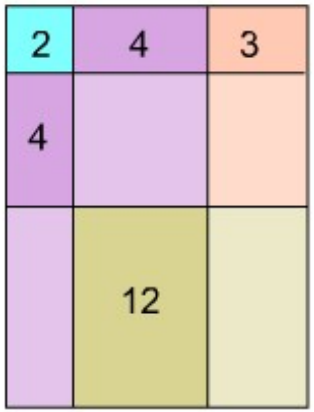
A large rectangle is divided into nine smaller rectangles.

The areas of some of the smaller rectangles are shown.

All measurements are in cm^2.

Not to scale



What is the area of the entire rectangle?

25 cm^2

48 cm^2

54 cm^2

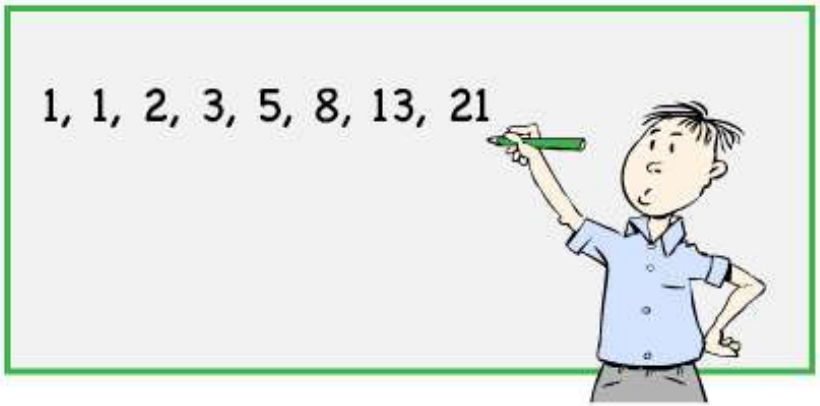
81 cm^2

Philip recorded the number of sit-ups he completed each morning. Over the first four mornings he averaged 15 sit-ups. The average of the first five mornings was 16 sit-ups.

How many sit-ups did Philip complete on the fifth morning?

- 1
- 16
- 20
- 21

Raad wrote down the first eight numbers in a pattern:



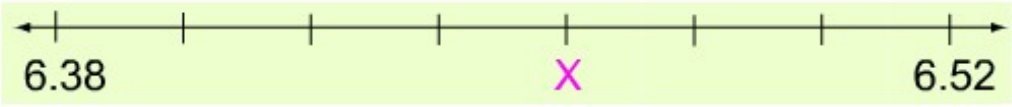
What is the first number in the pattern that is greater than 100?

- 101
- 109
- 123
- 144

Three sisters entered the long jump at the athletics carnival. Kahli jumped 50% further than Anna and Anna jumped 50% further than Francesca.

How many times further did Kahli jump than Francesca?

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



On the number line, what number is represented by X?

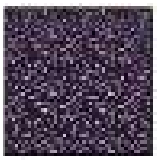
- 6.42
- 6.44
- 6.484
- 6.46

Leo uses different-sized stickers to cover a grid.

He has stickers of the following sizes:

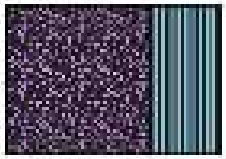
a small square

a rectangle



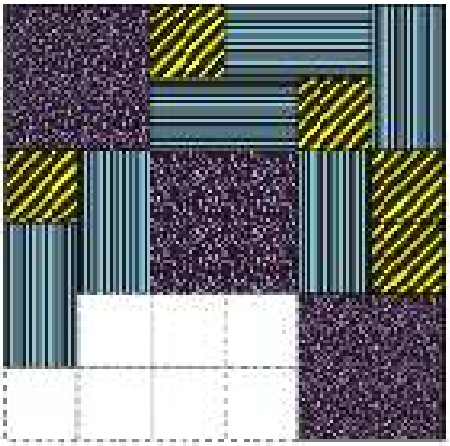
a large square

There are many ways Leo can cover a three-by-two grid. Here are two examples:



Leo plans to use the small squares, the rectangles and the large squares to cover a six-by-six grid in a pattern that is symmetrical.

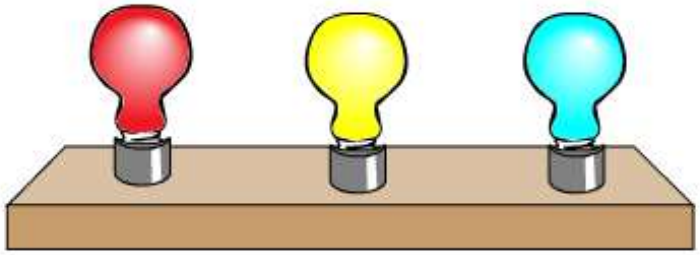
The diagram below shows some of the grid already covered.



How many of each shape does Leo need to complete the pattern?

- three small squares and one large square
- one small square and three rectangles
- three small squares and two rectangles
- five small squares and one rectangle

A machine can use lights to give a signal.



Each light can be either on or off. So if there is just one light there are two possible signals. If there are two lights there are four possible signals: off, off; off, on; on, off; on, on. Anna created a table to record the signals for different numbers of lights in a row.

Number of lights	Number of different signals
1	2
2	4
3	8
4	
5	

How many different signals would there be if there were five lights in a row?

- 16
- 22
- 24
- 32

This shape is being rotated in a pattern.

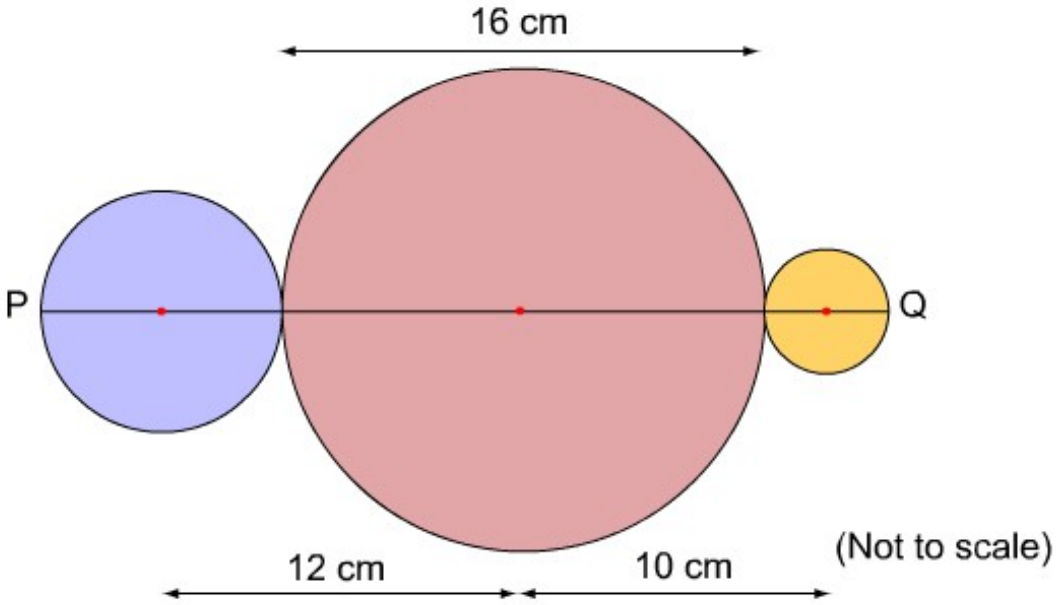
Through how many degrees, in a clockwise direction, is the shape being rotated?

- 135
- 150
- 210
- 225

The diagram shows three circles arranged so that their centres are on the straight line joining P to Q.

The diameter of the large circle is 16 cm.

The distance between the centres of the first two circles is 12 cm and the distance between the centres of the second and third circles is 10 cm.

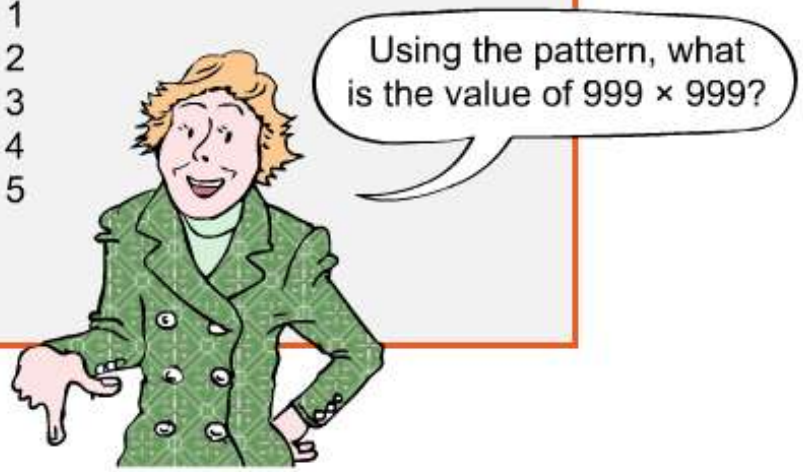


How long is the line from P to Q?

- 22 cm
- 26 cm
- 28 cm
- 36 cm

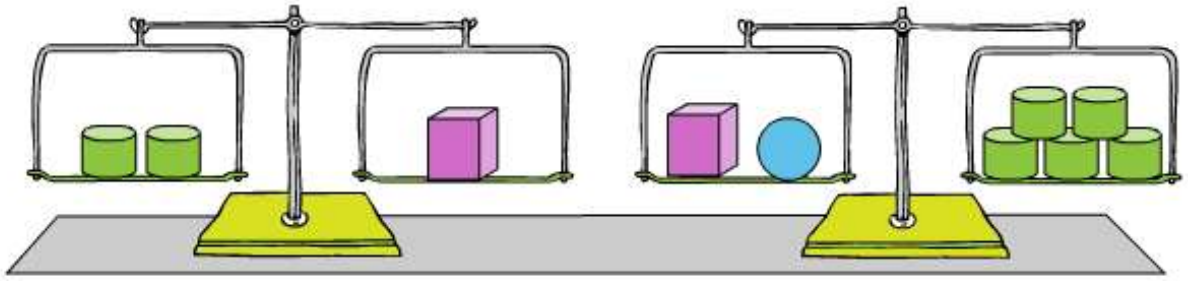
Here are the first five steps in a pattern:

$2 \times 2 - 1 = 3 \times 1$
$3 \times 3 - 1 = 4 \times 2$
$4 \times 4 - 1 = 5 \times 3$
$5 \times 5 - 1 = 6 \times 4$
$6 \times 6 - 1 = 7 \times 5$

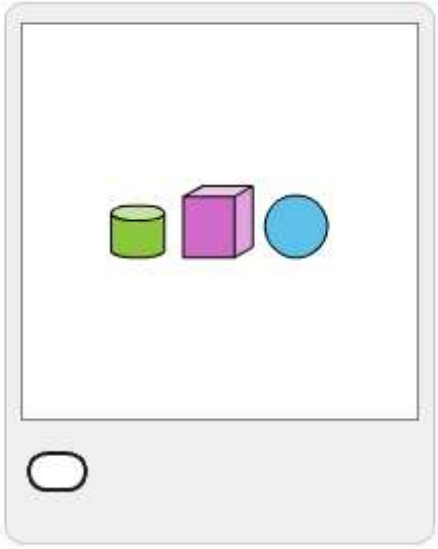


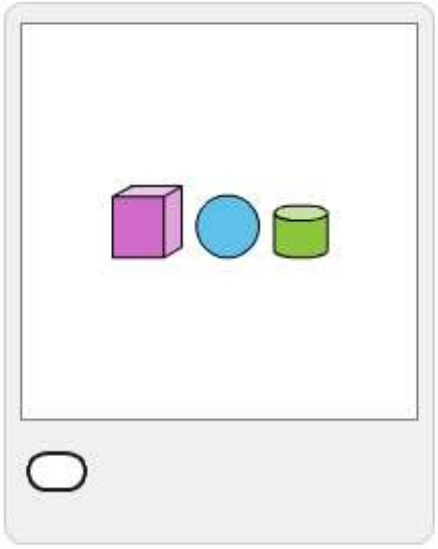
- 999 799
- 999 801
- 997 999
- 998 001

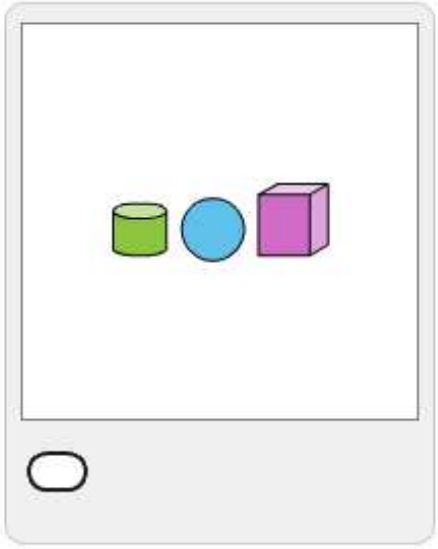
The balances show the relationships between the masses of three different objects.

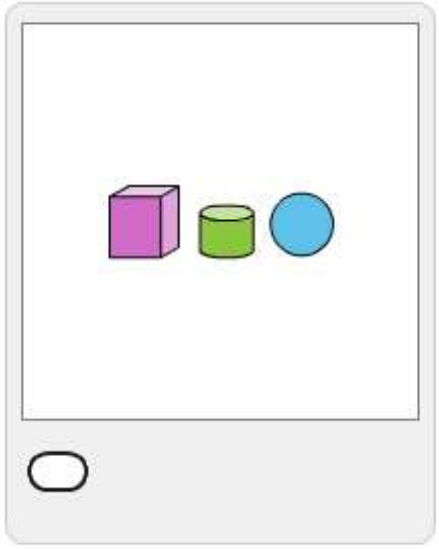


Which of the following represents the three objects from lightest to heaviest?

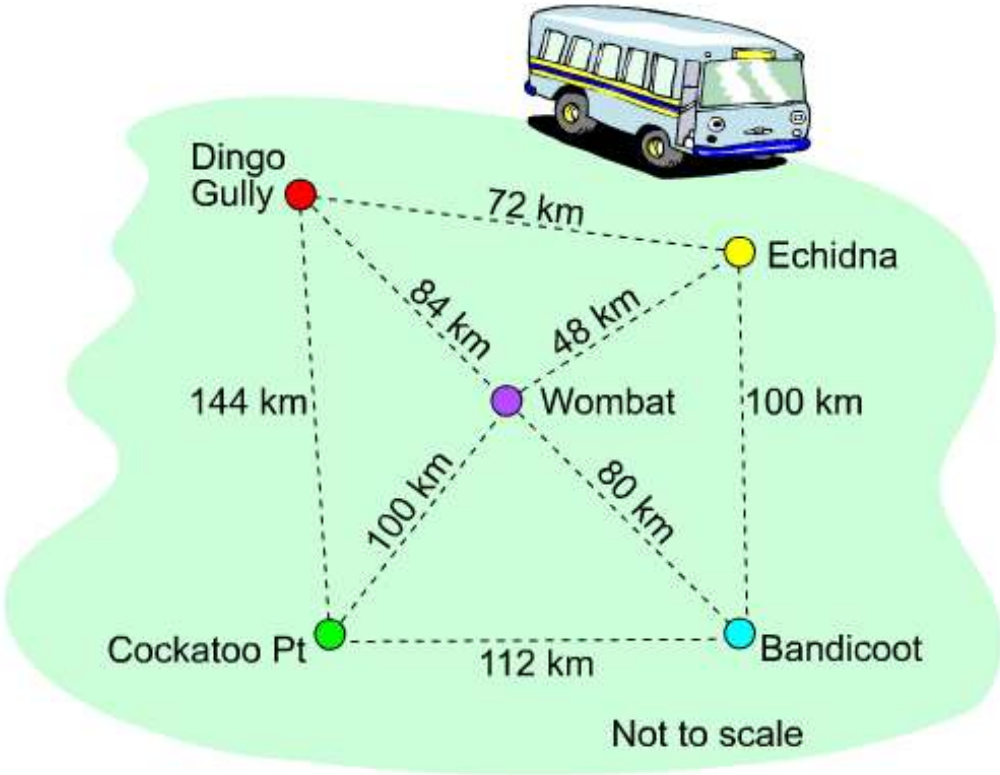








Gavin is organising a bus trip from Dingo Gully to Cockatoo Point. The bus will stop at the towns of Bandicoot, Echidna and Wombat (in some order) on the way.

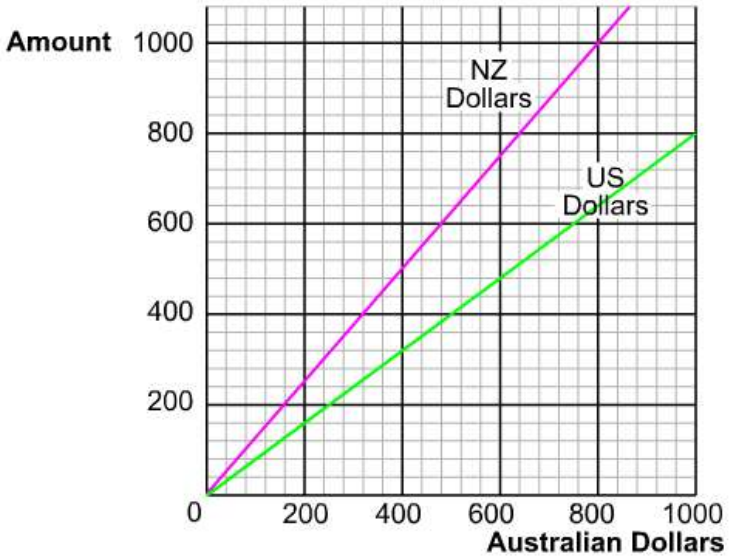


If the bus travels at an average speed of 60 km/h, what is the minimum travelling time that Gavin should allow?

- 4 h 56 min
- 5 h 12 min
- 5 h 24 min
- 5 h 32 min

This graph can be used to change Australian dollars into US Dollars or New Zealand dollars. For example, A$1000 = US$800, and NZ$1000 = A$800.

Conversion of NZ and US dollars to Australian dollars



Erica changed NZ$600 to Australian dollars. Bob changed US$500 to Australian dollars.

Which statement best describes the difference between the amounts Erica and Bob then had?

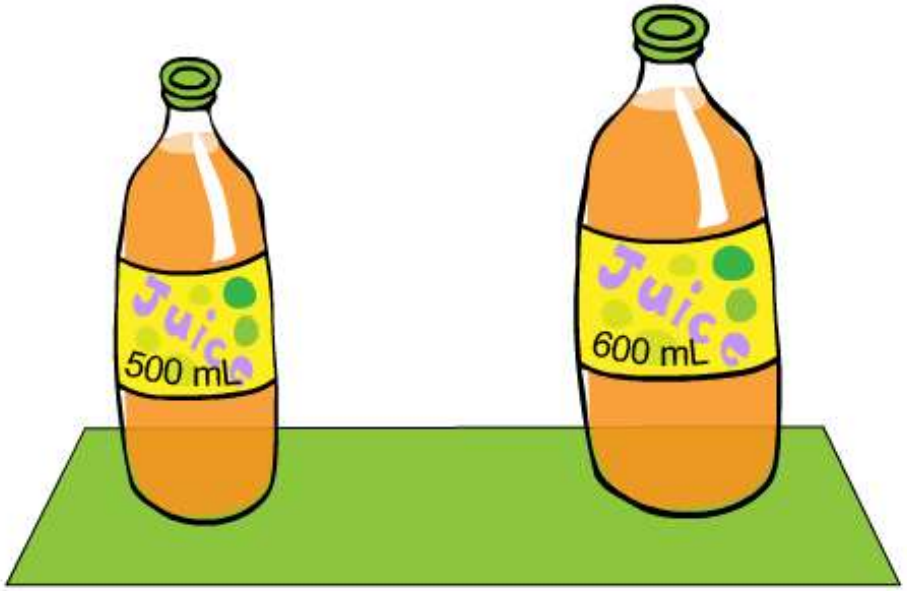
- Erica had $145 more than Bob
- Erica had $145 less than Bob
- Erica had $100 more than Bob
- Erica had $100 less than Bob

The table shows the results of the football games the Wayward Warriors have played in the competition. It shows whether they played at home (their home ground) or away (their opponents' home grounds), the goals for (the goals the Warriors scored) and the goals against (the goals their opponents scored).

Week	Venue	Opponent	Goals For	Goals Against
1	Home	Pirates	3	2
2	Away	Sharks	2	0
3	Home	Eagles	1	2
4	Away	Bulls	1	1
5	Away	Pirates	4	1
6	Home	Sharks	1	1
7	Away	Eagles	2	0
8	Home	Bulls	3	0

Against which opponent did the Warriors score the highest percentage of goals out of the total for the two games played?

- ◯ Pirates
- ◯ Sharks
- ◯ Eagles
- ◯ Bulls



A bottle that holds 600 mL of juice weighs 960 g when full. When it is half full it weighs 600 g. A smaller bottle of the same juice holds 500 mL and weighs 760 g when full.

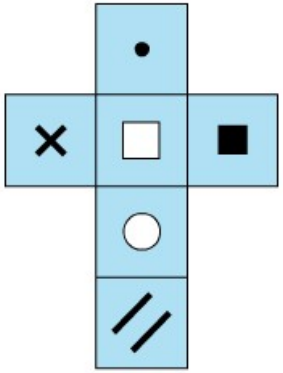
What fraction of the weight of the empty 600 mL bottle is the empty 500 mL bottle?

- $\frac{5}{6}$
- $\frac{4}{5}$
- $\frac{3}{4}$
- $\frac{2}{3}$

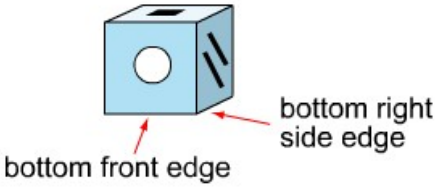
Satyam and Laura like going for walks.
Satyam walks at 6 km/h and Laura walks at 3 km/h.
They set out from the post office at the same time in the same direction.
After an hour, Satyam stops, turns around and walks back towards the post office while Laura continues walking away from the post office.
When he meets Laura, she also turns around and follows Satyam.

When Satyam reaches the post office how long will he have to wait until Laura arrives?

- ⬭ 20 min
- ⬭ 25 min
- ⬭ 30 min
- ⬭ 40 min

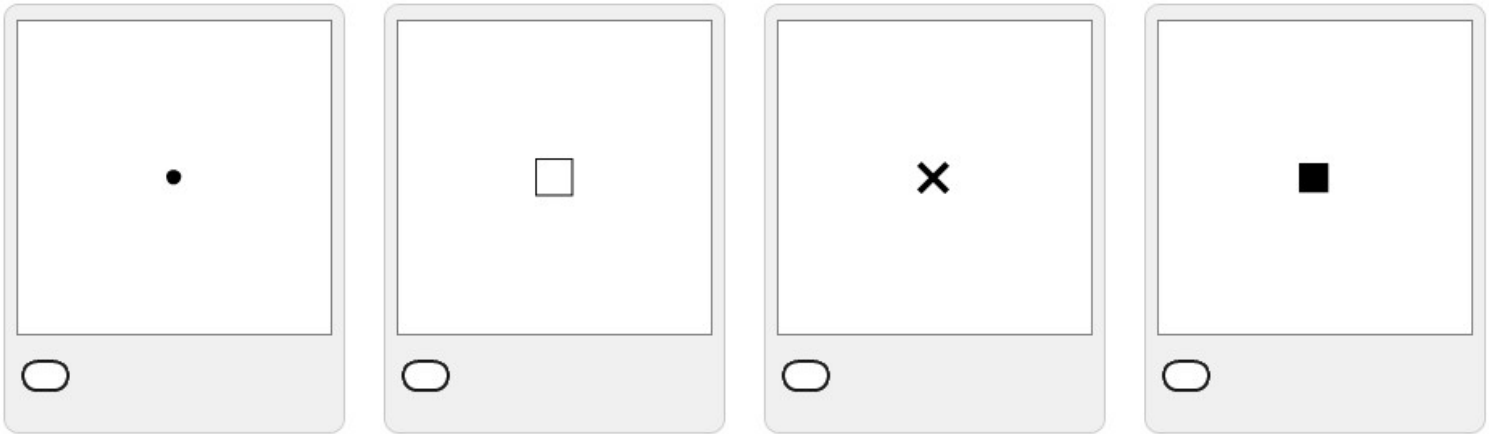


The cube is placed on a table so that the white circle is at the front, the black square is on the top and the lines are on the right side as shown.



The cube is rolled forward over the bottom front edge and then rolled sideways over the (new) bottom right side edge.

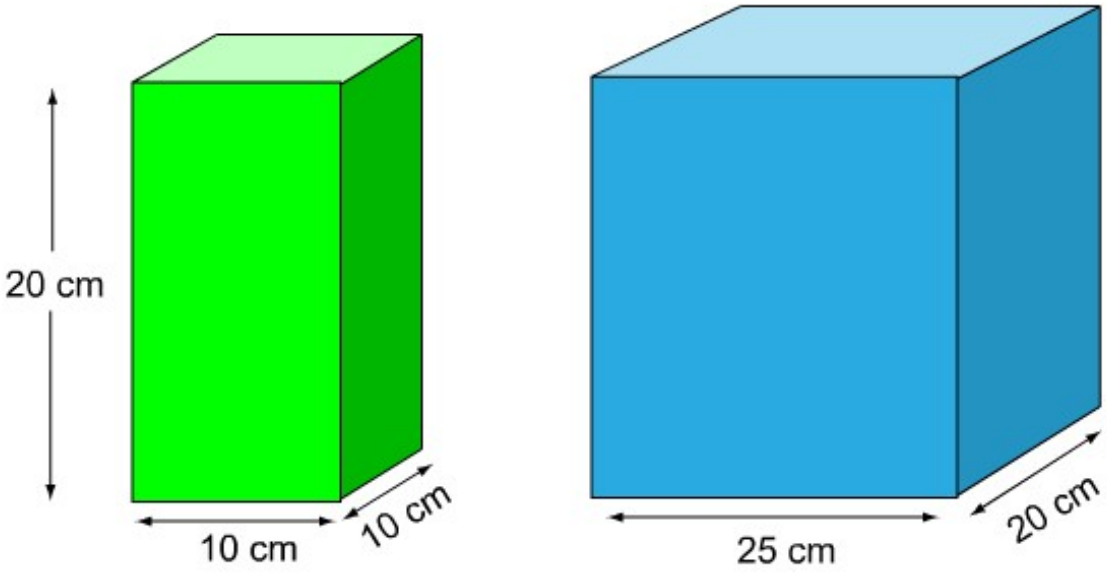
Which face is now on top?



Two containers are in the shape of rectangular prisms.

Phillipa pours water into Container A. She fills the container to the top.

She then carefully pours all the water from Container A into Container B.



What is the depth of water in Container B?

- 4 cm
- 5 cm
- 10 cm
- 20 cm

The numbers from 1 to 16 are placed in a magic square, one number in each small square, so that all the rows, all the columns and both diagonals add to the same number.

What number goes at P?

- 12
- 13
- 14
- 15

During an epidemic, a group of 100 people are tested every week for the disease.

Last week, 10% of the group were sick and 90% were healthy.

Today, 10% of the sick people had recovered but 10% of the healthy group are now sick.

What percentage of the entire group is healthy now?

- ⬭ 81%
- ⬭ 82%
- ⬭ 91%
- ⬭ 92%