ICAS.

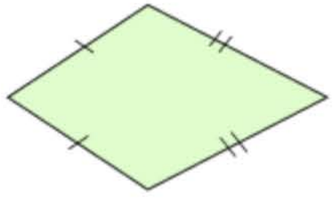
PAPER

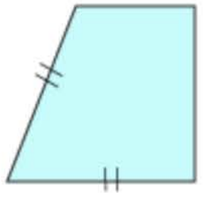
E

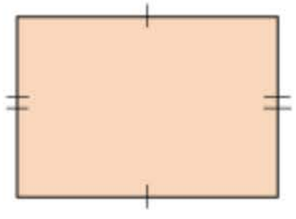
2019 MATHEMATICS

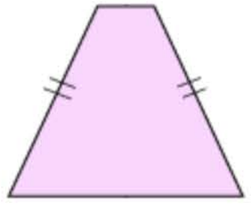
ICAS assessments

Which shape has only one pair of opposite sides that are equal in length?

☐ 

☐ 

☐ 

☐ 

Select **THREE** of the measurements that represent the same length as 1.25 m.

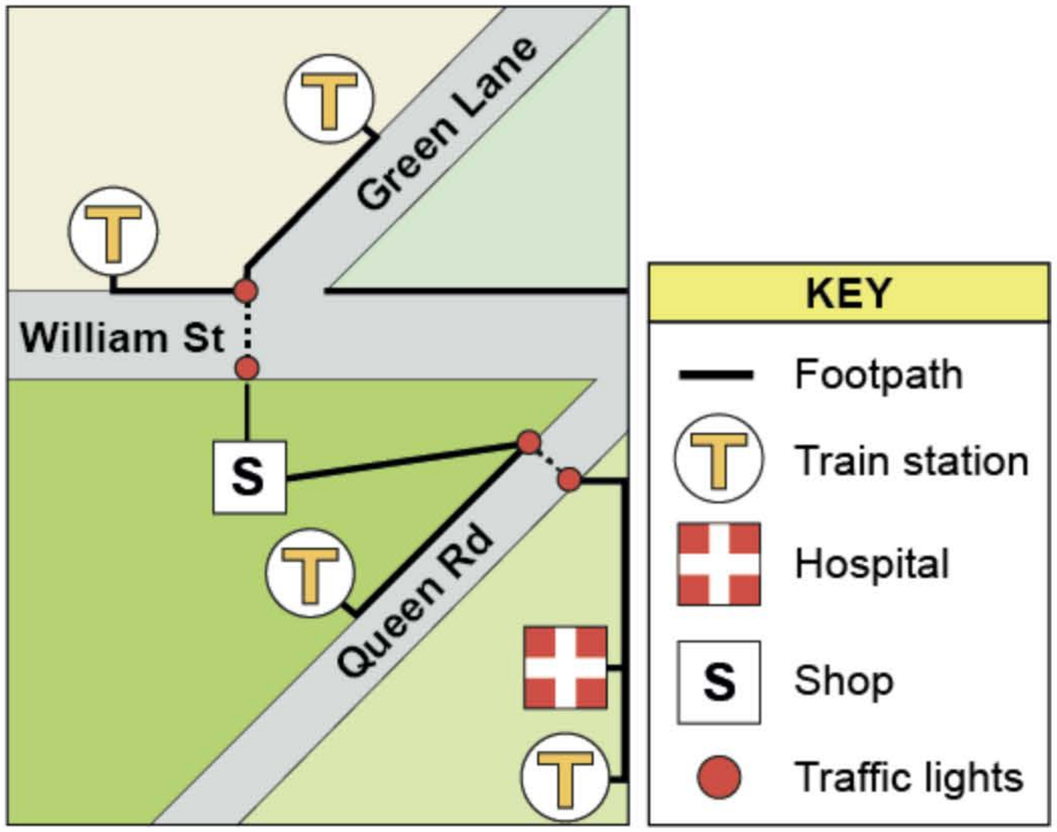
- [ ] 1250 mm
- [ ] 12cm 5mm
- [ ] 125cm
- [ ] 1m 25cm

How many times larger than the value of the 7 in 5.7 is the value of the 7 in 709?

- [ ] 10
- [ ] 100
- [ ] 1000
- [ ] 10 000

Bill stopped at the shop, then walked to the nearest train station.

He always stays on the footpath and crosses the road at traffic lights.



Which train station did Bill walk to?

- [ ] the station on Green Lane
- [ ] the station on William St
- [ ] the station on Queen Rd
- [ ] the station near the hospital

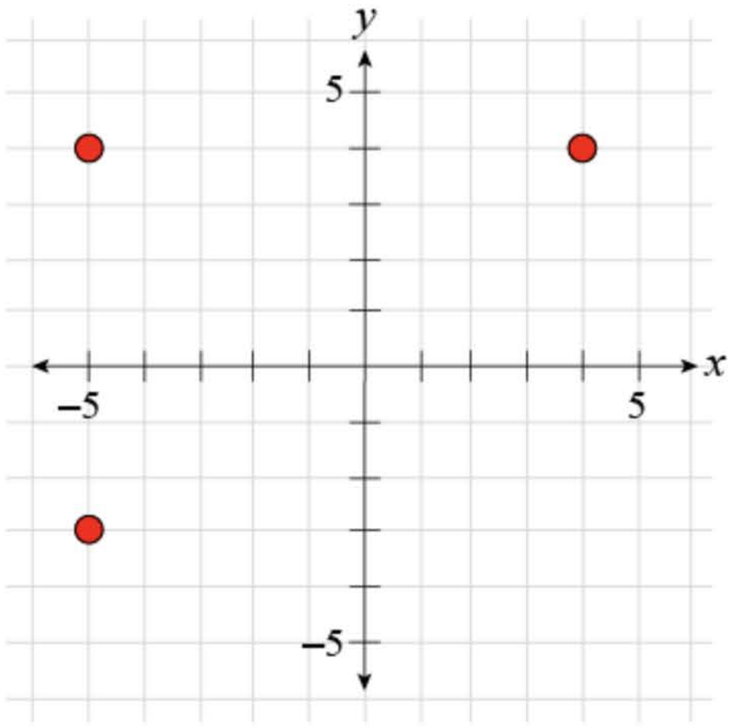
There were 20 teams competing at an Ultimate Frisbee tournament.

Each team had 6 female and 8 male players.

What fraction of the players were female?

- ☐ $\frac{3}{4}$
- ☐ $\frac{3}{7}$
- ☐ $\frac{3}{8}$
- ☐ $\frac{3}{10}$

Vani plotted these three points on a number plane.



She then plotted a fourth point. Vani connected the dots to form a rectangle.

What are the coordinates of the fourth point?

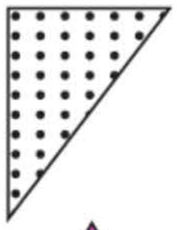
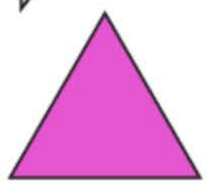
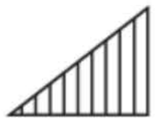
- [ ] (4, –3)
- [ ] (5, –3)
- [ ] (–3, 4)
- [ ] (–3, 5)

Jason noticed these clocks at the airport showing local times for the same day.

What is the time difference between London and Sydney?

- [ ] 3 hours
- [ ] 7 hours
- [ ] 9 hours
- [ ] 15 hours

Sally had 12 plastic pieces. First she grouped them by shape.

Triangle	Square	Rectangle
		
		
		
		

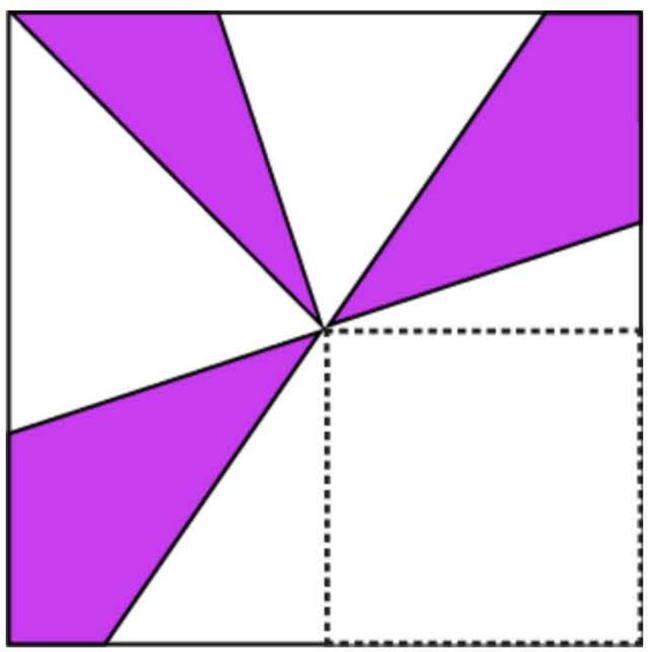
Then she grouped them another way. Each new group had a **DIFFERENT** number of plastic pieces.

How did Sally group the plastic pieces this time?

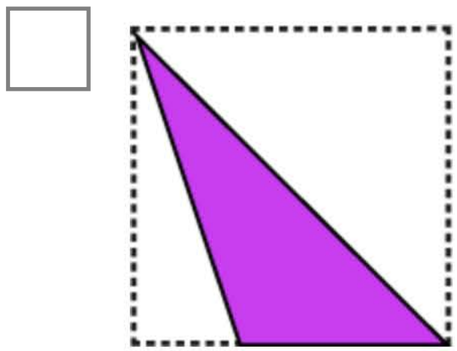
☐	All sides equal	Not all sides equal
☐	4-sided shape	3-sided shape

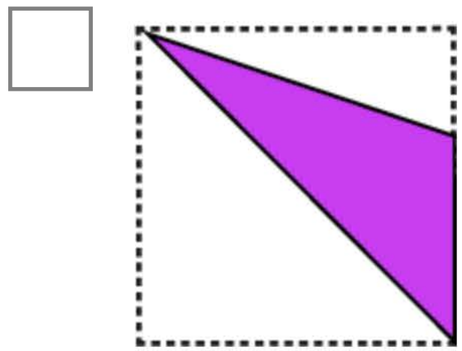
☐	Black	Pink	Striped	Dotted
☐	Shaded	Patterned		

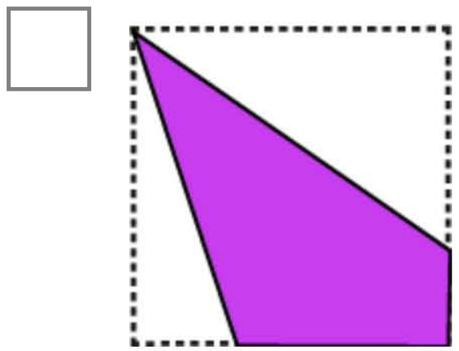
Jill is drawing a shape that will have rotational symmetry of order 2.

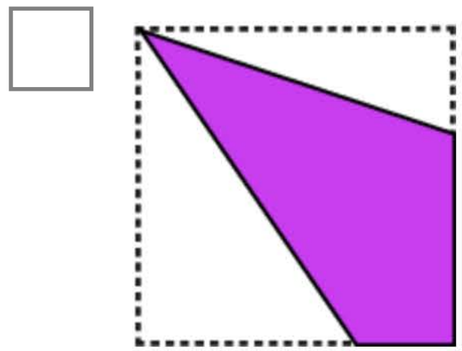


Which of these will complete her drawing?









One year, 23 September was a Monday.
What day of the week was 10 November that year?

- [ ] Sunday
- [ ] Monday
- [ ] Thursday
- [ ] Saturday

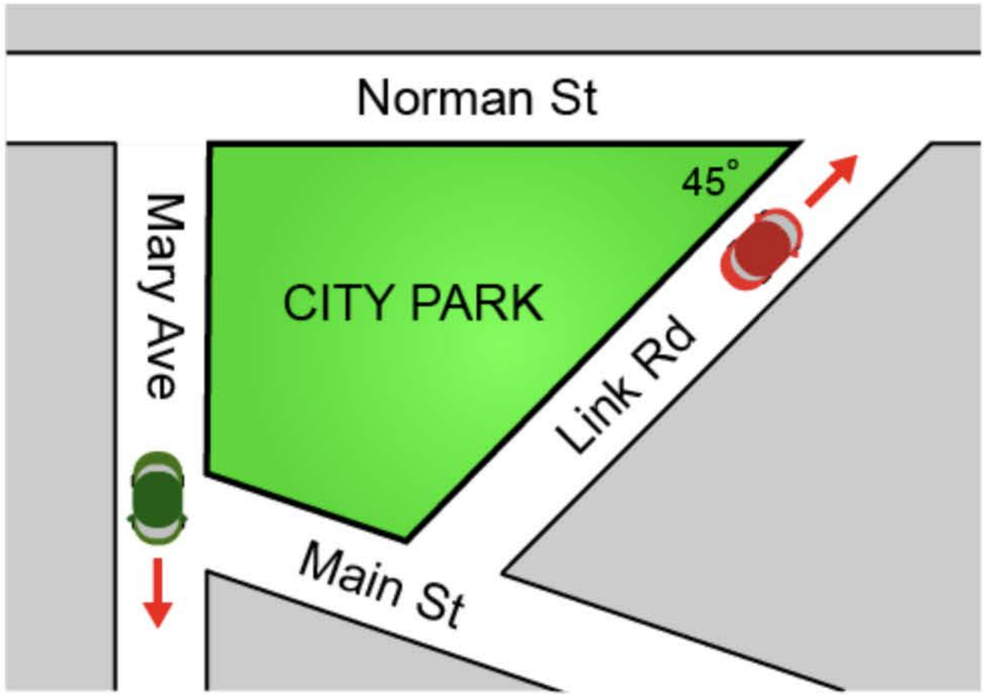
Ravi made 900 mL of purple paint by mixing blue paint and red paint.

Three-fifths of the mixture was blue paint.

How much red paint was in the mixture?

- [ ] 350 mL
- [ ] 360 mL
- [ ] 450 mL
- [ ] 540 mL

The green car is travelling west along Mary Ave.



In which direction is the red car travelling along Link Rd?

- [ ] south-east
- [ ] north-east
- [ ] south-west
- [ ] north-west

Jack hired a bike in France.

The cost to hire the bike for the first day was €20.

The cost for each day after this was a fixed lower amount.

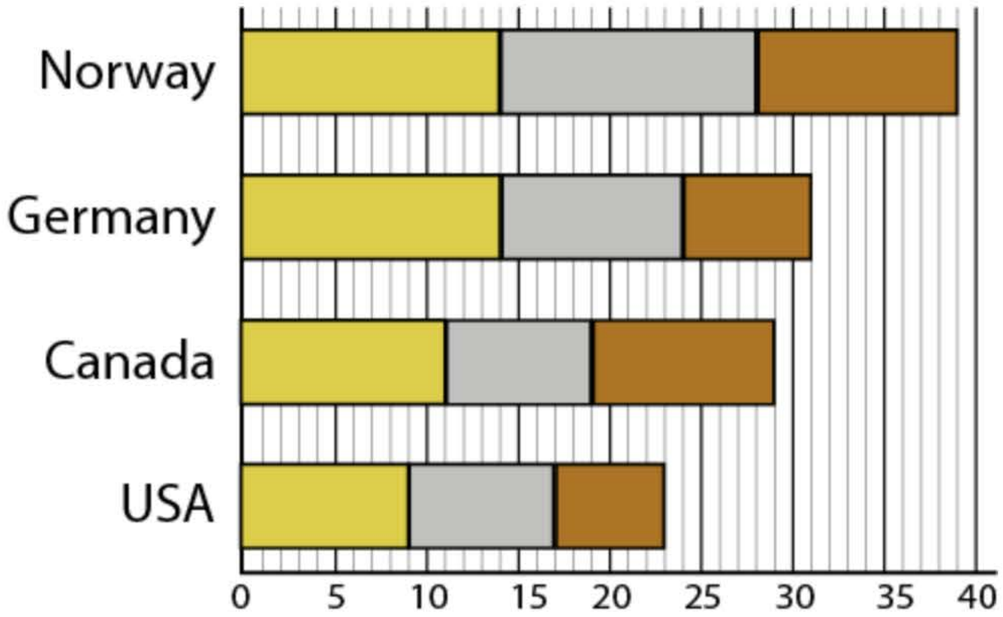
Altogether, Jack paid €44 to hire the bike for 4 days.

What would it have cost Jack to hire the same bike for only 2 days?

- [ ] €24
- [ ] €28
- [ ] €31
- [ ] €35

Norway, Germany, Canada and the USA won the most medals at the 2018 Winter Olympic Games.

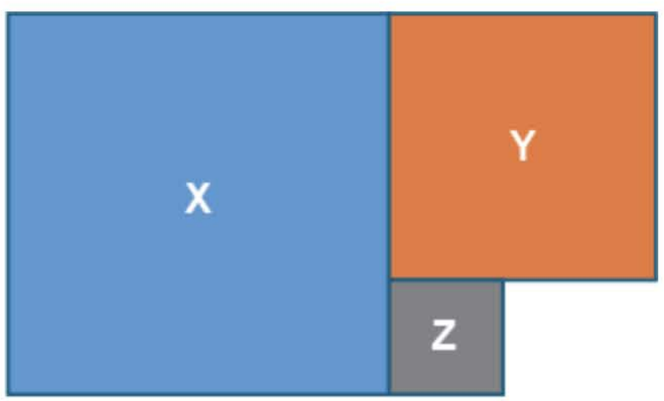
This graph shows the number of medals won by each of these countries, in the order gold, silver and bronze.



Which of these statements is **FALSE**?

- [ ] Norway won equal numbers of gold and silver medals.
- [ ] Canada won equal numbers of gold and bronze medals.
- [ ] Germany won more gold and silver medals than the medals USA won altogether.
- [ ] Norway won the same number of bronze medals as Canada won gold.

X, Y and Z are squares. The perimeter of X is 32 m and the area of Y is 25 m².

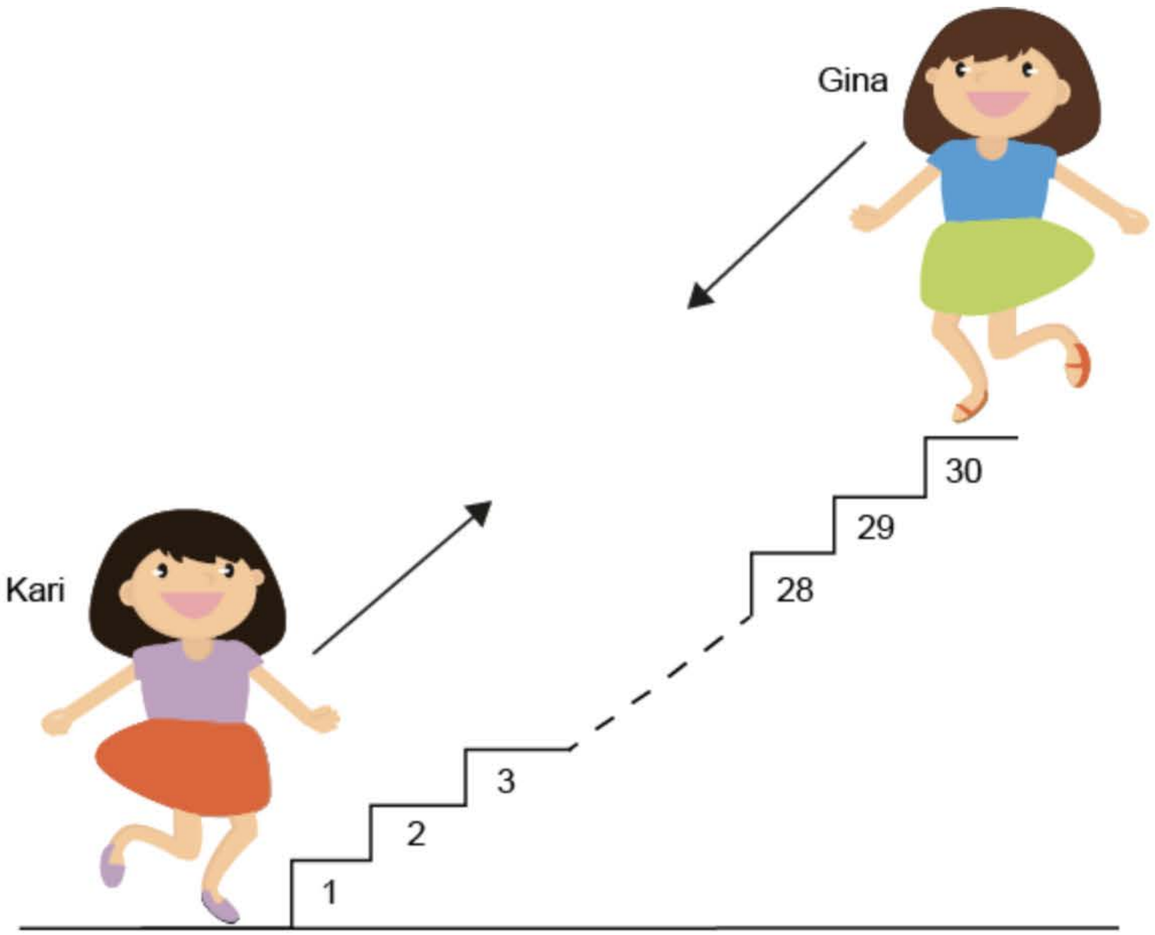


NOT TO SCALE

What is the perimeter of Z?

- [ ] 3 m
- [ ] 7 m
- [ ] 9 m
- [ ] 12 m

Kari and Gina are standing at opposite ends of a 30-step staircase.



They start walking towards each other at the same time.

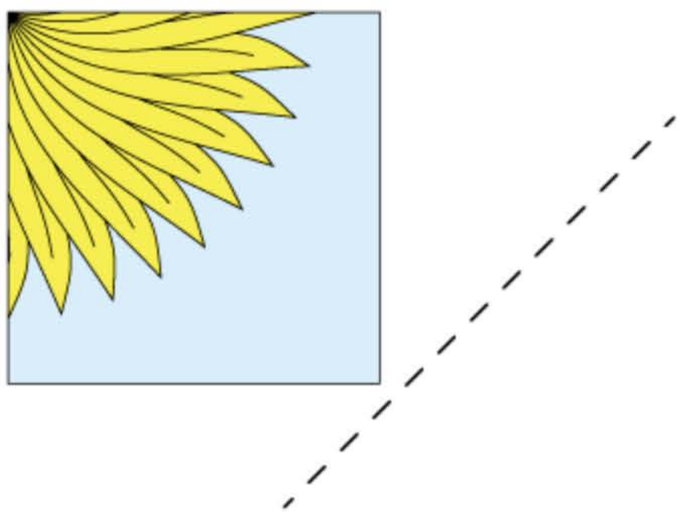
Gina walks down 3 steps every second.

Kari walks up 2 steps every second.

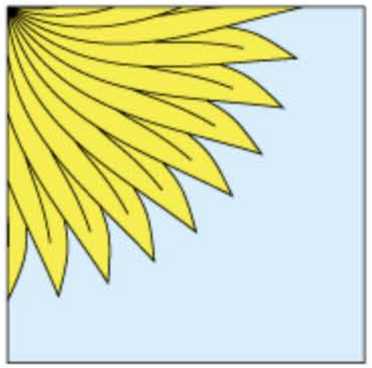
On which step will they meet?

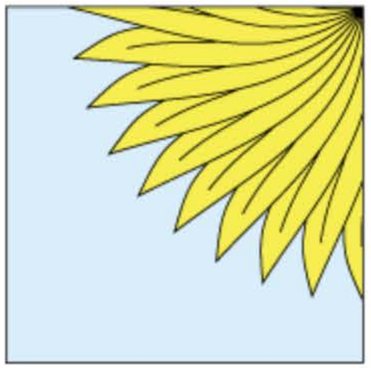
- ☐ 18
- ☐ 15
- ☐ 12
- ☐ 10

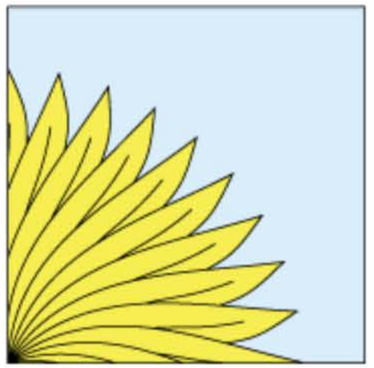
Sasi reflected this shape in the dotted line.

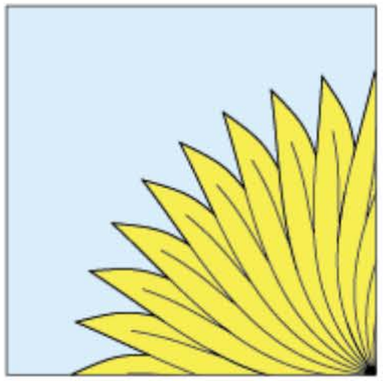


What did the reflected shape look like?









Fadi found the product of an odd number and an even number, both greater than 2.

He then subtracted the same odd number from his result.

Which of these is true of the answer?

- [ ] It could be either an odd or an even number.
- [ ] It must be a different even number.
- [ ] It must be the same even number.
- [ ] It must be a different odd number.
- [ ] It must be the same odd number.

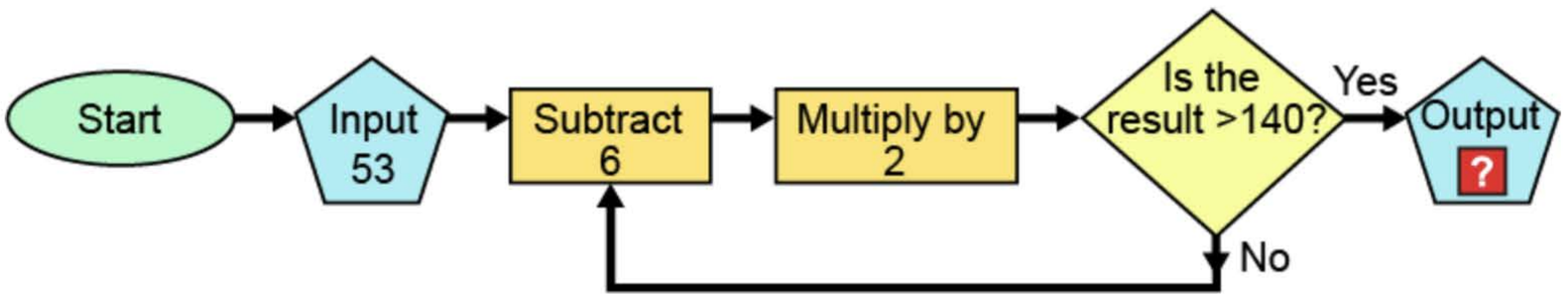
Anh and Jemma collect coins.

Jemma has two-thirds the number of coins that Anh has.

What percentage of the total number of coins does Jemma have?

- [ ] 67%
- [ ] 60%
- [ ] 40%
- [ ] 33%

Here is a flowchart.



What is the output?

- [ ] 152
- [ ] 176
- [ ] 188
- [ ] 200

All 106 students at a school camp must sleep in tents. Each tent is occupied by either 9 or 11 students.
How many tents are occupied by 11 students?

- [ ] 2
- [ ] 8
- [ ] 9
- [ ] 10

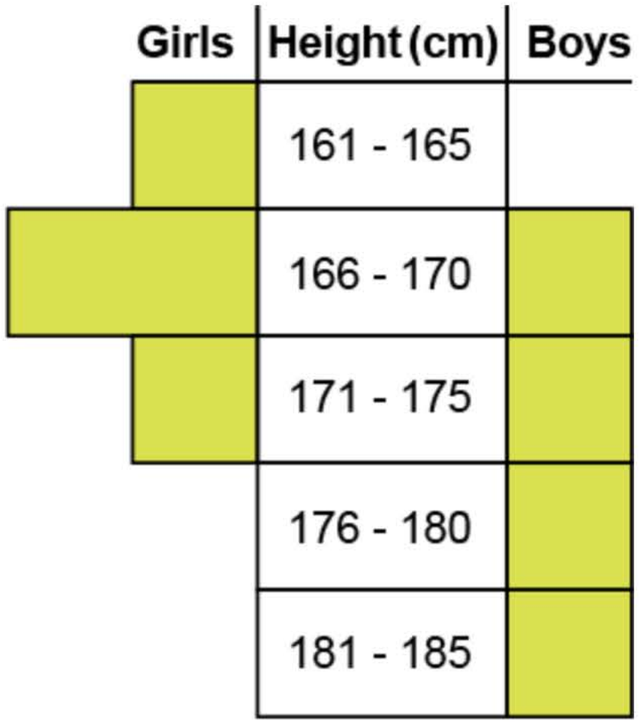
Minh built one large cube using a number of small cubes. The first layer of his large cube used 64 small cubes.
How many small cubes were used to build the large cube altogether?

- [ ] 512
- [ ] 1024
- [ ] 2018
- [ ] 4096

A group of five boys and five girls measured and recorded their heights to the nearest centimetre. The ordered results are shown here:

164, 167, 168, 168, 170, 172, 174, 180, 182, 182.

The tallest girl used a double bar graph to compare the heights of the other four girls with the heights of four of the boys.

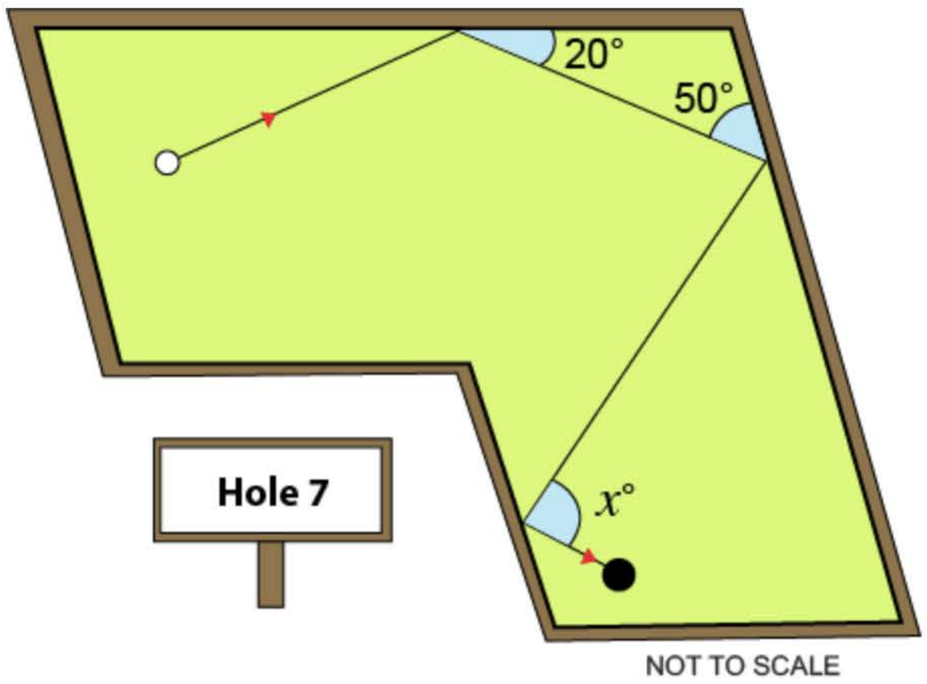


Which statement is true?

- [ ] The missing boy's height is 172 cm.
- [ ] The missing girl's height is 167 cm.
- [ ] The shortest boy's height is 164 cm.
- [ ] The tallest girl's height is 182 cm.

Leanne is playing minigolf. All opposite sides on Hole 7 are parallel.

Leanne hit the ball into the hole. The diagram shows the path of the ball.



Every time the ball hit a side, the angle at which the ball approached a side was equal to the angle at which it rebounded.

What is the value of x?

- ☐ 50
- ☐ 70
- ☐ 80
- ☐ 100

Kate is using a rule to generate her code.

For each letter, she uses the number of its position in the alphabet, doubles this number and then subtracts 3.

For example, B is in position 2 so:

B = 2 × 2 – 3 = 1

What code will Kate use for F U N ?

- ☐ 6 21 14
- ☐ 6 36 22
- ☐ 9 37 23
- ☐ 9 39 25

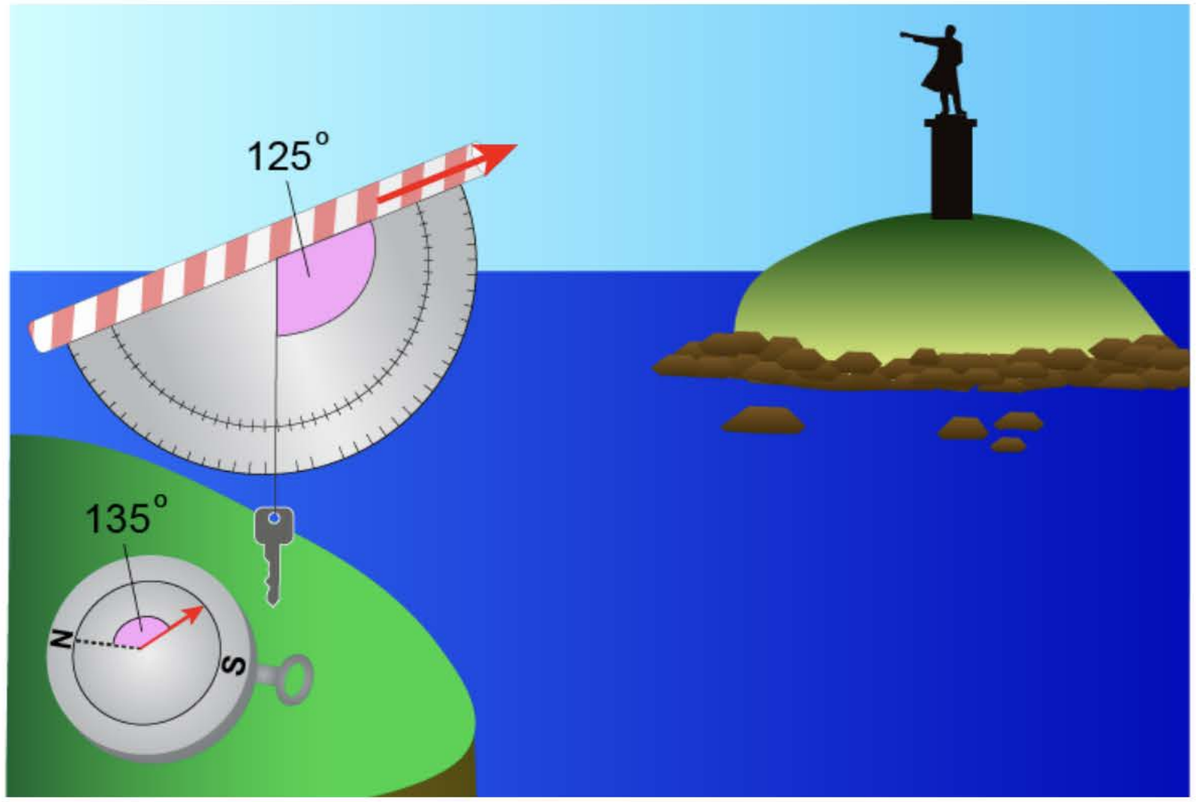
Which of these fractions gives the largest result when divided into a positive integer?

- ☐ $\frac{2}{3}$
- ☐ $\frac{3}{4}$
- ☐ $1\frac{1}{3}$
- ☐ $1\frac{1}{2}$

Jim made a clinometer with a straw, a protractor and a weighted piece of string.

Jim looked through the straw to the top of the statue and measured the angle.

Then he used his compass to obtain a bearing.



Which is the bearing and angle of inclination of the statue's position from Jim?

☐

Bearing	Inclination
north-east	35°

☐

Bearing	Inclination
north-east	55°

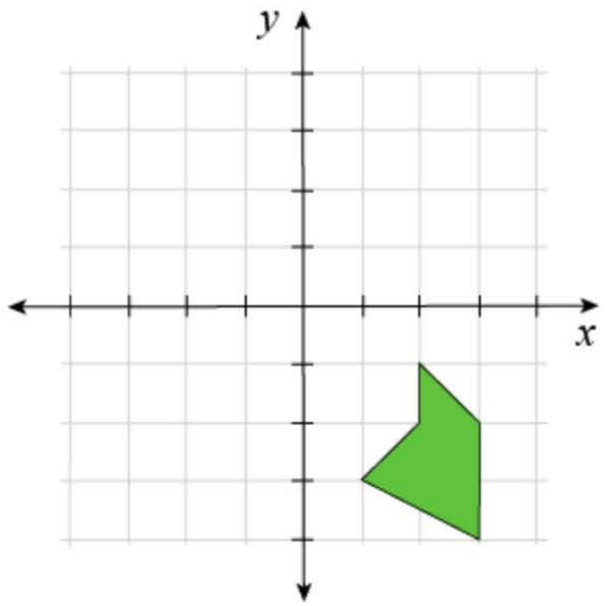
☐

Bearing	Inclination
south-east	35°

☐

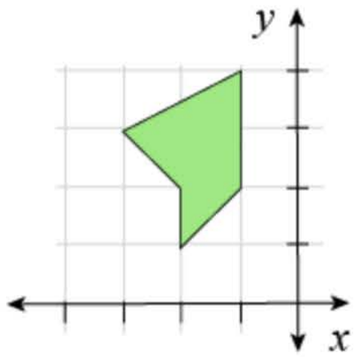
Bearing	Inclination
south-east	55°

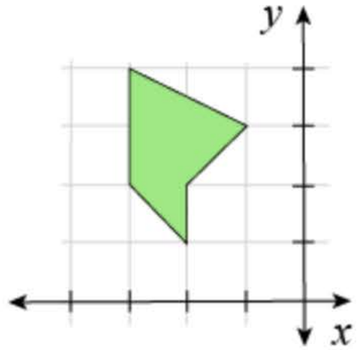
Lin drew this shape on the number plane.

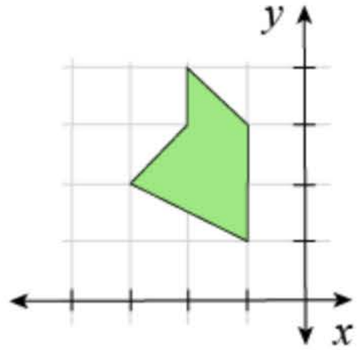


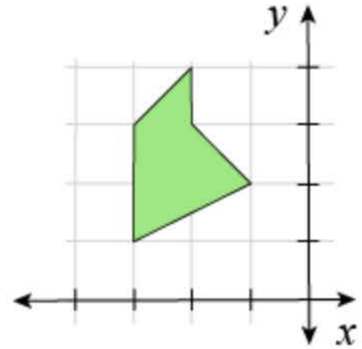
She copied the shape and translated it 4 units to the left. Lin then reflected it across the x-axis.

Which diagram shows the position of the copied shape after the two transformations?

☐ 

☐ 

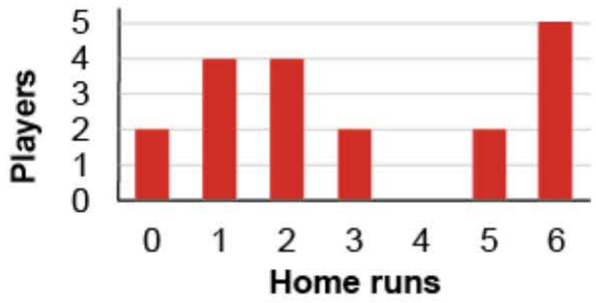
☐ 

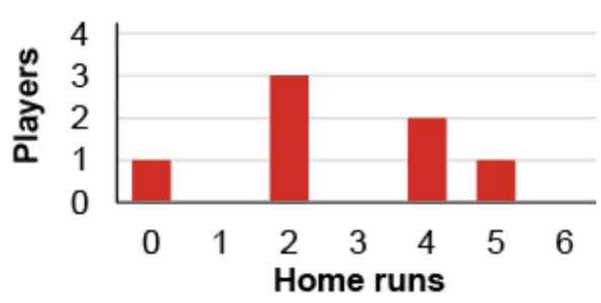
☐ 

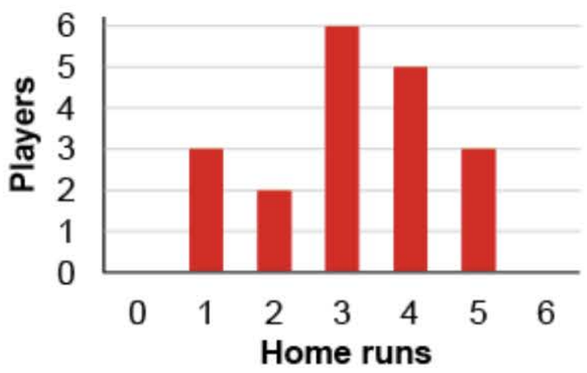
This table shows the number of home runs scored by some players in a softball team.

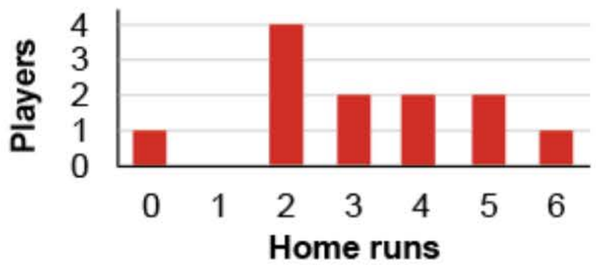
	Game					
Player	**1**	**2**	**3**	**4**	**5**	**Total**
Milly	0	1	0	0	1	**2**
Pam	1	0	0	2	1	**4**
Jane	1	1	2	0	0	**4**
Ruby	0	0	1	1	0	**2**
Alison	0	0	0	0	0	**0**
Jess	0	0	1	1	0	**2**
Liz	1	0	2	1	1	**5**
Total	**3**	**2**	**6**	**5**	**3**	**19**

Which graph shows the number of players who scored a given number of home runs?









Only square numbers have an odd number of factors.

For example, 16 has five factors: 1, 2, 4, 8 and 16.

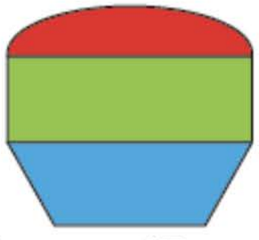
How many numbers between 1 and 100 have exactly three factors?

- [ ] 4
- [ ] 5
- [ ] 6
- [ ] 7

Sam had identical copies of these three paper shapes.

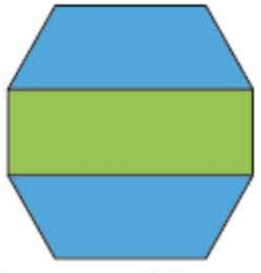
He used them to create these designs.

Design 1



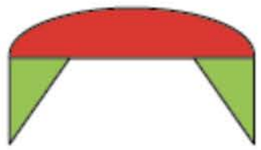
Area = 17 cm²

Design 2



Area = 20 cm²

Design 3



Area = 5 cm²

Design 4

Area = ? cm²

What value must ? be?

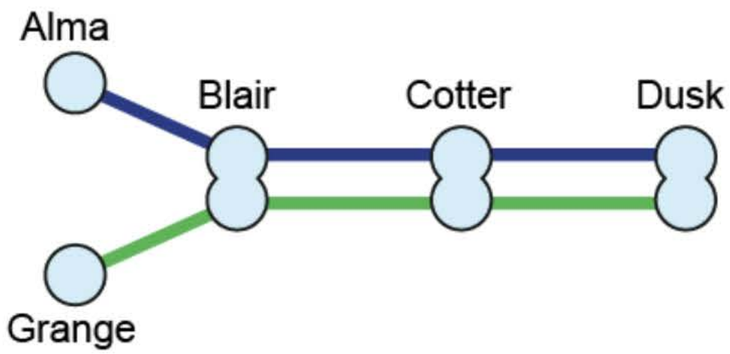
- [ ] 10
- [ ] 11
- [ ] 12
- [ ] 13

Andy wanted to leave Alma Station between 10 am and 11 am. He worked out the fastest route to Grange Station using these train timetables.

Train 1			
Station	**am**	**am**	**am**
Alma	10:00	10:30	10:45
Blair	10:45	11:15	11:30
Cotter	10:55	11:20	11:35
Dusk	11:00	11:25	11:40

Train 2			
Station	**am**	**am**	**pm**
Dusk	10:55	11:25	12:00
Cotter	11:00	11:30	12:05
Blair	11:05	11:35	12:10
Grange	11:20	11:50	12:25

This is the train network relating to the two timetables.

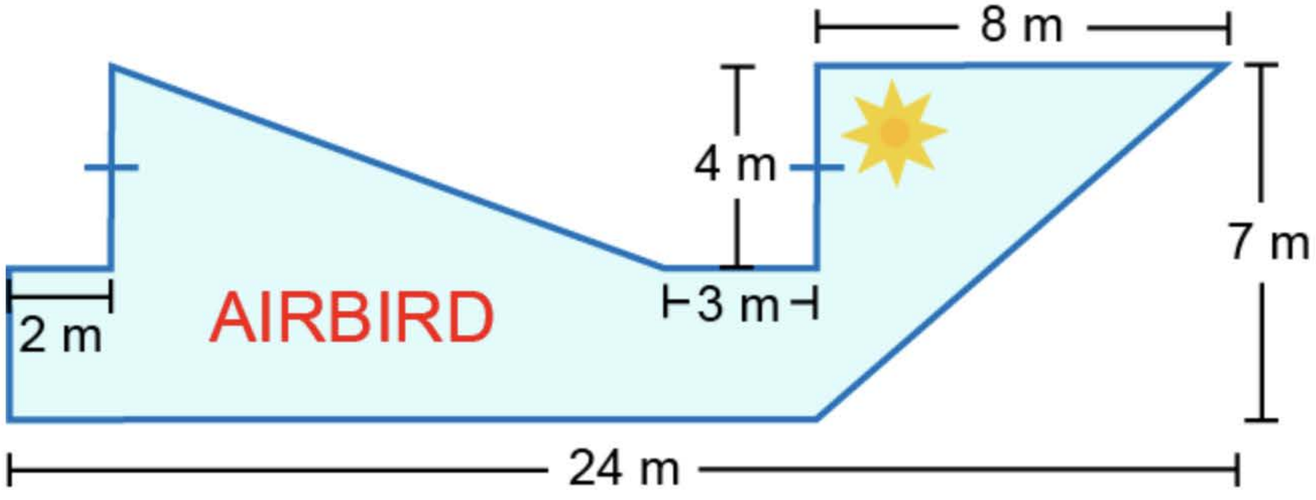


How long did the trip take Andy from start to finish?

- ☐ 50 minutes
- ☐ 1 hour 5 minutes
- ☐ 1 hour 20 minutes
- ☐ 1 hour 40 minutes

The airline Airbird has just released their new logo, which is a stylised aeroplane.

This will be painted on the side of their planes.

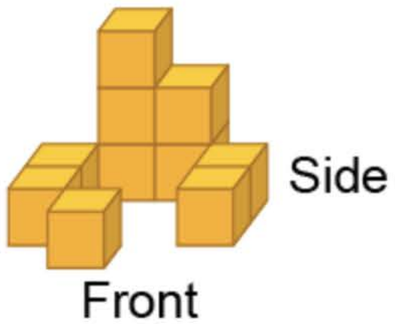


NOT TO SCALE

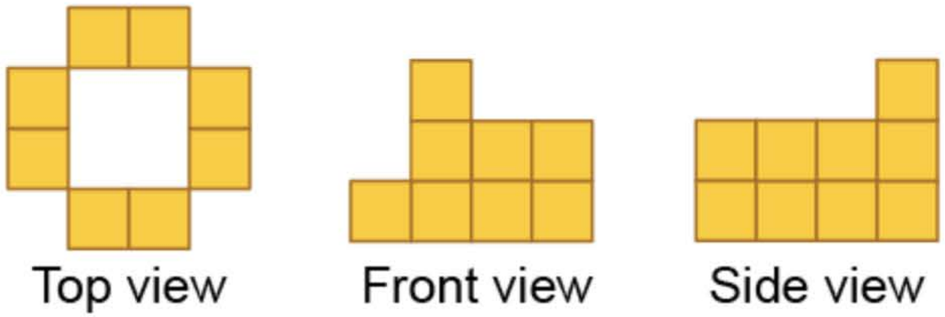
What is the area of the logo?

- [ ] 86 m²
- [ ] 98 m²
- [ ] 122 m²
- [ ] 126 m²

Ben stacked his cubes to make this pattern.



He wants to add more cubes so his pattern matches these views.



What is the minimum number of cubes Ben needs to add?

- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5

Meg rolled three regular dice.

Each time she rolled two sixes or three sixes she recorded it. Two examples of these outcomes are listed in the table.

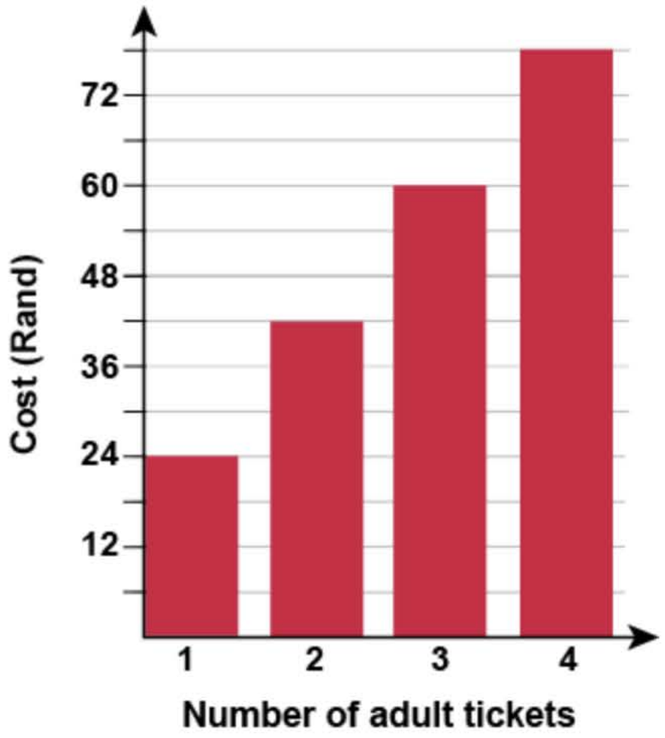
Red dice	Green dice	Blue dice
6	6	4
6	1	6

How many different outcomes, showing two or three sixes, are possible?

- ☐ 12
- ☐ 15
- ☐ 16
- ☐ 18

Joe lives in South Africa. He bought movie tickets online for himself and his three children.

The graph shows the price per adult ticket, including the fixed booking fee.



A child ticket is half the cost of an adult ticket.

What was the total cost of the tickets, including the booking fee?

☐ Rand

A number is known as a duodecuple if it is divisible by both 3 and 4.

Bo made up a duodecuple and used it as the 3-digit code to a combination lock.

The first digit is 8 and there is no 2 in the code.

The last two digits are different and form a number greater than 10.

8 _ _

What are the last two digits of Bo's code?

- [ ] 94
- [ ] 18
- [ ] 40
- [ ] 30

China is launching a mini-moon to replace streetlights in Chengdu. It is to be made of mirrors that will reflect enough light to illuminate 50 km² of land.

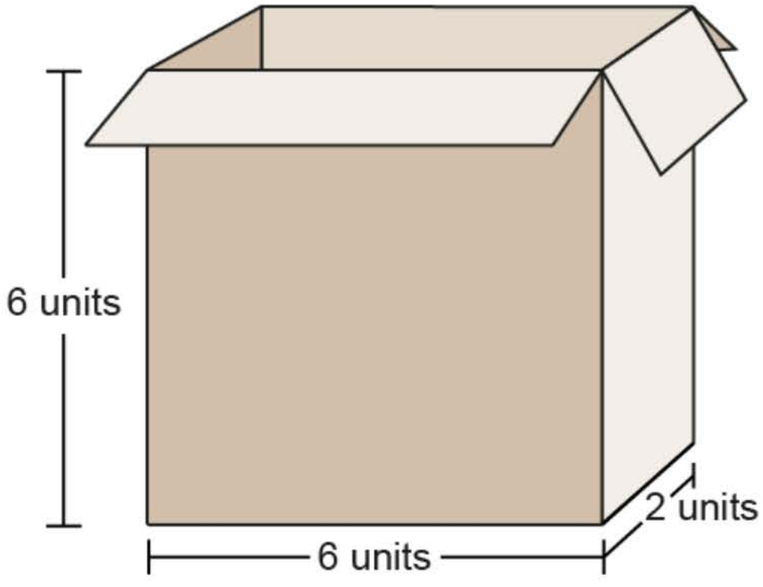
If this is successful, three larger mini-moons will be launched a few years later.

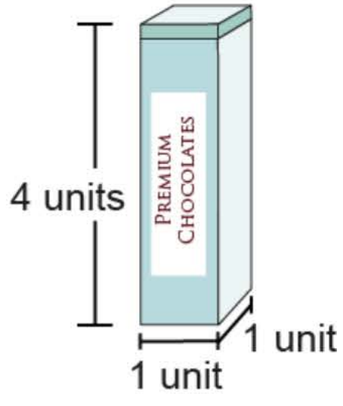
Together the four mini-moons will illuminate 5000 km² of land.

What percentage increase in illuminated land will be provided by the three larger mini-moons compared to having just one small mini-moon?

[ ] %

Ajay is packing boxes of chocolates into large cardboard boxes. Each cardboard box can be closed after packing.



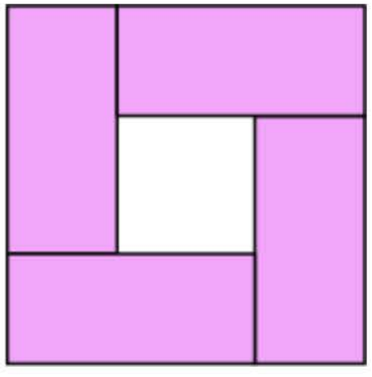


Ajay has 1440 boxes of Premium Chocolates to pack.

What is the smallest number of large cardboard boxes required?

☐ large boxes

Lin arranged four identical rectangles to form this shape.



The outer edges and the inner edges of the shape form squares.

The larger square has an area of 121 cm^2 and the smaller square has an area of 25 cm^2.

What is the perimeter of each rectangle?

cm

Results

Question number	Correct answer	Mark	Category	Descriptor
1	D		Space & Geometry	Identify a shape given a specific property
2	A, C, D		Measures & Units	Recognise the equivalence of measurements
3	C		Number & Arithmetic	Understand the relative value of digits in the tenths and hundreds columns
4	B		Space & Geometry	Read a legend and interpret the shortest route on a map
5	B		Number & Arithmetic	Express a ratio as a simplified fraction
6	A		Algebra & Patterns	Identify the coordinates of the vertex of a rectangle
7	C		Measures & Units	Calculate the difference between two 12-hour times
8	C		Chance & Data	Group shapes by pattern, number of sides and position to solve a problem
9	A		Space & Geometry	Identify the shape that completes a rotational symmetrical pattern
10	A		Measures & Units	Identify the day of the week in a calendar
11	B		Number & Arithmetic	Find the fraction of a quantity
12	A		Space & Geometry	Determine a direction from a map
13	B		Algebra & Patterns	Solve a problem involving two fixed amounts
14	B		Chance & Data	Interpret a group of divided bar graphs
15	D		Measures & Units	Solve a problem involving area and perimeter of squares
16	C		Measures & Units	Solve a problem involving the comparison of distances over the same time period
17	D		Space & Geometry	Identify a shape after a one-step reflection
18	D		Number & Arithmetic	Use the properties of odd and even numbers
19	C		Number & Arithmetic	Calculate the percentage of the total left after subtracting a sum
20	B		Algebra & Patterns	Follow the rules of a flowchart to find the output
21	B		Number & Arithmetic	Solve a problem involving the sum of multiples of 9 and 11
22	A		Measures & Units	Calculate the volume of a cube given the number of cubes in the first layer
23	D		Chance & Data	Interpret a double bar graph
24	C		Space & Geometry	Find the size of an angle between a transversal and parallel lines
25	D		Algebra & Patterns	Follow the pattern to determine the missing part of the code
26	A		Number & Arithmetic	Understand that division by a small fraction gives a large result
27	C		Space & Geometry	Calculate a complementary angle and bearing in a surveying context
28	A		Space & Geometry	Identify the orientation of a shape on the number plane after two transformations
29	B		Chance & Data	Convert information from a table into a column graph
30	A		Number & Arithmetic	Determine how many numbers have exactly three factors

Results

Question number	Correct answer	Mark	Category	Descriptor
31	B		Measures & Units	Calculate the area of a composite shape given a number of related areas
32	B		Measures & Units	Interpret two timetables to find the fastest route
33	B		Measures & Units	Calculate the area of a composite shape
34	C		Space & Geometry	Build a solid to match its top, side and front views
35	C		Chance & Data	Determine the number of possible outcomes involving three dice
36	51		Chance & Data	Interpret a graph to solve a financial problem
37	C		Number & Arithmetic	Apply the rules of divisibility by 12 to solve a problem
38	9900		Number & Arithmetic	Calculate a percentage increase that is greater than 100 per cent
39	90		Space & Geometry	Solve a packing problem involving rectangular prisms
40	22		Measures & Units	Solve a perimeter problem involving the comparison of lengths and areas

You have completed this practice test.

Your mark is 0 / 40 0%

Click here to reset the test and try again.

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