

## M1 Maths – Fun and Games

# 12 Question Challenge

### **Aim**

To develop motivation and skills for problem solving and group cooperation.

Students seem to be more prepared to persist and struggle with a problem if they are working as part of a group in competition with other groups than when working by themselves. They will probably think as hard about a maths problem here as they will anywhere.

By discussing and arguing, they get ideas from their peers about how to think effectively mathematically.

### **Procedure**

The students form teams of 3 to 5 people. This can be done in varying ways. For instance, students might choose their own. Other times they might be assigned randomly, e.g. by house or by each person picking a team name from a hat.

During the previous lesson, the students might be told what topics the questions will be on so that those who wish to can revise.

When the teams are organised and seated, the teacher walks around each team handing out question sheets (without answers). They can start when they get their sheet. They write their team and member names at the top of the sheet, then start to answer the questions.

At the end, the teacher walks round again in the same order and collects up.

The teacher marks the papers. It can be an idea to give the students another task while the papers are being marked or to project the questions with the correct answers for them to look at. One point is given per correct answer. The team with the most points wins. If two or more teams are equal and a single winner is needed, the team with the correct answer to the highest number question wins; if those are the same, then the next highest and so on.

The teams are warned 5 minutes and 2 minutes before time-up.

A sample question set is included below.

Different sets can be made up for different age classes or to focus on particular topics. They can be put into the template below.

Alternatively, 12 questions selected from the Maths Teams Challenge Relay Event question sets at the appropriate level provide a source for further general question sets.

## **Variations**

As with the Group Problem Solving game, it is possible to hold inter-class contests.

## **Tips**

Small prizes for the winning teams can help with motivation, but are not really necessary.

**Team Name:**

**Team Members:**

1	2 pies and a sausage roll cost \$15.10 2 pies and 3 sausage rolls cost \$20.50 How much would 3 pies and 2 sausage rolls cost?	\$24
2	How many different ways can you make 40c out of 20c, 10c and 5c coins?	9
3	30 L of water is poured into a rectangular fish tank 60 cm long, 20 cm wide and 50 cm deep. How deep will the water be in the tank?	25 cm
4	What are the factors of 111?	1, 3, 37, 111
5	Find the 12 <sup>th</sup> number in this sequence: 5, 15, 45, 135, ...	885 735
6	Grandma is 3 times Jodie's and twice Ben's age. The three ages add to 99 years. How old is Grandma?	54
7	An inch is 2.54 cm. To the nearest whole number, how many cubic centimetres in a cubic inch?	16
8	How many degrees in one of the interior angles of a regular decagon?	144
9	The six faces of a cube have a combined area of 10 086 m <sup>2</sup> . What is its volume in m <sup>3</sup> ?	68 921
10	Write $\frac{23+25}{20+5 \times 20}$ as a common fraction in simplest form.	$\frac{2}{5}$
11	In the long run a matchbox lands on an end $\frac{1}{20}$ of the times it's dropped. It lands on its side 12% of the times. What fraction of the times does it land flat. Answer as a decimal fraction.	0.83
12	Water freezes at 0°C and 32°F. It boils at 100°C and 212°F. What is 20°C in °F	68

Score: