

# A1

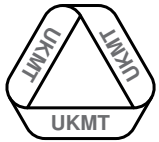
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SHUTTLE

$A =$  the 5th triangular number  
+ the 4th prime number  
– the 3rd square number  
– the 2nd cube number

Pass on the value of  $A$ .



# A3

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SHUTTLE

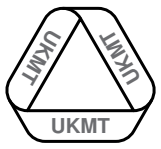
$T$  is the number that you will receive.

To celebrate the New Year, three bells in Mathstown ring at constant intervals of 8 seconds, 10 seconds and  $3T$  seconds respectively.

They all ring together at midnight and continue ringing at their particular intervals for a whole hour.

The next time at which the three chime together is  $K$  minutes past midnight.

Pass on the value of  $K$ .



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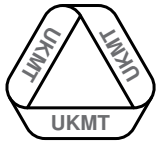
SHUTTLE

*T* is the number that you will receive.

**A2**

Pass on the value of  $x$  that solves the equation

$$x + T = 2(2T - x) + 6.$$



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SHUTTLE

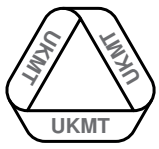
*T* is the number that you will receive.

**A4**

$T$  years ago, Hannah was five times as old as Claire.

In  $\frac{T}{2}$  years' time, Hannah will be twice as old as Claire.

Write down Claire's current age.



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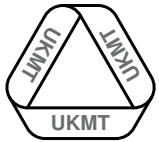
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# B1

There are  $N$  whole numbers between 1 and 100 that contain the digit 5.

Pass on the value of  $N$ .



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# B3

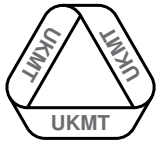
$T$  is the number that you will receive.

The mean of 5 numbers is  $T$ .

The mean of 10 other numbers is  $T + 30$ .

The mean of all 15 numbers is  $M$ .

Pass on the value of  $M$ .



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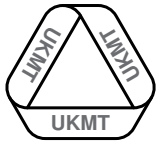
SHUTTLE

*T* is the number that you will receive.

**B2**

The prime factors of 2014 are  $T$ ,  $a$ , and  $b$ .

Pass on the value of  $a + b$ .



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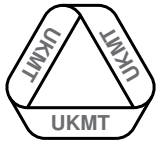
SHUTTLE

*T* is the number that you will receive.

**B4**

A linear sequence starts 8, 17, 26, 35, ...

Write down the numerical value of the  $\left(\frac{T}{3}\right)$ th term.



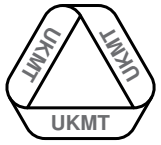
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SHUTTLE

# C1

Pass on the value of  $3^2 + 3^4 + 3^5$ .



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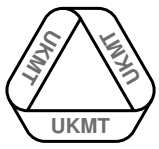
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# C3

*T is the number that you will receive.*

$$\frac{K}{3} = \frac{T}{3} + \frac{4}{5} + \frac{13}{15}$$

Pass on the value of  $K$ .



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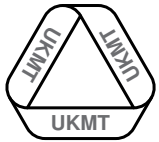
**C2**

*T* is the number that you will receive.

The parallelogram below has perimeter  $P$  cm and area  $A$  cm<sup>2</sup>.



Pass on the value of the whole number  $\frac{A - P}{13}$ .



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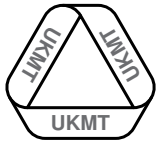
SHUTTLE

**C4**

*T* is the number that you will receive.

At  $T$  minutes past midday, the obtuse angle between the hands on a clock is exactly  $C^\circ$ .

Write down the value of  $C$ .



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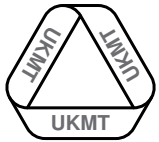
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SHUTTLE

# D1

$$K = (98 - 76 - 5 \times 4 + 3) \div 2 - 1$$

Pass on the value of  $K$ .



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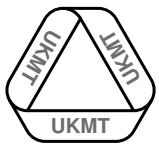
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# D3

$T$  is the number that you will receive.

$H$  is the highest common factor of  $24T$  and  $42T$ .

Pass on the value of  $H$ .



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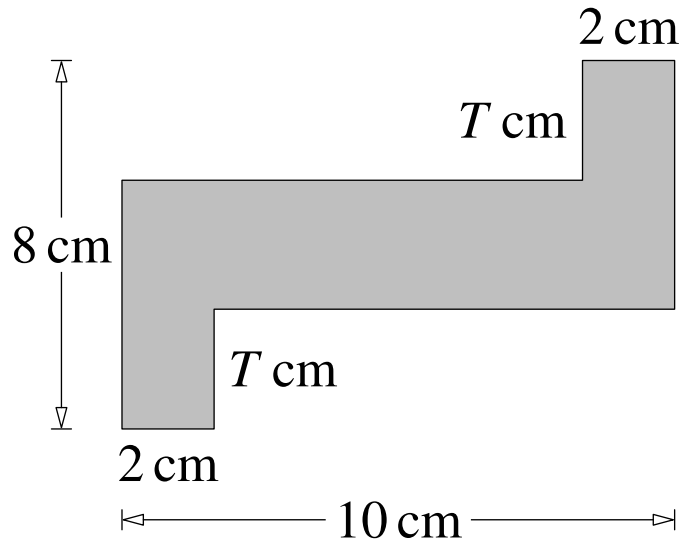
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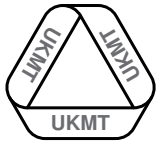
# D2

$T$  is the number that you will receive.

The shape below has perimeter  $P$  cm and area  $A$  cm<sup>2</sup>.



Pass on the value of  $A - P$ .



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# D4

$T$  is the number that you will receive.

Speedy Steve travels the first 100 km of his journey at  $T$  km/h, and the next 100 km of his journey at  $\frac{2}{3}T$  km/h.

His average speed over the whole journey is  $S$  km/h.

Write down the value of  $S$ .