



UNITED KINGDOM MATHEMATICS TRUST

## **SHUTTLE ROUND**

- There are 4 rounds to this Shuttle. 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.

## Shuttle 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>					

## Shuttle 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.**

Three angles of a quadrilateral are  $55^\circ$ ,  $73^\circ$  and  $82^\circ$ .

How many degrees are in the fourth angle?

**A3.**

*T represents the number you will receive.*

The length of the shorter sides of a rectangle is  $T$  cm. The longer sides are 5 times as long as the shorter sides.

What is the area of the rectangle? [Give your answer in terms of  $\text{cm}^2$ .]

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

The distance by train from London to York is  $2T + 20$  km, and the train's average speed was 80 km/hour. How many hours did it take to complete the train journey?

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

What is the value of :  $\frac{T}{2} + \frac{T+10}{3} + \frac{T-15}{5}$  ?

**B1.**

What is the total of the first 5 prime numbers?

**B3.**

*T represents the number you will receive.*

What is the sum of all the square numbers less than T?

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

What is the next triangle number after T?

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

What is the sum of all the positive whole numbers that are multiples of 5 and less than T?

**C1.**

Rob the builder has 80 1cm square tiles. He uses them all to make a rectangle whose perimeter is as short as possible. What, in cm, is the length of the perimeter of this rectangle?

**C3.**                    *T represents the number you will receive.*

Trevor travels at  $T^2$  km/hour for  $(2T - 3)$  hours. How far, in km, does Trevor travel?



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

Holly has  $T$  days annual leave. She uses one half of her annual leave allowance for a trip abroad, one quarter for numerous days out, and one ninth for visiting relatives.

How many days holiday does Holly have left?

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

Johnny is thinking of a number.

If you double  $T$  then subtract 26, you get the square of the number Johnny is thinking about.

What number is Johnny thinking about?

**D1.**

What is the smallest common multiple of 24 and 15?

**D3.**                    *T represents the number you will receive.*

Three angles of a quadrilateral are  $5T$ ,  $7T$  and  $9T$ .

What is the fourth angle?

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

What is the value of:  $\sqrt{2T + 16}$ ?

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

The area of a rectangle is your answer to D1 and it has a length of  $T - 4$  cm. What is the width of the rectangle?