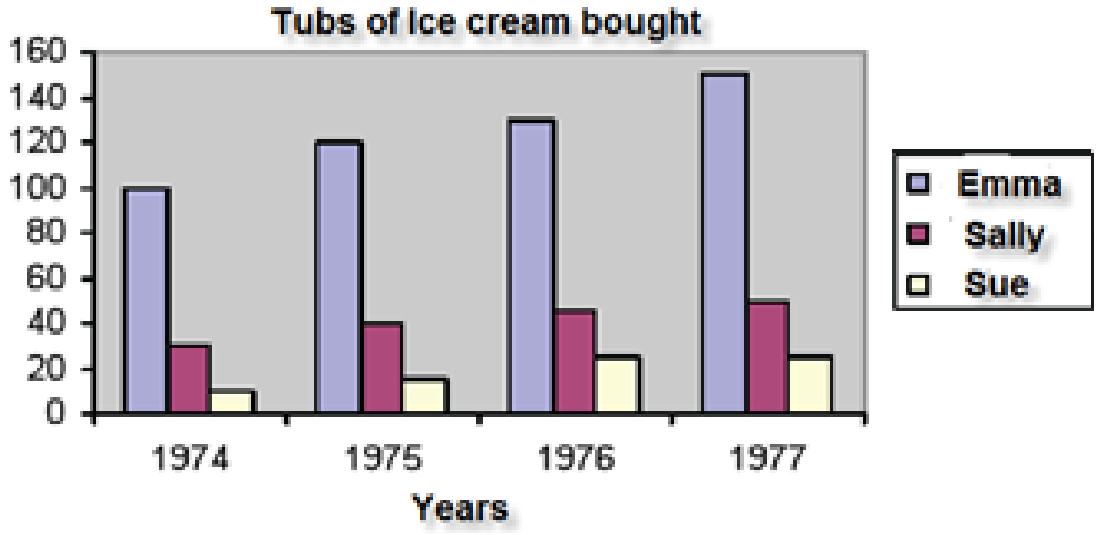
Estimate of c: Accept 95 - 110 °

Estimate of d: Accept 140 - 160 °

Estimate of e: Accept 50 - 70 °

(3 marks)

Q20)



(a) John is the father of the three girls: Emma, Sally and Sue.

He says: "As his girls grow they demand him more ice cream."

Is that true generally?

Yes

(1 mark)

(b) If there is an exception, who is the exception?

Sue

(1 mark)

When does she start to realise that ice cream is not good for her?

Between 1976 and 1977

(1 mark)

Q21)

(a) Victor caught a train to Glasgow at 1:25 pm. The journey lasted 2 hours and 45 minutes. At what time did Victor arrive in Glasgow?

4:10 pm

(1 mark)

(b) Victoria is at home. She wants to meet Victor at quarter past 3. If the journey takes 3 hours 45 minutes, at what time should she leave home?

Half past 11

(1 mark)

Q22) Jenny is on the allotment with her Mum to plant some flowers in rows of pots. She has less than 200 but more than 150 flowers.

The number of pots is not a problem for her. She has plenty of them, but they need to be arranged in a rectangular fashion in rows.

Jenny plants flowers in two rows of pots and has one clove left over.

So she tries again. She plants flowers in three rows and has one left over.

So she tries again. She plants cloves in four rows and has one left over.

So she tries again. She plants cloves in five rows and has one left over.

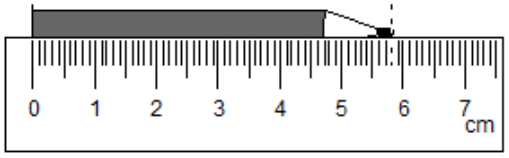
How many flowers does she have?

181

(2 marks)

Q23)

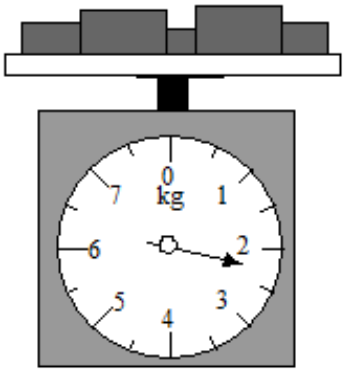
(a) What is the length of the pencil to the nearest centimetre?



6 cm

(1 mark)

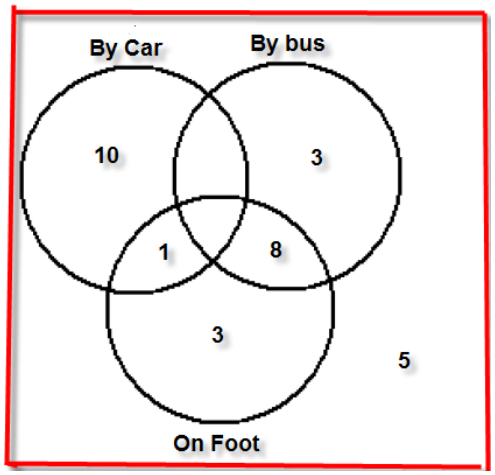
(b) Write down the total weight of the blocks on the scale to the nearest kilogram.



2 kg

(1 mark)

Q24) This Venn Diagram shows how pupils of class 3C come to school.



(a) How many pupils use both car and bus?

None

(1 mark)

(b) How many pupils use modes of transport other than car, bus or foot?

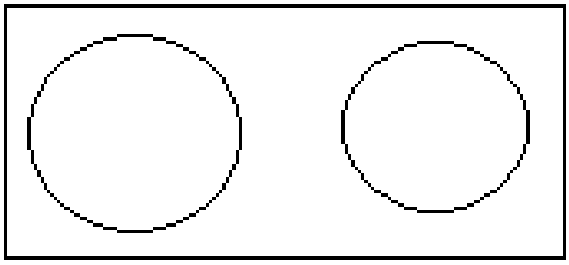
5

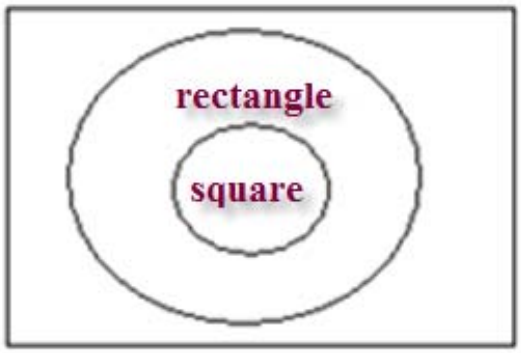
(1 mark)

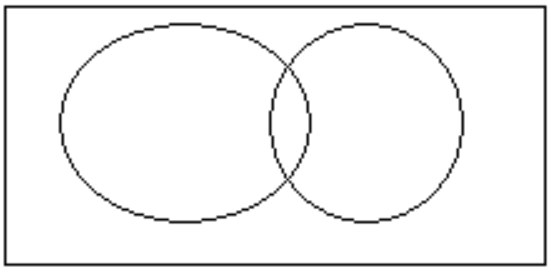
Q25) A Venn diagram can be used to explain this statement:

All squares are rectangles but not vice versa.

Write the words "Rectangle" and "Square" in the correct diagram.







(2 marks)

