



UNITED KINGDOM MATHEMATICS TRUST

## **GROUP ROUND**

- Time allowed: 45 minutes.
- There are 15 questions to try to answer in the time allowed.
- Each question is worth *four* marks. A question is marked either correct or incorrect – no partial marks are awarded.
- Some questions are easier than others!
- You will have to decide your team's strategy for this group competition. Do you split up so that individuals work on a few questions each, or do you work in pairs on a greater number of questions? Working all together on all the questions may well take too long. You decide!
- There is only one answer sheet per team. Five minutes before the end of the time you will be told to finalise your answers and write them on to the answer sheet. This answer sheet is the only thing that will be marked.
- Answers should be in their simplest form where appropriate.

## Answer Sheet (Ignore Units)

School Name \_\_\_\_\_

School Number \_\_\_\_\_

<u>Question 1</u>	<u>Question 2</u>
<u>Question 3</u>	<u>Question 4</u>
<u>Question 5</u>	<u>Question 6</u>
<u>Question 7</u>	<u>Question 8</u>
<u>Question 9</u>	<u>Question 10</u>
<u>Question 11</u>	<u>Question 12</u>
<u>Question 13</u>	<u>Question 14</u>
<u>Question 15</u>	<b>Award six points for each correct answer.</b>  <b><u>Total:</u></b>

## **Question 1**

Dennis wants to write down a 3-digit number whose digits are three different prime numbers. How many different 3-digit number of this kind are there?

## Question 2

The 30 members of my class each has a card with one of the numbers from 1 to 30 inclusive on it. The numbers on our cards are all different.

Those who have a square number, triangle number or a prime number show their cards to the teacher.

What is the sum of all the numbers that the teacher cannot see?

### **Question 3**

I walked the 1 kilometre to my grandparents' house, leaving at 9:15, at an average speed of 4km/h.

I returned home at an average speed of 3km/h, arriving home at 16:00 hours.

How long did I spend at my grandparents?

### Question 4

My uncle's garden is 18m long by 12m wide.

One third is a vegetable patch and a quarter is a barbeque patio. The rest is lawn.

What is the area of the lawn?

### Question 5

Last week the exchange rates were €1.20 to £1 and \$1.50 to £1.

I had to pay a bill for €54. What was the equivalent amount in dollars (\$)?

### Question 6

Billy is  $\frac{1}{4}$  of his mother's age now. In another 4 years he will be  $\frac{1}{3}$  of his mother's age.

How old is Billy now?



### Question 7

I have only 50p and 20p coins in a bag. I know there is £28.50 in the bag and there are three 50p coins to every two 20p coins.

How many of each coin are in the bag?

### **Question 8**

An open box with no lid is in the shape of a cube and has a volume of  $216\text{cm}^3$ .

What is the total surface area of the base and the sides of the box?

### **Question 9**

At the school sports day three-legged race each house had two teams. The first place scored 8 points, second 7 and so on until eighth place scored 1 point.

Red house scored 14 points, green house 11, blue house 7 and yellow house scored 4 points.

What were the positions of the two green house teams?

### **Question 10**

The local cricket league's top two teams were unbeaten at the end of July, part way through the season. The Hills were top with 107 points having won 4 of their 8 games and gained 39 team bonus points. The Village, second, were a point behind having won 4 of their games but had only played 7 times. However, they had gained 4 more bonus points than the Hills team.

How many points do you get for a winning a game and how many points for drawing a game?

### **Question 11**

I have four identical isosceles triangles. The two shorter sides of each triangle have length 10cm. The triangles fit exactly to form a square.

What is the area of the square formed by the four triangles?

## **Question 12**

The average age of our challenge team is exactly 12 years 4 months. Our teacher is precisely 20 years older than our average age.

What is the average age of all five of us?

### **Question 13**

Last Christmas I managed to get a discount of one third off a microwave which cost £180 originally, one quarter off a new kettle which would have cost £80, and a printer, whose full price was £140, for half price.

What fraction of the total price of all three items, before any of the discounts were given, did I manage to save?

### **Question 14**

In our football match against a neighbouring school 12 goals were scored altogether. Twice as many goals were scored in the second half as in the first half. Both sides scored at least one goal in each half. At half time we were losing. We won by two goals.

What was the score at half time?



### **Question 15**

The school basketball team scored 300 points in their 10 games this season.

The number of shots that scored 1 point was the same as the number of shots scoring 2 points and the same as the number of shots scoring 3 points. No shot scored more than 3 points.

Two fifths of their shots failed to score any points.

What was the total number of shots that the team made over the 10 games?