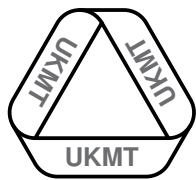


Instructions

- Time allowed: 40 minutes.
- Teams will work in pairs, in separate parts of the room.
- There are 30 questions in total, 15 for Pair A and 15 for Pair B.
- *Two* marks are awarded for every correct answer. Pairs will have two chances to answer each question and there is no penalty for giving a correct answer at the second attempt. A question is marked either correct or incorrect and no partial marks are awarded.



A1

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RELAY

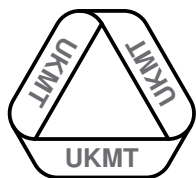
If a number is odd add one. If it is even halve it.

Use this rule starting with 38 as the first number.

What is the 5th number in the sequence?

ANSWER:

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A2

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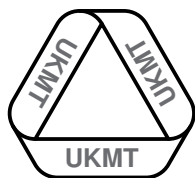
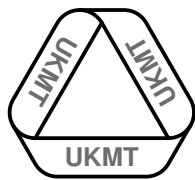
RELAY

In the county of Squareshire 12 000 new homes were built in one year. One half of them were houses, one third were bungalows and the rest were flats.

How many flats were built?

ANSWER:

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A3

When I add three consecutive numbers the total is 144.

What is the largest of the three numbers?

ANSWER:

A4

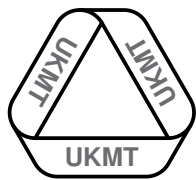
Ten girls recorded their heights. They were:

1 m	1.03 m	1.10 m	96 cm	98 cm
1.04 m	97 cm	1.12 m	1.20 m	1 m

What is the mean height in centimetres?

ANSWER:

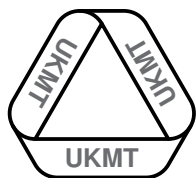
 cm



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RELAY

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A5

How many different ways can you stack four identical cubes against a wall?

Each cube has to have one face next to the wall and another whole face touching at least one of another whole face of a cube.

ANSWER:

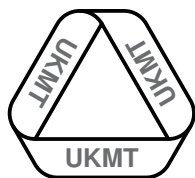
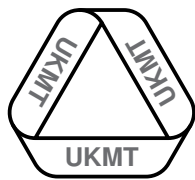
A6

A function machine is set up to multiply the input number by 2 and then subtract 5.

The output number is 59.

What is the input number?

ANSWER:



A7

From a batch of 1000 bulbs, 786 successfully matured into flowers. This measure of success is repeated in all the bulbs produced in one year by the growers.

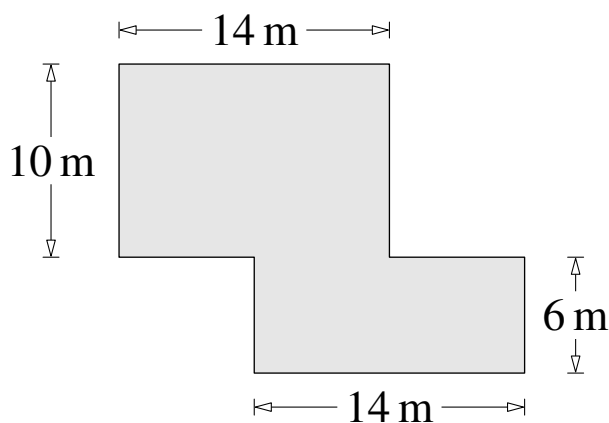
How many flowers are produced from 50 000 bulbs?

ANSWER:

A8

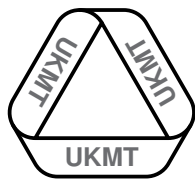
The diagram shows a shape made up of two rectangles.

What is the area of this shape?



ANSWER:

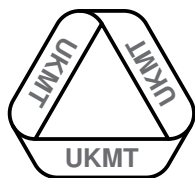
m²



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A9

John puts his hand into a sack containing 9 pairs of socks: 4 black, 3 brown and 2 white. He pulls them out one sock at a time.

How many socks must he pull out to be sure of having one pair of brown socks?

ANSWER:

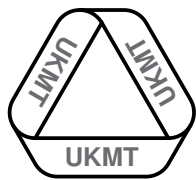
A10

A group of students made a large batch of jam and use it all to fill six 750 ml and five 550 ml jars.

How much jam was in the batch? Give your answer in litres.

ANSWER:

litres

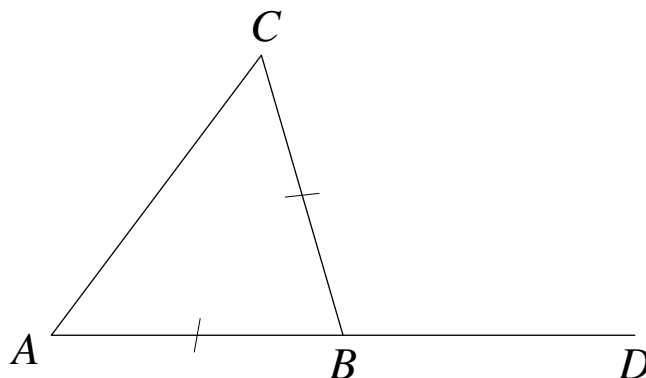


A11

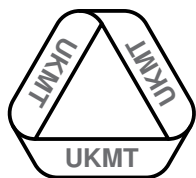
ABC is an isosceles triangle, with $AB = CB$.

AB is extended in a straight line to D . Angle $CBD = 110^\circ$.

What is the value of angle $BAC + \text{angle } ABC$?



ANSWER:

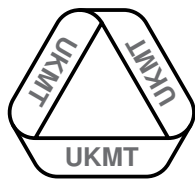


A12

Two thirds of a fruit pie is shared equally among 8 friends.

What fraction of the whole pie does each person receive?

ANSWER:



A13

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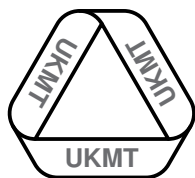
Item	Price
Jeans	£56.00
Tee-shirt	£12
Socks	£2 a pair
Denim jacket	£95

Walt picked up two pairs of jeans, a tee-shirt and a denim jacket. When he took them all to the counter to pay he was delighted to be told that there was 10% off.

How much did Walt spend?

ANSWER:

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A14

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RELAY

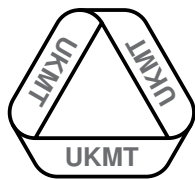
Fred is planning to run a marathon and has included some uphill runs in his training. He can run 10 km per hour on the flat, 8 km per hour on gentle slopes and only 5 km per hour on steep slopes.

His training run has 4 km on the flat, 2 km on gentle slopes and 1 km on a steep slope.

How long does Fred take on this training run?

ANSWER:

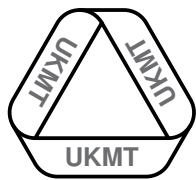
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The crossroads are controlled by sets of traffic lights. The roads run north/south (A12) and east/west (B125). The traffic lights are set to allow traffic to flow either north/south or east/west with no special treatment or filters. Traffic on the B125 goes through the junction at 12 vehicles every minute. Traffic on the A12 goes through at 15 vehicles every minute. The lights are green for 2 minutes and as they change they are on red/amber for 1 minute, when no traffic is moving.

Starting with the A12 just on green, how many vehicles go through the junction in half an hour?

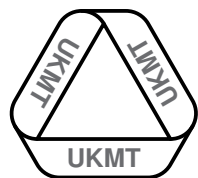
ANSWER:



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B1

If you multiply a certain whole number by 15 and then add 3 your answer will be 138.

What number did you start with?

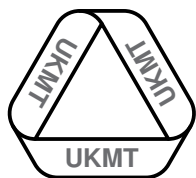
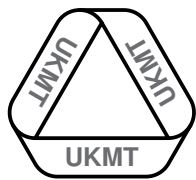
ANSWER:

B2

The total of three consecutive numbers is 441.

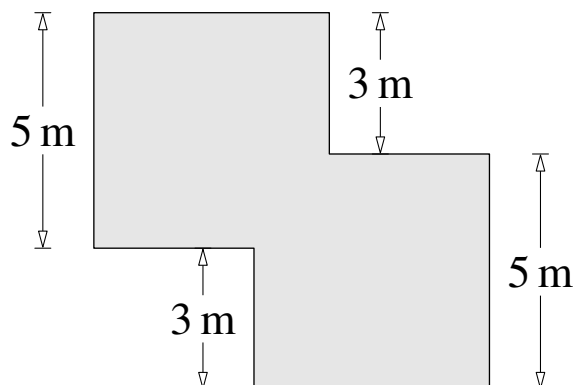
What is the smallest number?

ANSWER:



B3

Two squares have been placed on a piece of card, one overlapping the other. The overlap is also a square. The result of drawing round them is shown in the diagram.



What is the area of this shape?

ANSWER:

m²

B4

Complete the following sums and then write the letters in order of size, starting with the lowest answer.

$$A = 33 - 14 - 21 + 16$$

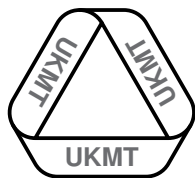
$$B = 6 \times 4 - 8 \times 2$$

$$C = 9 + (6 \times 5) - 23$$

$$D = 10 - 9 + (3 \times 7)$$

$$E = 19 - 23 - 31 + 58$$

ANSWER:



B5

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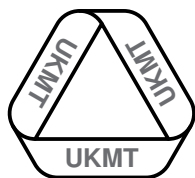
Item	Price
Tennis racquet	£65.00
Set of 6 tennis balls	£4.25
One pair of white socks	£3.95
Tennis bag	£45.50

Wendy bought two sets of tennis balls, three pairs of white socks and a tennis bag.

How much did she spend?

ANSWER:

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B6

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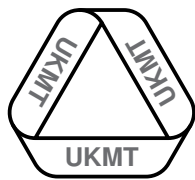
RELAY

I have a circular pizza and am going to cut it up, not necessarily into equal parts.

What is the largest number of pieces of pizza I can get if I make three cuts?

ANSWER:

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B7

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RELAY

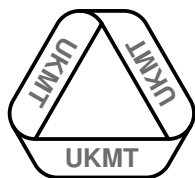
If a number is odd, subtract one; if it is even, halve it.

Use this rule, starting with 65 as the first number.

What is the sixth number in the sequence?

ANSWER:

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B8

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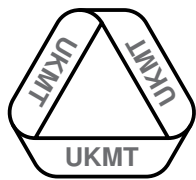
RELAY

When six boys get to the party there is only three-fifths of a litre of juice left. They decide to share it equally.

What fraction of a litre will each boy receive?

ANSWER:

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B9

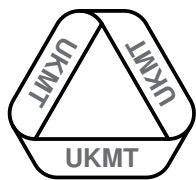
A cuboid has a square base. It is twice as high as it is wide.

The base is 49 cm^2 .

What is the surface area of the cuboid?

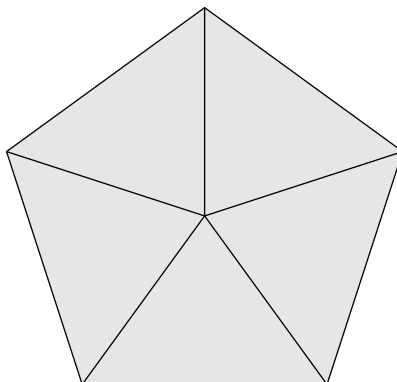
ANSWER:

cm^2



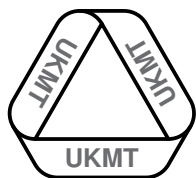
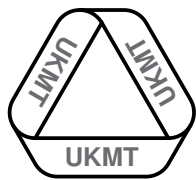
B10

A regular pentagon is divided into 5 congruent triangles.



What are the three angles of one of these triangles?

ANSWER:



B11

Five pieces of string are tied together to make one long piece.
The five pieces measure:

1.2 m 3 m 98 cm 56 cm 1.5 m

Each knot is going to use up 10 cm of each of the two strings
that it joins.

How long, in centimetres, will the joined up piece of string
measure?

ANSWER:

cm

B12

Jenny is using her cell phone to contact somebody. She needs
to press 4 buttons plus the 11-digit phone number and the text.
Jenny can press 2 buttons per second.

She decides to send a text to a friend. Because she does not
want to make a mistake, she does not use predictive text.

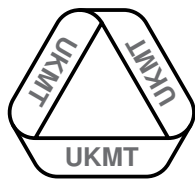
The text reads

will be at the boat on thursday

How long does the text take to send?

ANSWER:

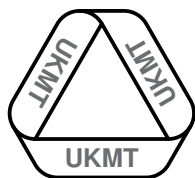
seconds



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RELAY

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B13

On a production line in a toy factory only 2% of the toy cars were found to be faulty.

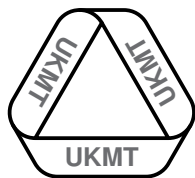
When 20 000 000 cars are produced, how many are not faulty?

ANSWER:

B14

How many different ways can you arrange the digits 1, 2, 5, 8 to form a four-digit number less than 5000?

ANSWER:



To celebrate the school's 500th birthday the head ordered 2880 commemorative items. A third of them were mugs, one for each student. A twelfth were scarves for the staff. The rest of the items were for sale.

How many items were for sale?

ANSWER: