



UNITED KINGDOM MATHEMATICS TRUST

SHUTTLE ROUND

- There are 4 rounds to this Shuttle Round. 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 inside 6 minutes. Further instructions for scoring are provided in the Answer Booklet.
- 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 Round Score Sheet

School Name: _____

School Number _____

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

Shuttle Round Answer Record 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 the value of the first square number after the eighth prime number.

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

The area of a square is $2T - 15 \text{ cm}^2$.

X cm is the length of one of the sides of the square.

Pass on the value of X .

A2. T represents the number you will receive.

X is the Lowest Common Multiple of $T + 15$

and $T + 5$.

Pass on the value of X .

A4. T represents the number you will receive.

The mean (average) of four consecutive even numbers is T .

X is the largest of these four numbers?

What is the value of X ?

B1. Find the 13th number in the arithmetic sequence
3, 8, 13, 18, 23,

Pass on the sum of the digits of the 13th number.

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B3. *T represents the number you will receive.*

The mean (average) age of two members of staff

is: $\frac{3T - 1}{2}$ years.

The mean (average) age of the other eight
members of staff is 25 years.

Pass on the mean (average) age, in years, of all the
staff.

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

The sum of the lengths of the edges of a cube is $4T$ cm.

$X \text{ cm}^3$ is the volume of the cube.

Pass on the value of X .

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

What is the value of:

$$5 \times \frac{7T - 4}{T - 8}$$

C1. Pass on the value of:

$$1 + 2 \times 3 \times 4 + 5 + 6 \times 7 - 8 - 9.$$

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

I think of a number, add T , then divide the total by 4.

My answer is 5.

X is the number with which I started.

Pass on the value of X .

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

Three angles of a quadrilateral are:

$T + 30$, $2T - 35$ and $3T + 24$.

X° is the value of the fourth angle.

Pass on the value of X .

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

Chloe, Jacky and Sam were the only candidates in the school election for class monitor. Chloe received $T + 1$ votes, and Jacky received $\frac{3(T+6)}{5}$ votes, which was one more vote than Sam received.

How many people voted in the class election?

D1. Of the 28 pupils in the class, 17 said they played football, 18 said they played tennis, while 2 said they did not play either of these two games.

X is the number of pupils who said they played both games.

Pass on the value of X .

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

Two communication satellites are launched from the same place at the same time. One takes T hours to orbit the Earth, the other $T - 2$ hours.

X hours is the time taken for both satellites to be over the point where they were launched again for the first time.

Pass on the value of X .

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

T is the difference between two consecutive square numbers.

X and *Y* are the two square numbers

Pass on the sum of the digits of *X* and *Y*.

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

A pentagon has five interior angles.

It has two 90° angles and two angles both of which are T° .

How many degrees are there in the fifth angle?

