

Year 8 Mathematics Challenge

The 4 Rounds

Round 1 General Maths questions

Round 2 Memory Round

Break

Round 3 Estimation Round

Round 4 General Maths questions

60 marks for each round.

Preliminaries

- If your school has more than one team, decide on a 'Team A' and a 'Team B'.
- Make sure you write your team name on each Answer Sheet.
- Units are important! Correct answers with incorrect or missing units will not get full marks.
- Pens/pencils only. No calculators or measuring equipment.
(You will be given a ruler to use in the memory round.)
- Three heats. Top three teams from each heat will go through to the Final on Tuesday 19th June.

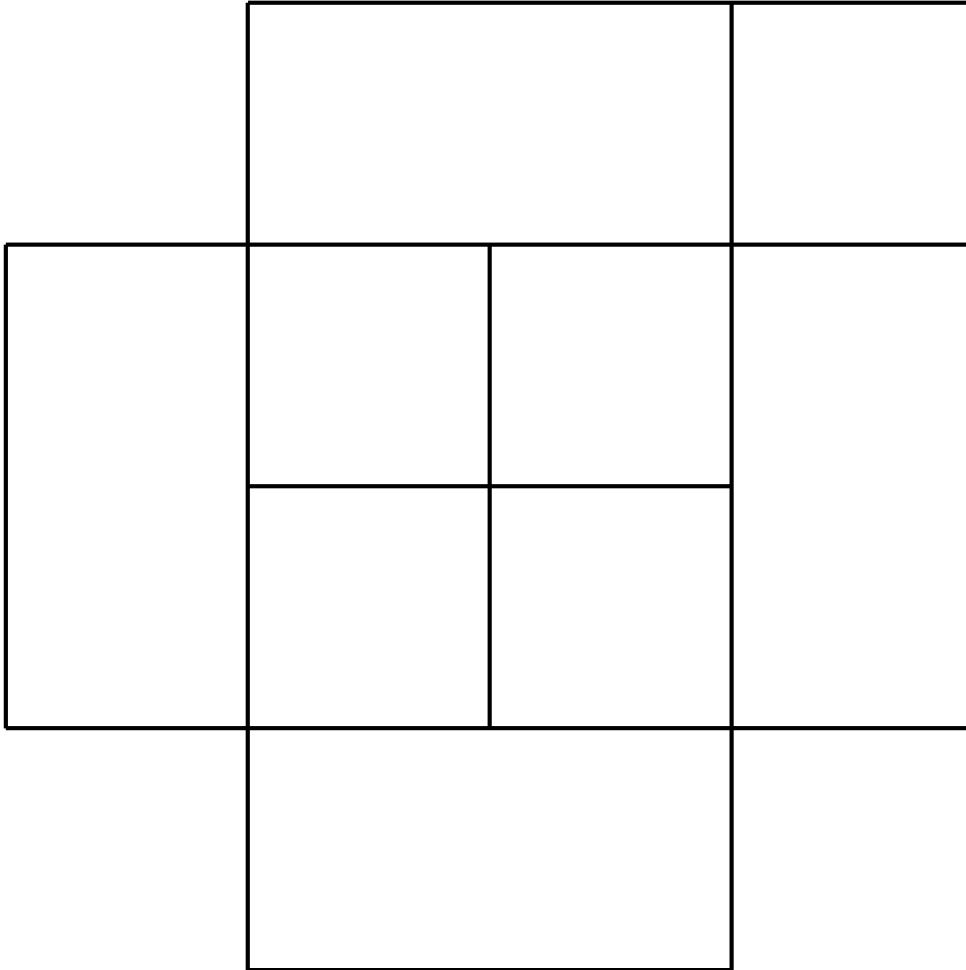
Round 1

**General
Mathematics
Questions**

What is the
smallest number
with exactly 6
factors?

Round 1

Question 2



How many
squares
are there
in this
diagram?

Round 1

Question 3

What are the next **two** numbers in this sequence?

3 7 15 31 63 _____

Joanna's Maths class takes a tables test every lesson.

In the first 5 tests, Joanna's mean score is 6.

In the next 3 tests, her mean score is 10.

What was Joanna's mean score for all eight tests?

Round 1

Question 5

In this fraction sum, the boxes stand for positive integers.

$$\frac{1}{\boxed{}} + \frac{\boxed{}}{5} = \frac{7}{10}$$

What could the integers be?
Fill them in on the Answer Sheet.

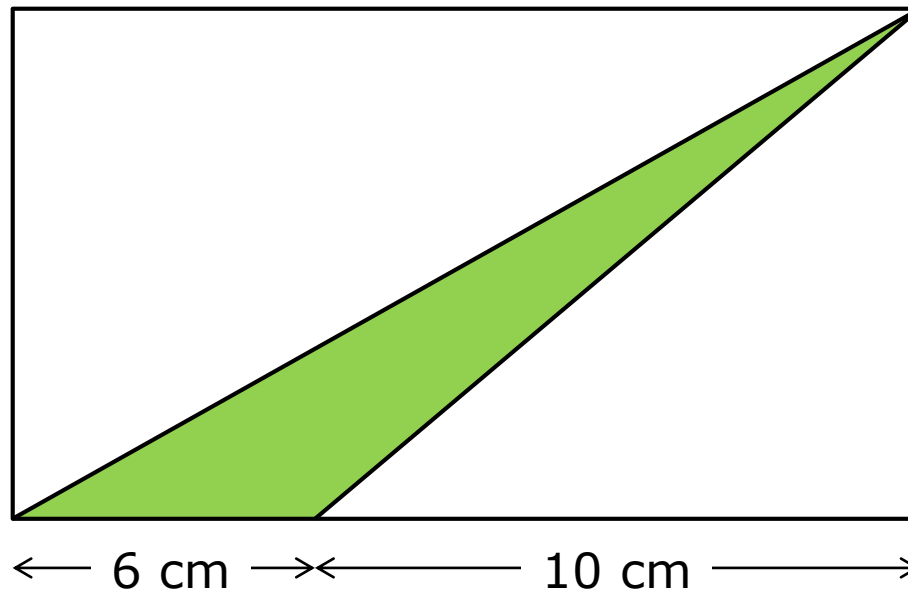
(There are two possible solutions – find both.)

Round 1

Question 6

The area of the green triangle is 15 cm^2 .

(not drawn to scale)



Work out the area of the rectangle.

Round 1: Answers

Q1 12

Q2 11

Q3 127 and 255

Q4 $7\frac{1}{2}$

Q5 $\frac{1}{\mathbf{2}} + \frac{\mathbf{1}}{5}$ and $\frac{1}{\mathbf{10}} + \frac{\mathbf{3}}{5}$

Q6 80 cm^2

Round 2

**Memory
Round**

Memory Round

We have a hidden mathematical poster.

Two members of your team (the **observers**) are allowed to come and look at the poster.

They must then go back and describe it for the other two people (the **scribes**) to draw.


The observers are not allowed to draw the poster, or make notes when they are looking at the poster.

When describing the poster, observers must use words only. They are not allowed to draw anything, or use their hands in any way.

Memory Round

The observers will have four chances to view the poster.

30 seconds to view
2 minutes to describe
30 seconds to view
2 minutes to describe
30 seconds to view
2 minutes to describe
30 seconds to view
2 minutes to describe



Scribes can draw at any time during the whole period.

After this, the team must hand their poster in immediately, with their team name on it.

Only ONE sheet must be handed in per team.

Memory Round

You now have one minute to:

- decide who will be the observers and who will be the scribes;
- find pencils, rubbers, rulers and anything else you might need;
- decide on tactics!

Round 3

**Estimation
Round**

Round 3

Question 1

You are going to see a picture for 10 seconds only.

Estimate the number of coins in the picture.

Round 3

Question 1



Estimate the length of time for which the football is displayed.



Round 3

Question 3

Estimate the
volume the
bottle can
hold.



Round 3

Question 4



Estimate the
mass of the
soup tin.

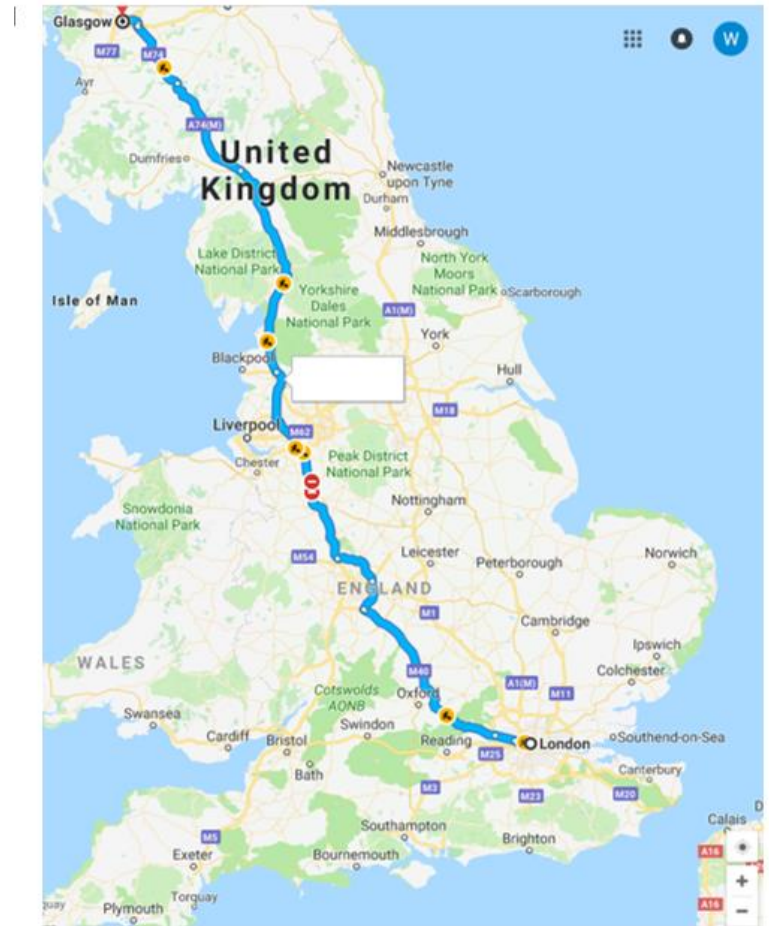
Estimate how many
10p coins could fit in a
straight line across this
hall.



Round 3

Question 6

Estimate the distance from London to Glasgow by road, using the blue route indicated.



Round 3: Answers

(Equivalent answers in alternative units accepted)

Q1 75 to 81

Q2 18 to 20 seconds

Q3 470 to 530 cm³

Q4 300 to 340 grams

Q5 TBD

Q6 643 to 683 km
(402 to 426 miles)

















Round 4

**General
Mathematics
Questions**

Round 4

Question 1

The total cost of each row and column is shown.

				£0.80
				£1.70
				£1.60
				£1.10
£0.90	£1.10	£1.40	£1.80	

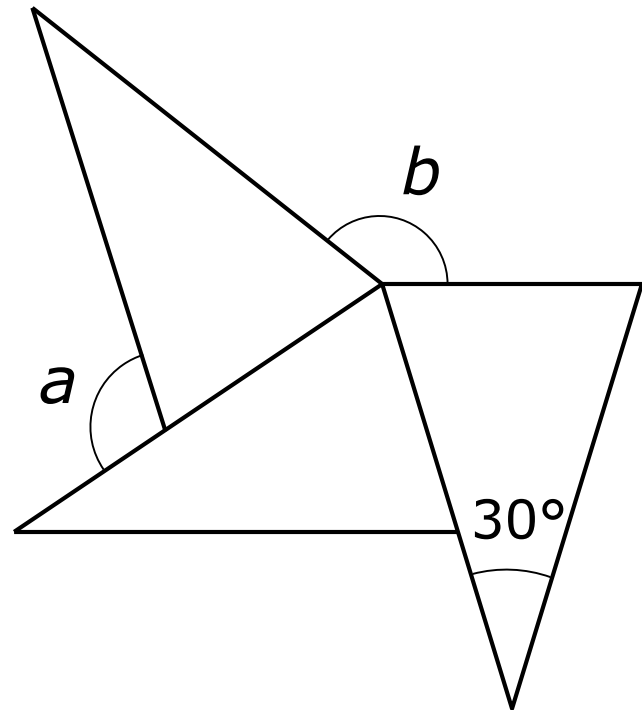
What is the cost of a lemon?



Round 4

Question 2

This diagram shows three congruent isosceles triangles.



Work out the angles marked a and b .

Round 4

Question 3

In a car park, the ratio of cars to vans is 6 : 1.

In the same car park, the ratio of cars to motorbikes is 9 : 4.



What is the ratio of vans to motorbikes?

(Give the answer in its simplest form.)

Round 4

Question 4

Pooja was doing a survey to find out which types of soup were most popular.

She gave people three types of soup to try:



Tomato

Chicken

Mushroom

- One-quarter of people preferred chicken.
- Four times more people chose tomato than chose mushroom.

Pooja drew a pie chart to show her results.
What angle did she draw to represent **tomato** soup?

Round 4

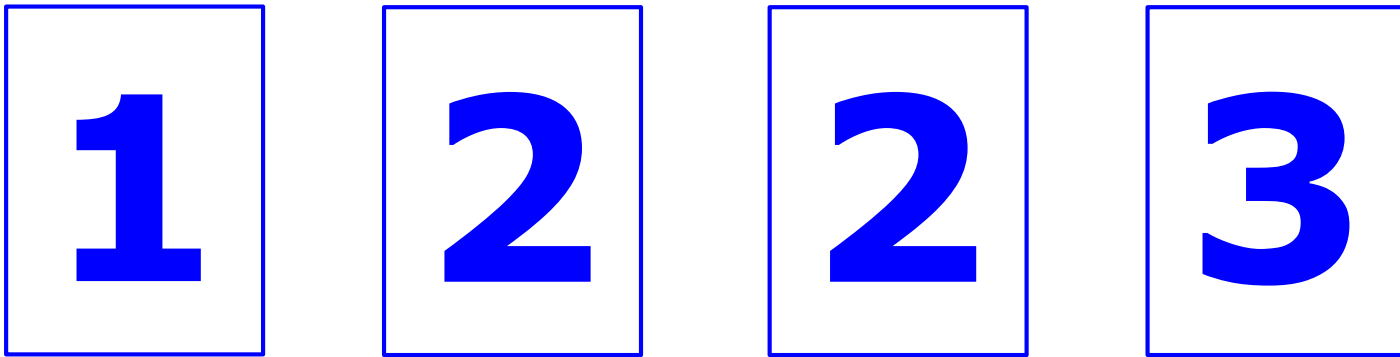
Question 5

Look at this pattern of letters:

A B B C C C D D D D E E E E E A A A A A A B...

If this pattern is continued, what will the 100th letter be?

How many different numbers can be made using **some or all** of these cards?



(For example: 21, 3212, ...)

Round 4: Answers

Q1 30p or £0.30

Q2 $a = 105^\circ; b = 135^\circ$

Q3 3 : 8

Q4 216°

Q5 D

Q6 34

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