ICAS.

PAPER

E

2020 MATHEMATICS

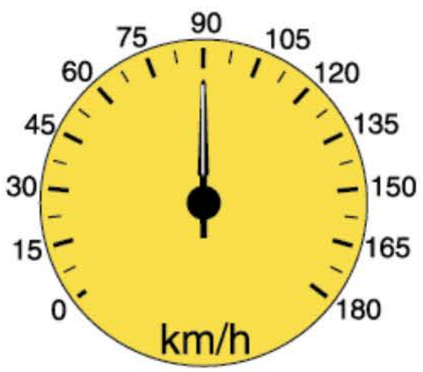
TIME ALLOWED: 1 HOUR

ICAS assessments

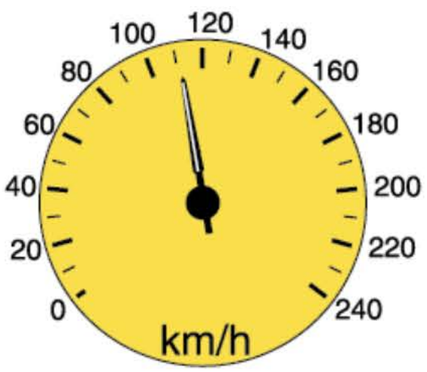
Jill has cut out a triangle from this picture.

Which of these is the triangle she cut out?

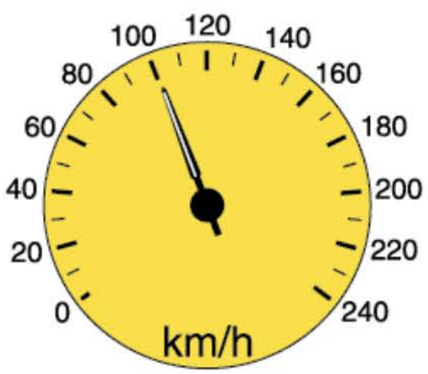
The speedometers below show the speeds of four different cars.



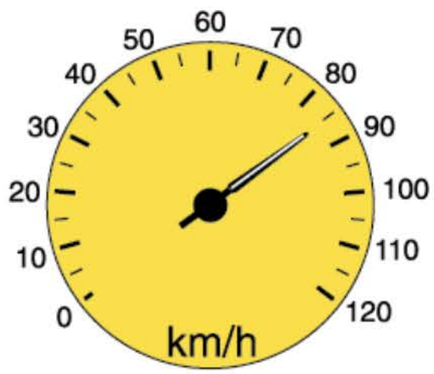
car W



car X



car Y



car Z

Which car is travelling the slowest?

- [ ] car W
- [ ] car X
- [ ] car Y
- [ ] car Z

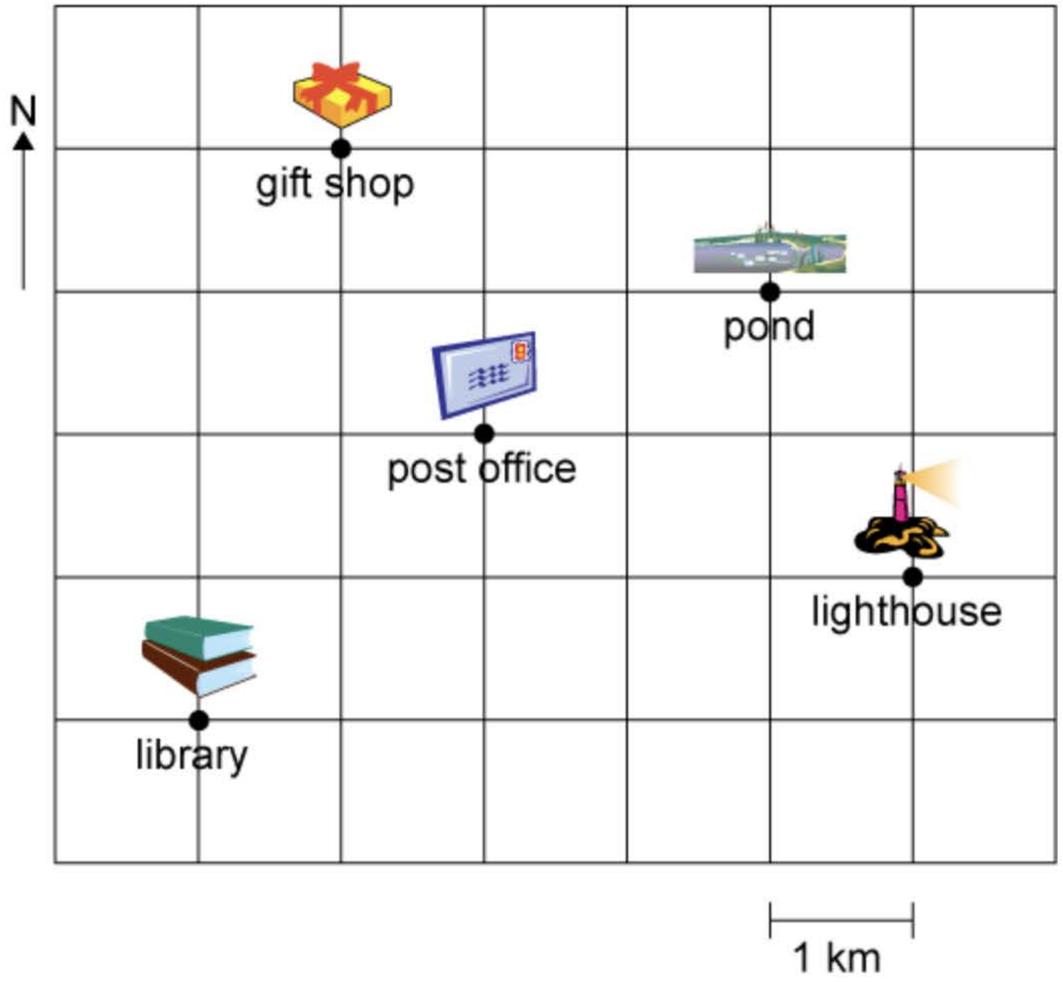
The students in Year 7 at Rocky Shore High School had to choose one of five sports.

The sector graph shows the proportion of students who chose each sport. 36 students chose football.

How many students were in Year 7 at Rocky Shore High School?

- [ ] 90
- [ ] 144
- [ ] 180
- [ ] 270

The grid below shows the location of some places in a town.

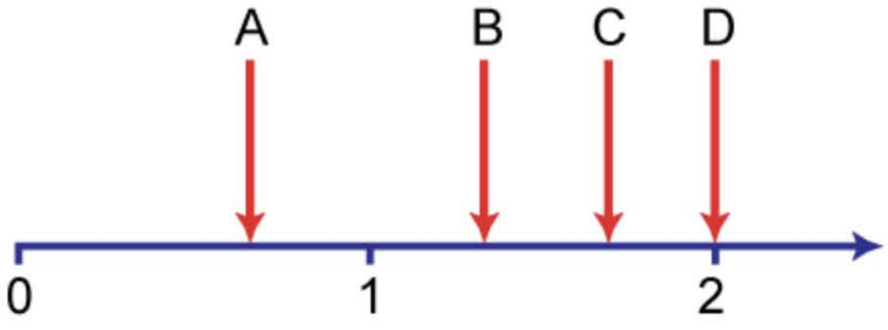


Adam is at the post office. He walks two kilometres west and one kilometre south.

Which of these best describes his new position?

- ☐ one kilometre north of the library
- ☐ two kilometres south of the pond
- ☐ one kilometre east of the lighthouse
- ☐ three kilometres south of the gift shop

Where is $1\frac{2}{3}$ on this number line?



- [ ] A
- [ ] B
- [ ] C
- [ ] D

Which of these units is the most appropriate to use for the area of a football field?

- [ ] metres
- [ ] centimetres
- [ ] square metres
- [ ] square centimetres

In a particular sports competition, each game consists of :

- four 10-minute quarters
- two 5-minute breaks
- one 10-minute break at half-time

Fred's competition draw shows that his game starts at 13:30.
What time does Fred's game finish?

- ☐ 1:55 pm
- ☐ 2:30 pm
- ☐ 3:55 pm
- ☐ 4:30 pm

Fadi wrote the first four terms of a number pattern involving fractions.

1	2	3	4
$1+\frac{1}{2}$	$1+\cfrac{1}{2+\frac{1}{3}}$	?	$1+\cfrac{1}{2+\cfrac{1}{3+\cfrac{1}{4+\frac{1}{5}}}}$

What expression could ? be?

☐ $1+\cfrac{1}{2+\frac{1}{3}+\frac{1}{4}}$

☐ $1+\cfrac{1}{2+\cfrac{1}{3+4}}$

☐ $1+\cfrac{1}{2+\cfrac{1}{3+\frac{1}{4}}}$

☐ $1+\cfrac{1}{2+\cfrac{1}{\frac{3+1}{4}}}$

$3 + 1 \times 5 - 4 \div 2 =$?

What answer must ? be?

- [ ] 2
- [ ] 6
- [ ] 8
- [ ] 18

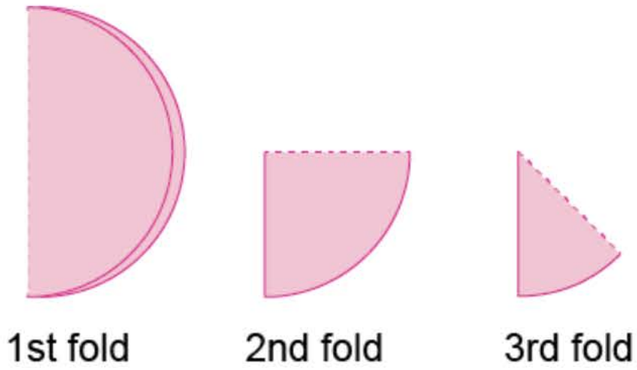
A company owns a fleet of 100 cars. Each car is either black or white.

There are 35 black cars. A car is picked at random from the fleet.

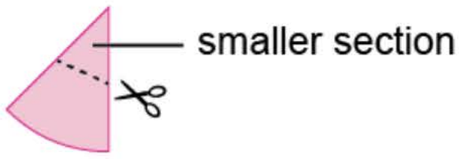
What is the probability that it is white?

- ☐ 0.35
- ☐ 0.65
- ☐ $\frac{1}{35}$
- ☐ $\frac{1}{65}$

Sue took a circular piece of paper and folded it in half three times.

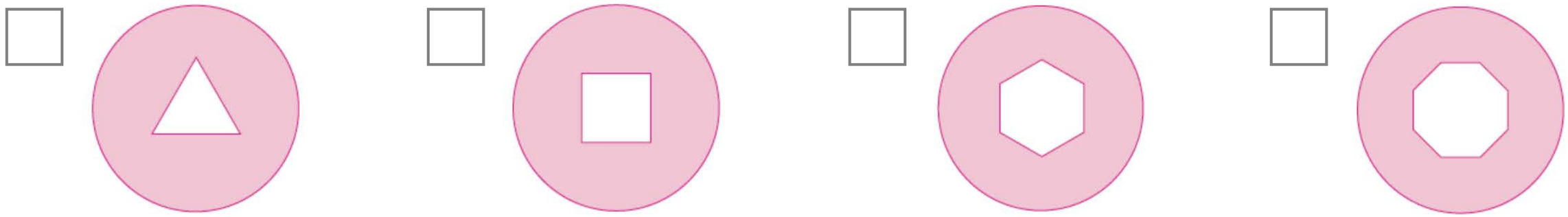


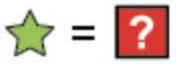
She then cut along this dotted line and threw away the smaller section.



Sue unfolded the remaining piece.

Which of these is the shape of the remaining piece?





- 5
- 6
- 7
- 8

The time in Redville is 2 hours ahead of the time in Bluehill.

The time in Bluehill is 3 hours behind the time in Greenbridge.

What is the time in Greenbridge if it is 6 pm in Redville?

- ☐ 11 pm
- ☐ 7 pm
- ☐ 5 pm
- ☐ 1 pm

Eve gave some of her marbles to three of her friends.

She gave 10% to Adrian, 25% to Barbara and 50% to Ken.

She kept 30 marbles for herself.

How many marbles did she start with?

- ☐ 100
- ☐ 120
- ☐ 170
- ☐ 200

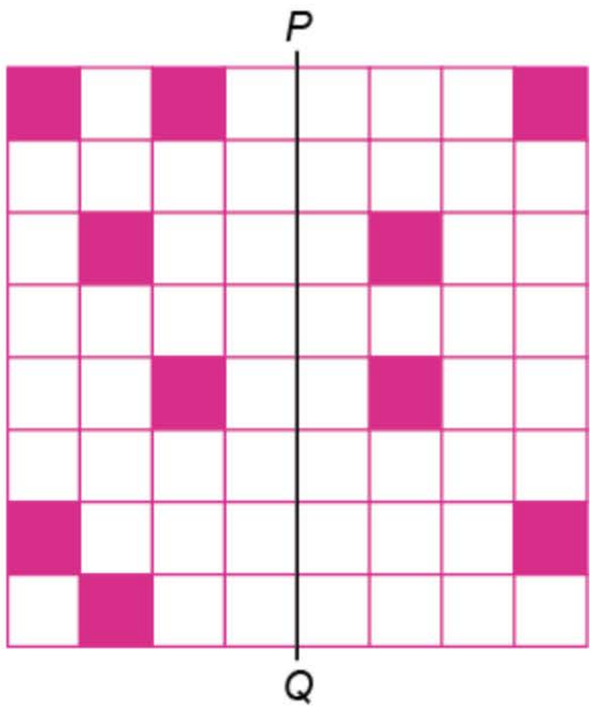
Each row in this table forms a number pattern.

10	20	30	40	★
2	4	8	16	●

What is ★ − ●?

- ☐ 50
- ☐ 32
- ☐ 26
- ☐ 18

Dani is making a design with *PQ* as the line of symmetry.



What is the minimum number of squares that Dani still needs to shade?

- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5

Jackson bought 2 packets of balloons. Each packet contained 15 balloons.

6 friends came to his party. Jackson shared all the balloons equally between himself and his friends.

What is the least number of balloons that were left over?

- [ ] 0
- [ ] 1
- [ ] 2
- [ ] 3

Leanne picked up leaves in the yard. She filled 20 buckets with leaves.

The average mass of the leaves in the first 12 buckets was 0.4 kg.

The average mass of the leaves in the next 8 buckets was 0.5 kg.

What was the total mass of the leaves in the 20 buckets?

- ☐ 6.4 kg
- ☐ 7.0 kg
- ☐ 8.8 kg
- ☐ 9.0 kg

A second-hand car was advertised for $3000.

Max bought the car and received a discount of 30%.

How much did Max pay for the car?

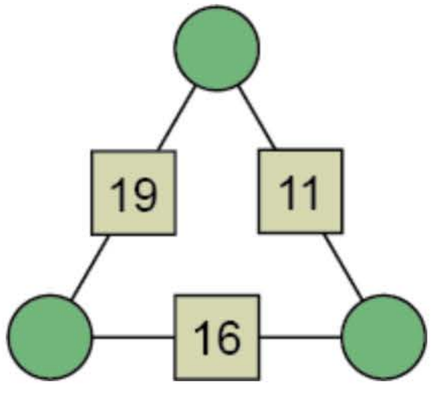
- [ ] $900
- [ ] $1000
- [ ] $2000
- [ ] $2100

Pam climbed 300 steps. Each step is 20 cm high.

How high did she climb?

- [ ] 6 m
- [ ] 60 m
- [ ] 600 m
- [ ] 6000 m

The number in each square is equal to the sum of the numbers in the circles joined to the square.



What is the sum of the numbers in the circles?

- [ ] 17
- [ ] 23
- [ ] 24
- [ ] 46

In Mathland, the money is called zees and zeds.

1 zee = 111 zeds

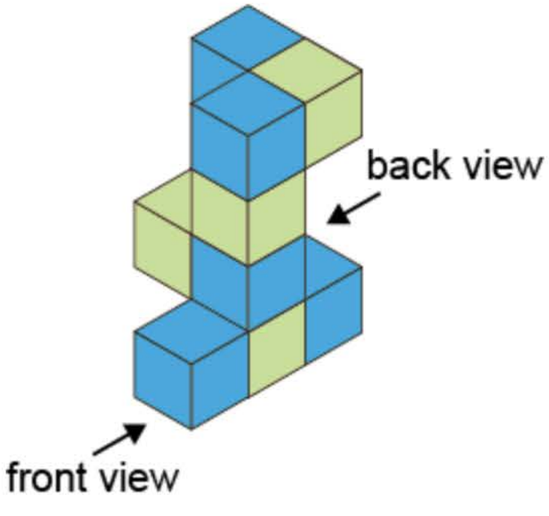
Each row of fruit costs 60 zeds:

Elvis buys one of each fruit.

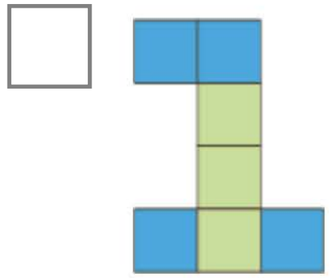
How many zeds does he get back if he pays 1 zee? Type your answer in the box.

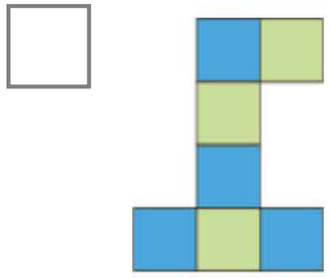
[ ] zeds

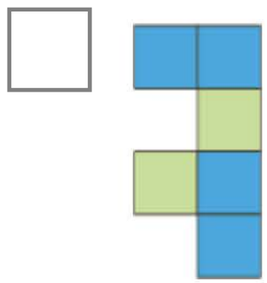
The object below is made with 5 blue cubes and 4 green cubes.

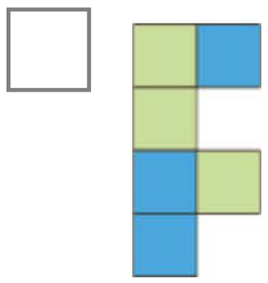


Which drawing shows the object as seen from the back?







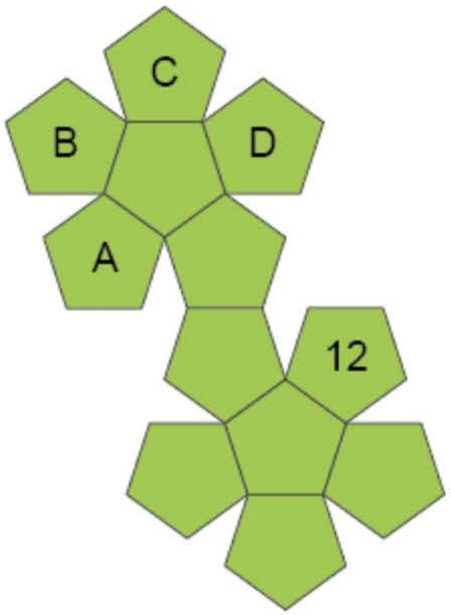


On a particular day, the number of hours left in the day is $\frac{3}{5}$ the number of hours that have already passed.

How many hours are left in that day?

- [ ] 6
- [ ] 9
- [ ] 15
- [ ] 18

Lien folded this net to make a 12-sided dice.

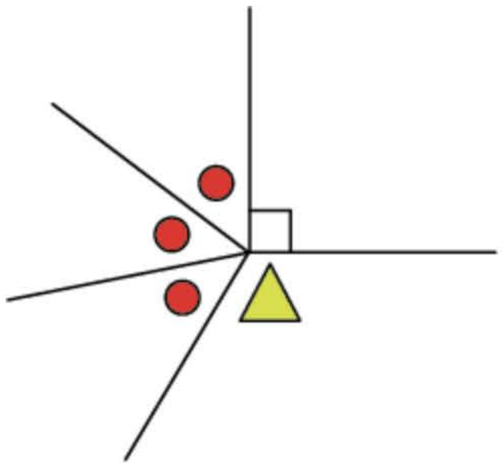


He placed it on the table so that 12 was showing on top.

Which face was on the bottom?

- [ ] A
- [ ] B
- [ ] C
- [ ] D

In this diagram, ● + ● = △.

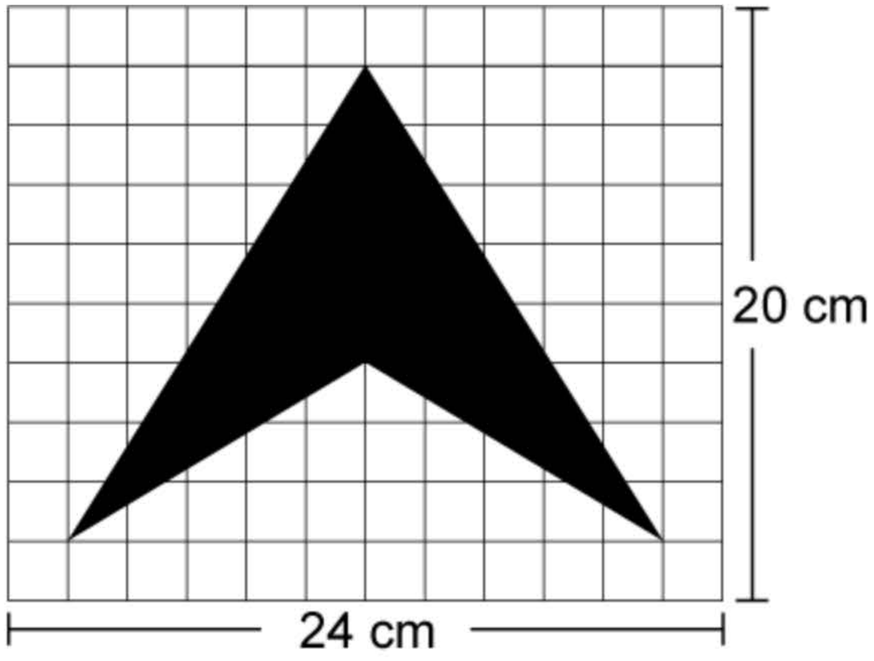


NOT TO SCALE

What angle is represented by △?

- ☐ 72°
- ☐ 100°
- ☐ 108°
- ☐ 120°

Sharon is designing a logo. She draws a plan for her logo on grid paper.



What is the area of the shaded region, in cm^2?

- ☐ 60
- ☐ 90
- ☐ 100
- ☐ 160

Oscar, Lily and Jack collect souvenir coins.

Oscar has 44 more coins than Lily and 48 more coins than Jack.

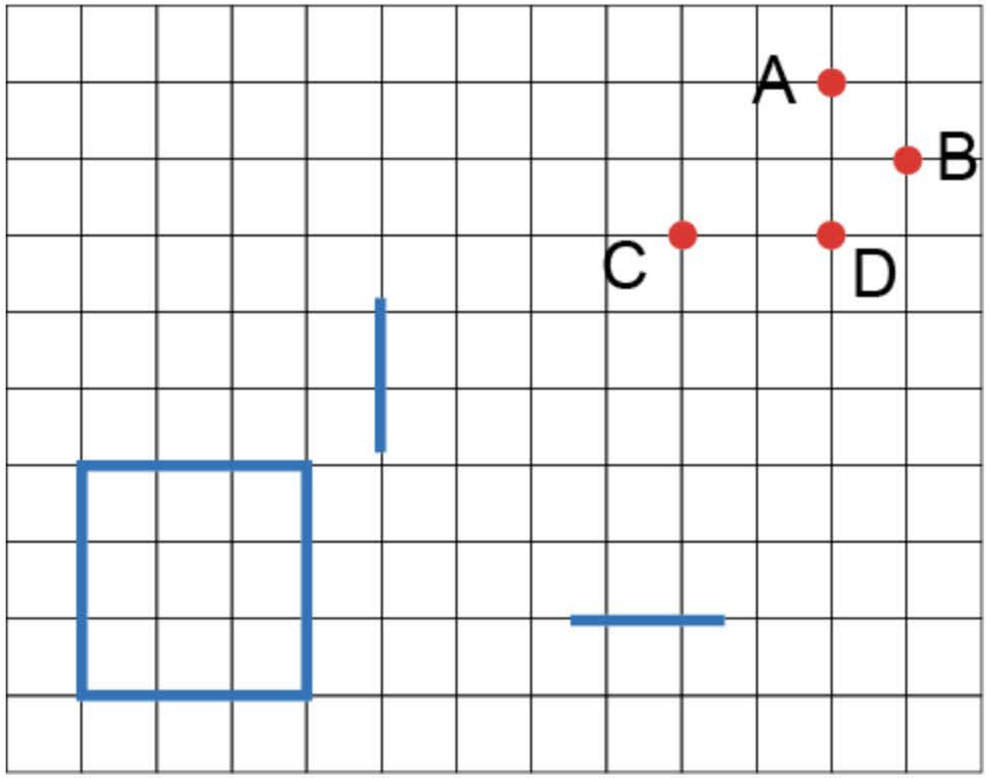
Oscar has 6 more coins than Lily and Jack combined.

How many coins do Oscar, Lily and Jack have altogether?

- [ ] 196
- [ ] 166
- [ ] 156
- [ ] 146

Chen drew a square on a grid. Then he started to draw a second square with a side length double that of the first square.

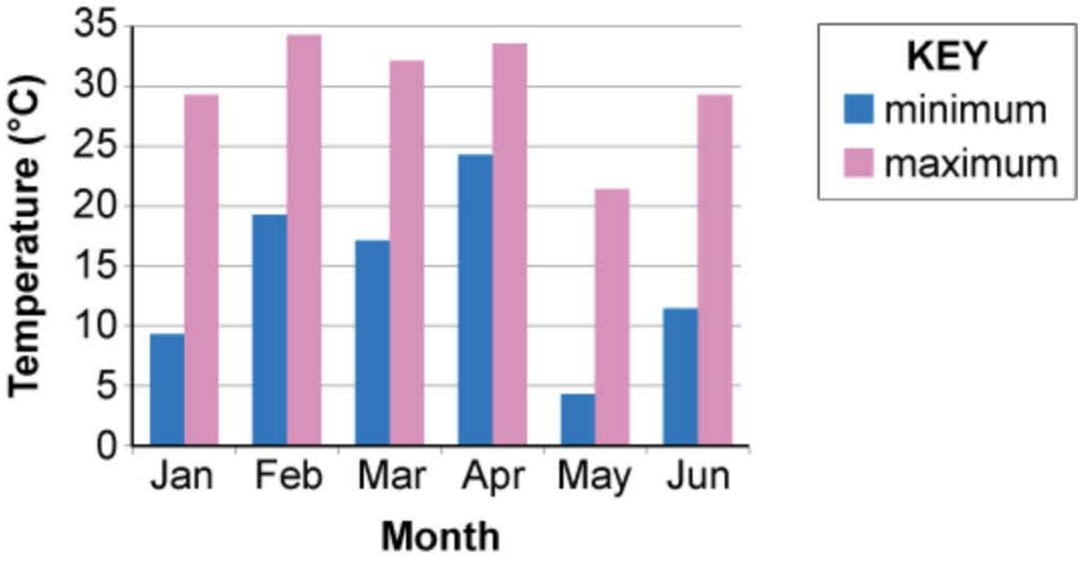
Two parts of the second square are shown on the grid.



Which dot will lie on one of the sides of the second square?

- [ ] A
- [ ] B
- [ ] C
- [ ] D

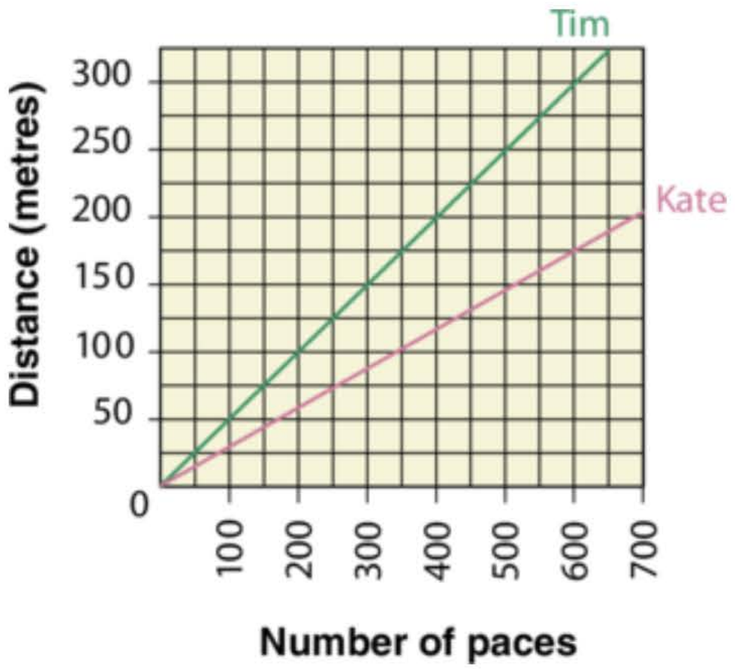
The column graph shows the minimum and maximum temperatures in Anyland for six months.



Which month has the greatest range in temperature?

- [ ] Jan
- [ ] Feb
- [ ] May
- [ ] Jun

This graph shows how many paces Kate and Tim take to walk certain distances.



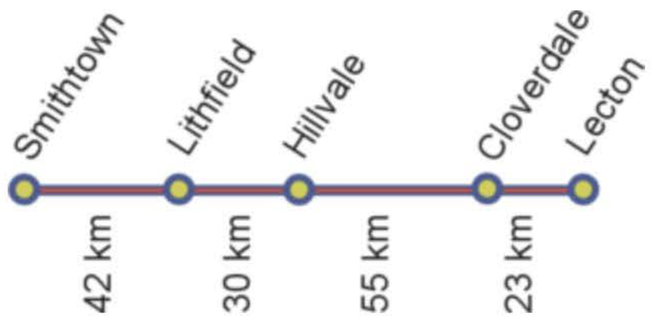
Kate takes 600 paces to walk from school to the local shops.

How many paces does Tim take to walk from school to the local shops?

Joe travelled from Smithtown to Lecton without stopping.

He left Smithtown at 9:00 am and arrived in Lecton at 11:15 am.

Joe passed through several towns on the way. The diagram shows the distances between them.



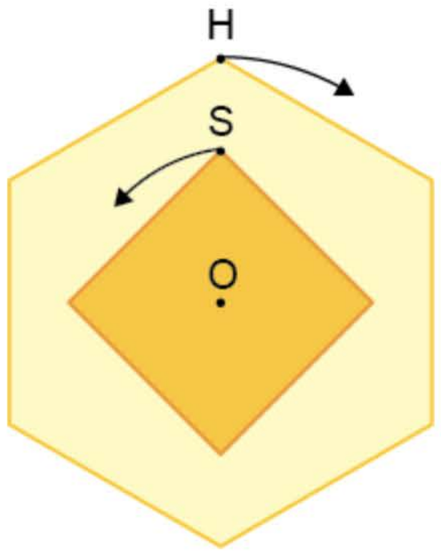
This table shows the time at which Joe passed through each town.

Town passed	Time
Lithfield	9:40 am
Hillvale	10:05 am
Cloverdale	10:55 am

Between which two towns did Joe travel at the highest average speed?

- [ ] Smithtown and Lithfield
- [ ] Lithfield and Hillvale
- [ ] Hillvale and Cloverdale
- [ ] Cloverdale and Lecton

A square cog and a regular hexagonal cog are both rotating about a common centre, O.



At each click, the hexagon rotates 60° clockwise, and the square rotates 90° anticlockwise.

Initially, the vertices H and S and centre O lie in the same straight line as shown.

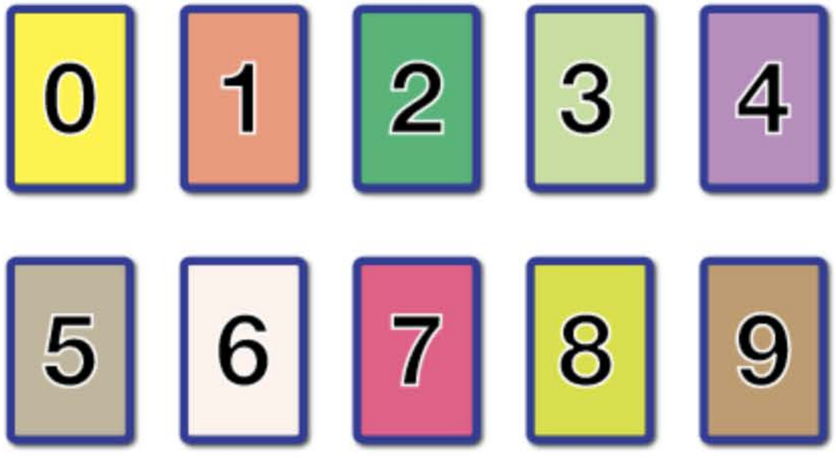
How many clicks does the hexagonal cog make before the vertices H and S first return together to their original position?

A cube has a volume of 1000 cubic centimetres.

What is the sum of the lengths of the edges of the cube, in centimetres?

- [ ] 30
- [ ] 60
- [ ] 80
- [ ] 120

Eight of the cards are used to form two 4-digit numbers.



What is the smallest possible difference between these two numbers?

The houses on one side of Acacia Street have consecutive odd numbers.

Jim lives in house number 83 and Marni lives in house number 15.

Clive lives in the house with the number exactly halfway between 15 and 83.

How many houses along from Marni's is Clive's house?

- [ ] 17
- [ ] 25
- [ ] 34
- [ ] 49

In 15 years' time, Janice will be twice as old as she was 25 years ago.

How old is Janice now?

☐ years old

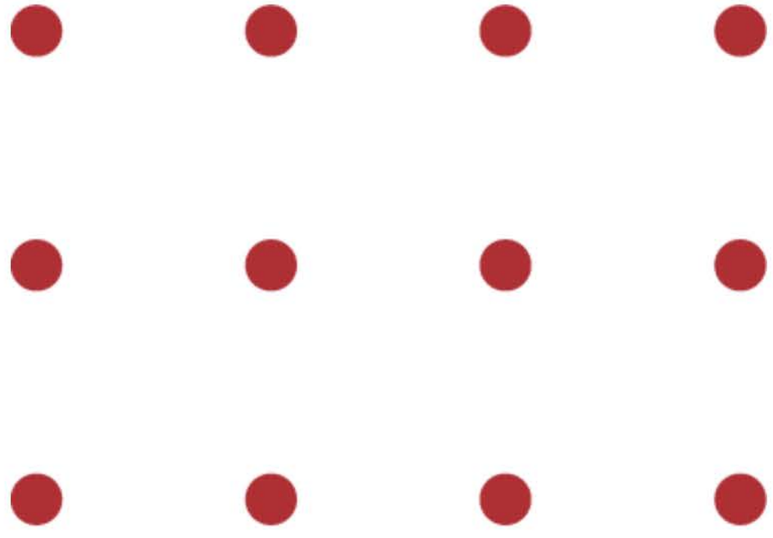
A rectangular painting has an area of 2.43 square metres. The length of the painting is three times the width.

NOT TO SCALE

What is the length of the painting?

- [ ] 0.27 metres
- [ ] 0.81 metres
- [ ] 0.90 metres
- [ ] 2.7 metres

Audrey drew 16 dots on her page. Each dot is the same distance from the dots above, below and to the side of it.



To draw a square, Audrey must use a dot for each corner.

How many squares can she draw?

- [ ] 10
- [ ] 14
- [ ] 18
- [ ] 20
- [ ] 22

There are 9 people in a room.

Each person shakes hands once with every other person in the room.

How many handshakes are there all together?

- ☐ 18
- ☐ 36
- ☐ 45
- ☐ 72

Results

Question number	Correct answer	Mark	Category	Descriptor
1	B		Space & Geometry	Recognise the missing shape from a picture
2	D		Measures & Units	Read four different speedometers and choose the slowest speed
3	B		Chance & Data	Interpret a sector graph
4	A		Space & Geometry	Identify a position on a grid using a compass and a scale
5	C		Number & Arithmetic	Determine the position of a fraction on a number line
6	C		Measures & Units	Choose the most appropriate unit to measure the area of a field
7	B		Measures & Units	Solve a problem involving 12 and 24-hour time systems
8	B		Algebra & Patterns	Find the next term in a pattern of continued fractions
9	B		Number & Arithmetic	Evaluate an expression using order of operations
10	B		Chance & Data	Calculate the probability of an event
11	D		Space & Geometry	Identify a 2D shape after folding and cutting
12	A		Algebra & Patterns	Find the value of a symbol given two number sentences
13	B		Measures & Units	Calculate the time difference between 2 cities given a 3rd city as point of reference
14	D		Number & Arithmetic	Solve a problem involving percentages and the unitary method
15	D		Algebra & Patterns	Recognise two number sequences and find the difference between the fifth terms
16	C		Space & Geometry	Add the minimum number of squares to make a design with line symmetry
17	C		Number & Arithmetic	Solve a problem using multiplication, division and subtraction
18	C		Measures & Units	Calculate a total mass given average masses
19	D		Number & Arithmetic	Calculate a discounted price
20	B		Measures & Units	Solve a problem involving the conversion of units
21	B		Number & Arithmetic	Use logic and number facts to solve a problem
22	18		Algebra & Patterns	Interpret the value of symbols and solve a problem using division, addition and subtraction
23	D		Space & Geometry	Identify the back view of a 3D shape
24	B		Number & Arithmetic	Evaluate the hours left in a day as a fraction of the hours that have elapsed
25	B		Space & Geometry	Determine the letter on the bottom of a dodecahedron with the face label of 12 on top
26	C		Space & Geometry	Calculate the magnitude of an angle given a right angle and angles at a point
27	C		Measures & Units	Calculate the area of a shaded region using a grid
28	B		Number & Arithmetic	Solve a complex word problem
29	D		Space & Geometry	Apply an enlargement transformation to a square on a grid
30	A		Chance & Data	Interpret a column graph to calculate the range

Results

Question number	Correct answer	Mark	Category	Descriptor
31	350	☐ ☐	Chance & Data	Solve a problem using a double line graph
32	B	☐ ☐	Measures & Units	Solve a word problem involving average speed
33	12	☐ ☐	Space & Geometry	Rotate two regular shapes and compare their positions
34	D	☐ ☐	Measures & Units	Calculate the sum of the length of the edges of a cube given its volume
35	25	☐ ☐	Number & Arithmetic	Evaluate the difference between two 4-digit numbers
36	A	☐ ☐	Number & Arithmetic	Solve a multi-step problem involving odd numbers
37	65	☐ ☐	Algebra & Patterns	Calculate a person's age given certain conditions
38	D	☐ ☐	Measures & Units	Find the length of a rectangle given the area and the relationship between the sides
39	D	☐ ☐	Space & Geometry	Determine the maximum number of squares that can be drawn on a grid
40	B	☐ ☐	Chance & Data	Determine the number of possible outcomes for a situation

You have completed this practice test.

Your mark is 0 / 40 0%

Click here to reset the test and try again.

ICAS.