



UNITED KINGDOM MATHEMATICS TRUST

## **MINI RELAY ROUND**

- There are 4 rounds to this Mini Relay. Each round contains a set of four questions.
- Each round lasts 8 minutes.
- *Three* marks are awarded for every answer correct on the first attempt or *one* mark awarded if correct on subsequent attempts. A bonus of *three* marks is awarded if there is a correct set of answers after 6 minutes.
- Your team should split into pairs. One pair will be given questions 1 and 3, and the other pair will be given questions 2 and 4.
- You are not allowed to talk to your other pair except through the supervising teacher.
- Question 1 can be solved independently of the other questions. The answer to this question should be written on the answer record sheet and passed to your other pair via your supervising teacher. The second pair will need the answer to question 1 to be able to calculate the answer to question 2, although some work can be done on question 2 before the answer to question 1 is received. The answer to question 1 is referred to as  $T$  (e.g. " $T$  is the number you will receive"). The first pair can then do some work on question 3, but will need the answer to question 2 to finalise their answer, and so on.
- Once question 4 has been answered, or if the time is up, the questions should be handed to the supervising teacher for marking.

## Mini Relay Score Sheet

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

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

| Round A                    |   |   | Round B      |   |   |
|----------------------------|---|---|--------------|---|---|
| <b>A1</b>                  | 3 | 1 | <b>B1</b>    | 3 | 1 |
| <b>A2</b>                  | 3 | 1 | <b>B2</b>    | 3 | 1 |
| <b>A3</b>                  | 3 | 1 | <b>B3</b>    | 3 | 1 |
| <b>A4</b>                  | 3 | 1 | <b>B4</b>    | 3 | 1 |
| <b>Bonus</b>               | 3 |   | <b>Bonus</b> | 3 |   |
| <b>Total</b>               |   |   | <b>Total</b> |   |   |
| Round C                    |   |   | Round D      |   |   |
| <b>C1</b>                  | 3 | 1 | <b>D1</b>    | 3 | 1 |
| <b>C2</b>                  | 3 | 1 | <b>D2</b>    | 3 | 1 |
| <b>C3</b>                  | 3 | 1 | <b>D3</b>    | 3 | 1 |
| <b>C4</b>                  | 3 | 1 | <b>D4</b>    | 3 | 1 |
| <b>Bonus</b>               | 3 |   | <b>Bonus</b> | 3 |   |
| <b>Total</b>               |   |   | <b>Total</b> |   |   |
| <b><u>Final Total:</u></b> |   |   |              |   |   |

## Mini Relay Answer Sheet

|                    |
|--------------------|
| <u>Question A1</u> |
| <u>Question A2</u> |
| <u>Question A3</u> |
| <u>Question A4</u> |

|                    |
|--------------------|
| <u>Question B1</u> |
| <u>Question B2</u> |
| <u>Question B3</u> |
| <u>Question B4</u> |

|                    |
|--------------------|
| <u>Question C1</u> |
| <u>Question C2</u> |
| <u>Question C3</u> |
| <u>Question C4</u> |

|                    |
|--------------------|
| <u>Question D1</u> |
| <u>Question D2</u> |
| <u>Question D3</u> |
| <u>Question D4</u> |

**A1.**

Pass on  $T$  which is the mean (average) of 4, 16 and 49.

**A3.**                     ***$T$  represents the number you will receive.***

$T$  is the area of a square in square centimetres. Pass on the perimeter of this square in centimetres.

**A2.** *T represents the number you will receive.*

$T$  is the difference between two consecutive square numbers.

Pass on the larger of these two square numbers.

**A4.** *T represents the number you will receive.*

What is the sum of all the factors of  $T$ , not including the number 1 or the number itself?

**B1.**

Four whole numbers have a mean of 9. I add the number 24.

What is the mean now?

**B3.**

*T represents the number you will receive.*

What is the sum of the first  $T$  square numbers?

**B2.** *T represents the number you will receive.*

How many sides does a regular polygon have if it has  $\frac{T}{2}$  lines of symmetry?

**B4.** *T represents the number you will receive.*

What is the value, in its simplest form, of:  $\frac{T - 1}{T + 9}$ ?

**C1.**

What is the value of:  $\frac{12^2 - 8^2}{7^2 - 3^2}$

**C3.**

***T represents the number you will receive.***

6T is a square number. What is the value of 25% of 6T?



**C2.** *T represents the number you will receive.*

The dimensions of a cuboid are :  $T$ cm,  $2T$ cm,  $T + 1$ cm.

What is the volume of the cuboid ( in cubic centimetres)?

**C4.** *T represents the number you will receive.*

Work out the value of :  $\frac{1}{2}$  of  $T$  plus  $\frac{1}{4}$  of  $T$ .

**D1.**

The sum of two whole numbers is 30, their difference is 20.

Pass on the larger of these two numbers.

**D3.**

*T represents the number you will receive.*

Work out :  $\frac{1}{5}$  of  $T$  plus  $\frac{1}{6}$  of  $(T + 1)$

**D2.**                    *T represents the number you will receive.*

A triangle has one angle of  $2T - 20$  degrees and one angle of  $3T + 10$  degrees.

How many degrees are there in the third angle?

**D4.**                    *T represents the number you will receive.*

I travel  $T$  km to work and it takes me 40 minutes.

What is my average speed in kilometres per hour?