



Mathematics Challenge 2015

by

Children's Well-wishers Network (CWN)

YEAR 4

Mark Scheme

We provide mark schemes of our CWN Mathematics Challenge 2015 examination papers 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)

(a) When John buys pencils in singles each costs him 10 p and when he purchases them in dozens, each dozen costs £1. Should he buy them in dozens or singles?

- Accept any answer:
 [1] We cannot decide.
 [2] Dozen
 [3] Single
 [4] Dozen and Singles

(½ mark)

Justify your answer:

- Accept any justification:
 [1] It depends on how many pencil he needs / It depends on how much he has.
 [2] He wants multiple of 12 pencils. Buying dozen will be cheaper.
 [3] He need only less than 12 / He has less than £1
 [4] He does not want buy a multiple of 12.

(½ mark)

(b) There is an offer in your local shop:

Buy any 2 for £3.00

Yeo Valley 0% Fat
 Greek Style
 Yoghurt Lemon
 450g
£1.60/unit

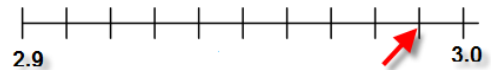


How much will you save by buying 4 pots of lemon yogurt?

40p

(1 mark)

Q2)



(a) Estimate the number shown by the red arrow.

2.99 (1 mark)

(b) Express your answer to nearest whole number.

3 (1 mark)

Q3)

(a) Express 0.33 in reduced fraction form.

$\frac{33}{100}$ (1 mark)

(b) Which is greater, 0.3 or $\frac{1}{3}$?

$\frac{1}{3}$ (1 mark)

Q4)

(a) The travelling distance from London to Manchester is different from Manchester to London.

Is this possible?

Yes

($\frac{1}{2}$ mark)

Why?

Certain routes are one-way

($\frac{1}{2}$ mark)

(b) The straight line distance from L to M is different from the distance from L to M.

Is that possible?

Yes

($\frac{1}{2}$ mark)

Why?

Because L and M are on the surface of closed 3D object

($\frac{1}{2}$ mark)

Q5) Bill ordered mango juice. He first ordered 1 litre and then ordered half of the previous order. He then ordered half of the previous order. He went on ordering in this manner.

After 3 orders how much might he have ordered all in all?

1 and three-quarter litres or $1\frac{3}{4}$ litres
($\frac{1}{2}$ mark)

After 4 orders how much might he have ordered all in all?

1.875 litres or $1\frac{7}{8}$ litres
($\frac{1}{2}$ mark)

After 5 orders how much might he have ordered all in all?

1.9375 litres or $1\frac{15}{16}$ litres
($\frac{1}{2}$ mark)

If Bill went on ordering forever how much might he have ordered in total approximately?

2 litres
($\frac{1}{2}$ mark)

Q6)

(a) How many different letters are there in the word "mathematician"?

8 (1 mark)

(b) Cross out the word(s) that cannot be made using the letters in the above word "Mathematician" from the list below.

Manitha, ~~Mahinda~~, Mahima, Maniac

(1 mark)

Q7) Carlie is deciding what to wear to school.

She has a blue and a red shirt, and she has a green, a red, a black, and two blue skirts.

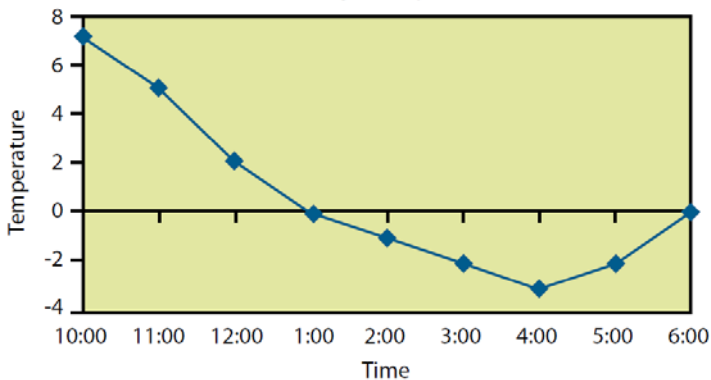
If she can only wear different colour combination of shirt and skirt, how many different combinations can Carlie pick?

Answer: **7**

(1 mark)

Q8) Look at this graph. Temperatures are in degrees Celsius ($^{\circ}\text{C}$).

Overnight temperature



(a) What type of the graph is this?

Line Graph

($\frac{1}{2}$ mark)

(b) How long did the temperature stay above 0°C ?

3 hours (or 3:00)

($\frac{1}{2}$ mark)

Q9)

(a) Find the sum of these numbers:

7 7.0 7.00 7.000

28.000 or 28

($\frac{1}{2}$ mark)

(b) Workout the difference between the highest and lowest value in the above set of four numbers.

0

($\frac{1}{2}$ mark)

Q10)

(a) Draw a ring around the fraction which is equal to **0.025**.

$\frac{1}{4}$ $\frac{1}{40}$ $\frac{1}{400}$ $\frac{4}{10}$ $\frac{4}{100}$

(1 mark)

(b) Add these fractions:

$\frac{1}{8}$ $\frac{6}{10}$ $\frac{5}{8}$ $\frac{3}{10}$

Answer: **$1\frac{13}{20}$**

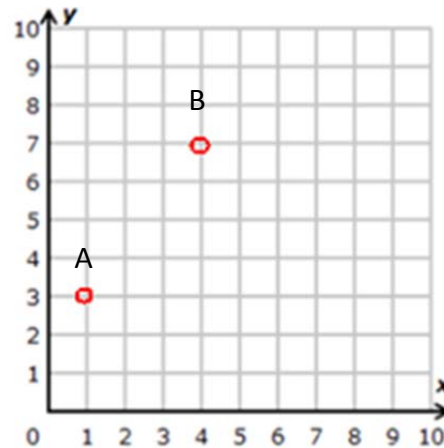
(1 mark)

Q11) Write these times in the 24 hour clock.

- (a) 10.30 in the morning
10:30 (½ mark)
- (b) Quarter past 10 in the morning
10:15 (½ mark)
- (c) 2 o'clock in the afternoon
14:00 (½ mark)
- (d) 5pm
17:00 (½ mark)
- (e) 6.30 in the evening
18:30 (½ mark)
- (f) Midnight
00:00 (½ mark)

Q12)

(a) Plot the points A (1, 3) and B (4,7) on the coordinate plane:



(2 marks)

(b) Find the distance AB if 1 unit represents 1 cm.

5 cm (1 mark)

Q13)

(a) Complete the Tally chart :

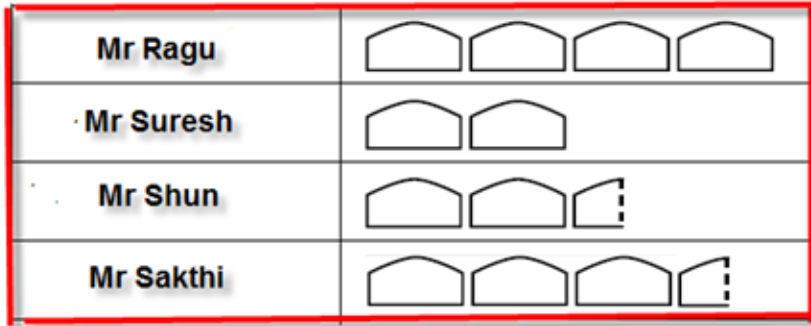
Class	Boys	Girls	Total
A	HHH HHH III	HHH HHH HHH	28
B	HHH HHH IIII	HHH HHH HHH II	31
C	HHH HHH HHH	HHH HHH IIII	29
D	HHH HHH III	HHH HHH II	25


(1½ marks)

(b) In which classes are there more girls than boys?

A and B (½ mark)

Q14) The pictogram shows the numbers of loaves of bread made by your friends.



Key:  represents 12 loaves of bread.

(a) Write down the number of loaves of bread made by Mr Shun.

30 (1 mark)

(b) If the total number of loaves made by all four are 144 complete the pictogram.

(3 ½ pictures on pictogram next to Mr Sakthi) (1 mark)

Q15)

(a) Workout :

$$4 + 4 \times 4 + 4 + 4 \times 4 + 4$$

44 (1 mark)

(b) Complete:

```

      8 4
    x 6 3
    -----
      2 5 2
+   5 0 4 0
-----
    5 2 9 2
  
```

(1 mark)

Q16)

(a) How many containers do you need if you want to pack 412 tennis balls **evenly** so that each container has:

i. 4 balls?

103 containers (½ mark)

ii. 5 balls?

Impossible containers (½ mark)

(b) Divide the balls in 1 : 3 ratio.

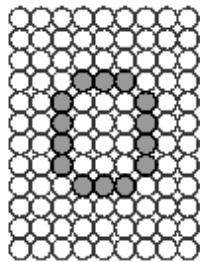
103 balls : 309 balls (½ mark)

(c) You want to paint 740 blocks with these colours: red, orange, yellow, green and purple, in nearly equal numbers. How many should be coloured with each colour?

148

(½ mark)

Q17)



The above is a part of a traffic signal of the letter “o” shown by a grid of tiny circular lights. The above letter can be bolded by **also** lighting any unlit cell immediately **left** to the cells currently lit. How many cells **need to be lit** to show the bolded “o”?

24

(Award ½ mark for 10.)

(1 mark)

Q18)

(a) Find two consecutive numbers which add up to give 99.

49, 50

(1 mark)

(b) Find three consecutive numbers which add up to give 60.

19, 20, 21

(1 mark)

(c) Find four consecutive numbers which add up to give 310.

76, 77, 78, 79

(1 mark)

(d) Find two consecutive even numbers whose product is 168

12, 14

(1 mark)

Q19) A new train arrives at Jaffna station with 100 passengers on board. $\frac{3}{5}$ of the passengers get off from the train in Jaffna to go home, of which 60 passengers are taken by the police for questioning.

How many passengers go home?

None

(1 mark)

Q20)

(a) Look at this series:

V, VIII, XI, XIV, _____, XX, . .

What number should fill the blank?

XVII

(Award ½ mark for 17)

(1 mark)

(b) Look at this series:

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

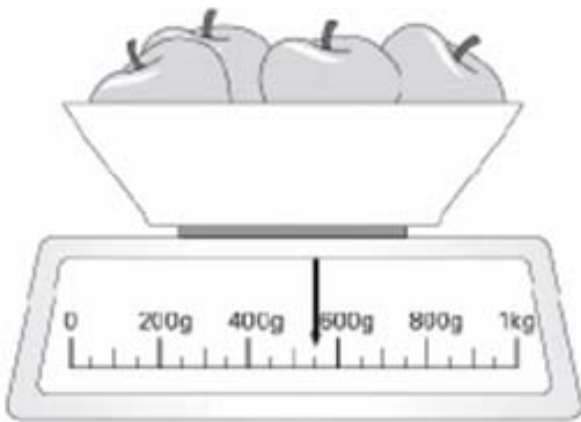
What number should come next?

$\frac{1}{8}$

(1 mark)

Q21)

(a)



What is the total weight of the apples?

550 g

(1 mark)

(b) The cost of a bag of apples is £1.20.



Assume you have enough number of coins in each of the above denominations and have no coins of any other denominations.

How can you pay for 1 bag of apples?

Many possible answers. E.g.:

50p + 20p + 20p + 20p + 10p

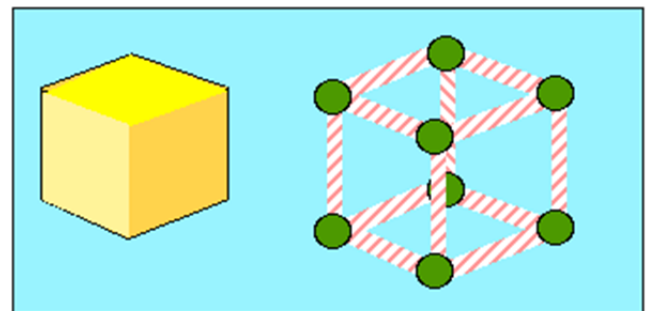
(½ mark)

If you want to pay using as many coins as possible how will you pay?

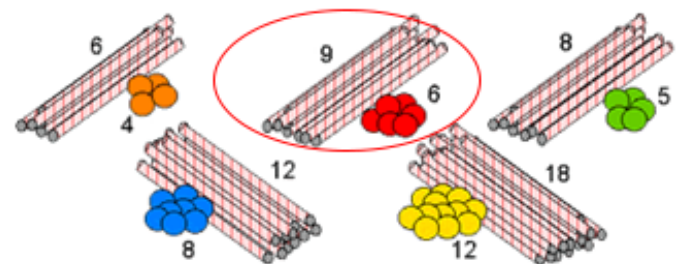
Using twelve 10p coins

(½ mark)

Q22) This shows a cube and a skeleton cube:



Here are some piles of modelling clay balls and straws:



Which of the piles needed to exactly make a triangular prism?

Circle the right pile.

(1 mark)

Q23)



Nature has lot of beautiful mathematical patterns of which the above are examples. Write the mathematical name of this pattern.

Spiral

(1 mark)

Q24)

(a) I am thinking of a 3-D shape.

It has a circular base and has no other flat surfaces.

What is the name of the 3-D shape?

Answer: **cone or hemisphere**

(1 mark)

(b) Name the shape that has the following properties:

- Four equal sides
- Four right angles
- Opposite sides parallel
- Diagonals bisect each other at right angles
- Four lines of symmetry
- Rotational symmetry of order four

Shape name: **Square**

(1 mark)

(c) Name the shape that has the following properties:

- Two pairs of equal sides
- Four right angles
- Opposite sides parallel
- Diagonals bisect each other
- Two lines of symmetry
- Rotational symmetry of order two

Shape name: **Rectangle**

(1 mark)

Q25) Complete the sentences below.

(a) Two angles are called **supplementary** when they ...

add up to 180° /

are on a straight line.

(1 mark)

(b) Two angles are called **complementary** when they ...

add up to 90°

(1 mark)

(c) A straight line angle is ...

180°

(1 mark)

(d) A reflex angle is ...

Greater than 180°

(1 mark)