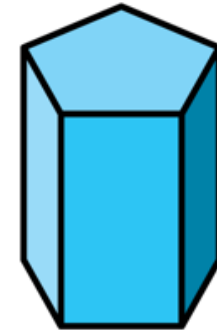


SIMMERING BRONZE

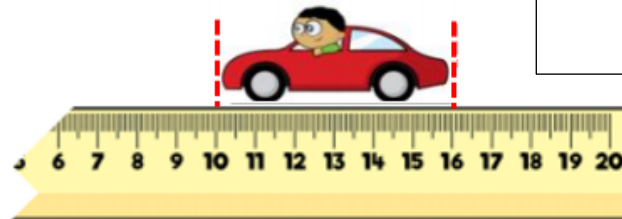
Flashback

What shape is this?

1) Which is heavier, 10 kg or 100 g?



2) How long is the car?

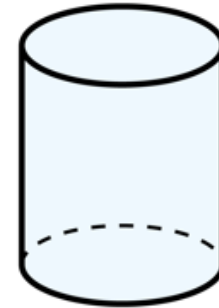


3) How many degrees does the minute hand on a clock turn between o'clock and half past

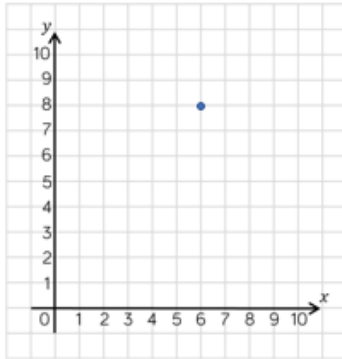
4) How many hundreds are equal to 60 tens?

Flashback 4

What shape is this?



- 1) Write the coordinates of the point shown.



- 2) How many lines of symmetry does an equilateral triangle have?

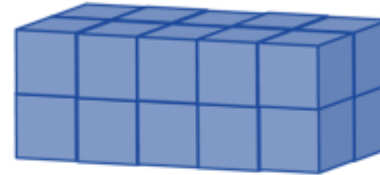
- 3) An angle measures 34° . What type of angle is it?

- 4) What is 48 divided by 6?

Flashback 4

What shape is this?

- 1) Each cube has a length of 1 cm.
What is the volume of the shape?





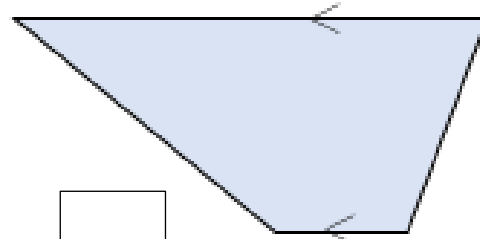
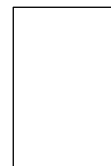
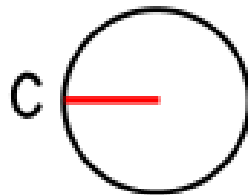
- 2) How many cm are the same as 6.25 m?

- 3) Complete the number sentence using <, > or =
4,752 ml 4.725 l

- 4) Convert $\frac{16}{5}$ into a mixed number.

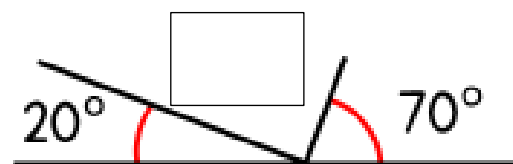
Flashback 4

1) Which red line shows the radius?

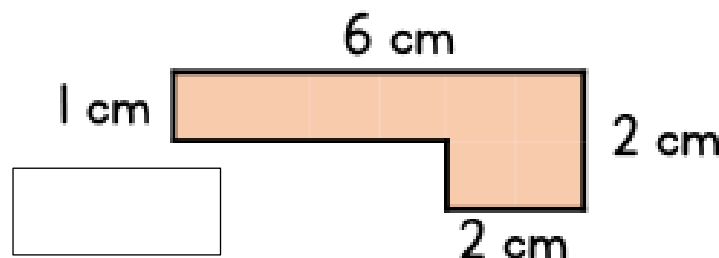


2) A car stops at the traffic lights. How would this be shown on a speed / time line graph?

3) Work out the missing angle.



4) Find the perimeter.



Flashback 4

pentagonal prism

1) Which is heavier, 10 kg or 100 g?

10 kg

2) How long is the car?



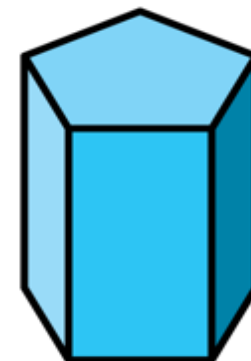
6 cm

3) How many degrees does the minute hand on a clock turn between o'clock and half past?

180°

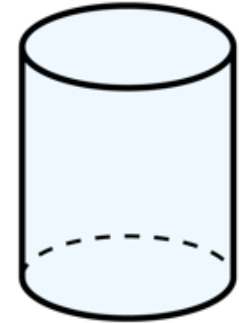
4) How many hundreds are equal to 60 tens?

6

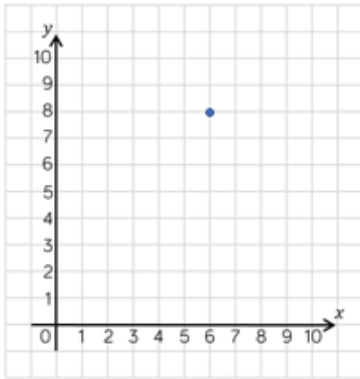


Flashback 4

cylinder



- 1) Write the coordinates of the point shown.



(6, 8)

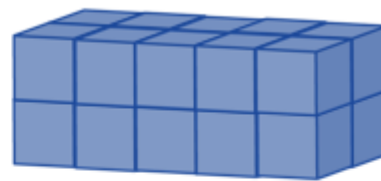
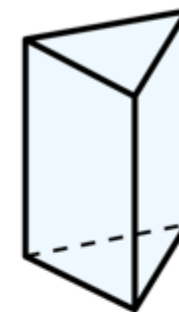
- 2) How many lines of symmetry does an equilateral triangle have? **3**
- 3) An angle measures 34° . What type of angle is it?
acute angle
- 4) What is 48 divided by 6? **8**

Flashback

4

Triangular prism

- 1) Each cube has a length of 1 cm.
What is the volume of the shape?

 20 cm^3 

- 2) How many cm are the same as 6.25 m?

 625 cm

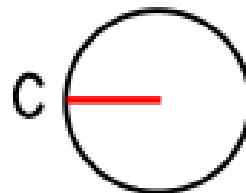
- 3) Complete the number sentence using $<$, $>$ or $=$
 $4,752 \text{ ml}$ $>$ 4.725 l

- 4) Convert $\frac{16}{5}$ into a mixed number.

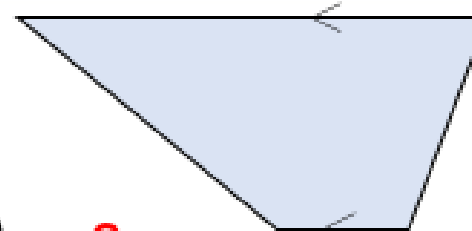
 $3\frac{1}{5}$

Flashback 4

1) Which red line shows the radius?



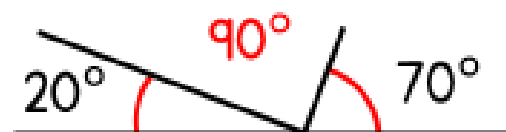
C



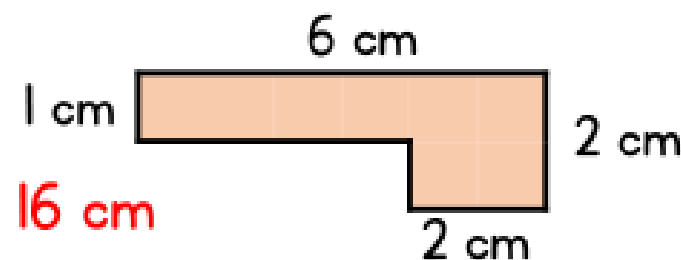
2) A car stops at the traffic lights. How would this be shown on a speed / time line graph?

A flat line where speed = 0

3) Work out the missing angle.



4) Find the perimeter.



Turns and angles

1 Which pictures show at least one angle?

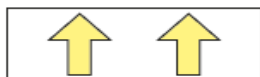


Compare answers with a partner.

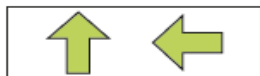
2 The arrows are being turned clockwise. Match the picture to the turn.



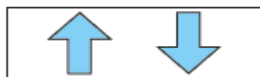
half turn



quarter turn



full turn



three-quarter turn

3 Here is a compass.



a) Aisha is facing north. She turns a quarter turn clockwise. What direction is she facing now?

b) Tommy is facing north. He turns a quarter turn anticlockwise. What direction is he facing now?

c) Annie is facing east. She turns a three-quarter turn clockwise. What direction is she facing now?

4 Mo and Eva are answering a question.

Mr Lee is facing west. He turns a half turn. What direction is he facing now?



Mo

I cannot answer this because we don't know what direction he turns in.



Eva

It does not matter about the direction!

Who do you agree with? Talk about it with a partner.

5 Esther and Brett are showing what time it will be in a quarter of an hour.

Here is the time now.



Here are their answers.

Esther



Brett



Who is correct? Talk about it with a partner.

- c) Annie is facing east. She turns a three-quarter turn clockwise. What direction is she facing now?

- 4 Mo and Eva are answering a question.

Mr Lee is facing west. He turns a half turn. What direction is he facing now?



I cannot answer this because we don't know what direction he turns in.

Mo



It does not matter about the direction!

Eva

Who do you agree with? Talk about it with a partner.

- 5 Esther and Brett are showing what time it will be in a quarter of an hour.

Here is the time now.



Here are their answers.

Esther



Brett



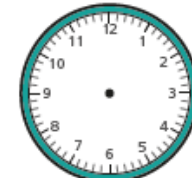
Who is correct? Talk about it with a partner.

- 6 Draw hands on the clocks to show the new times.

a)



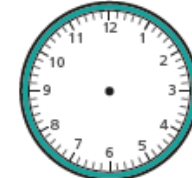
half an hour later



b)



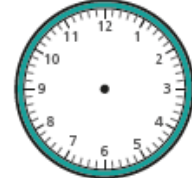
quarter of an hour later



c)



three-quarters of an hour later



d)



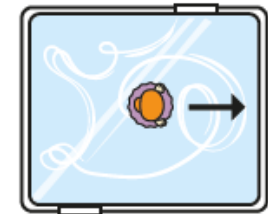
half an hour later



- 7 A figure skater is facing the direction shown. She turns a quarter turn clockwise and then a three-quarter turn clockwise.

- a) Draw on the picture to show that she ends up facing the same way as she started.
b) What other turns could she make and still end up facing the same way?

Compare answers with a partner.



Identify angles

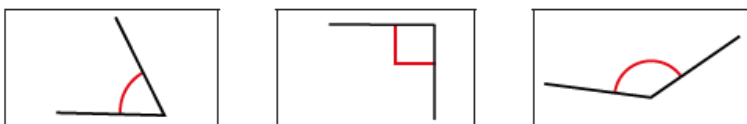
1 Complete the sentences.

Use the word bank to help you.

- 90
- 180
- greater
- less

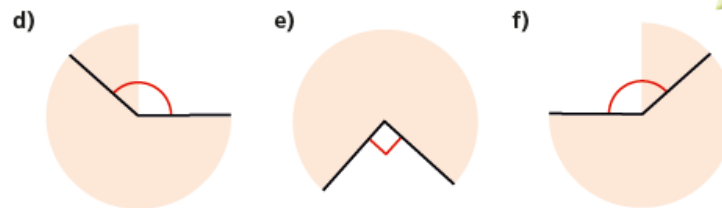
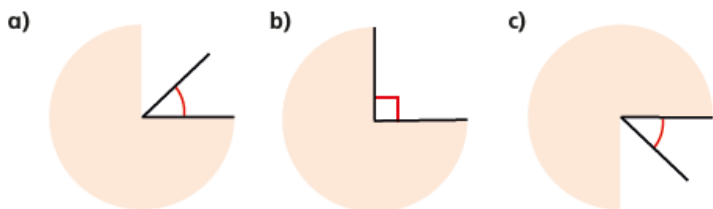
- a) A right angle is degrees.
- b) An acute angle is _____ than degrees.
- c) An obtuse angle is _____ than degrees but less than degrees.

2 Match the angles to the labels.



- right angle
- acute angle
- obtuse angle

3 Label the angles: acute, obtuse or right angle.



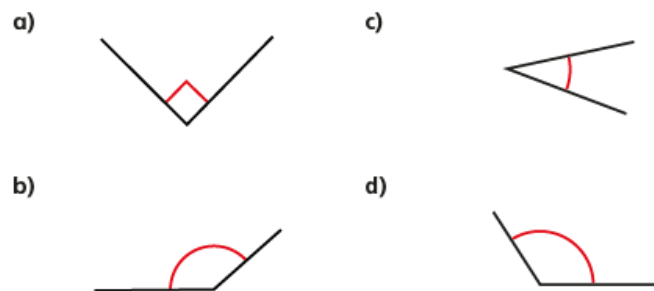
4 Which are acute angles?



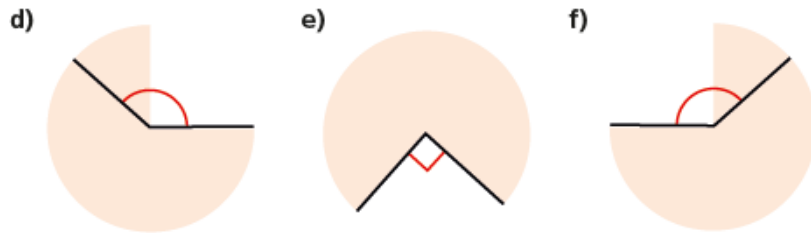
5 Which are obtuse angles?



6 Label the angles: acute, obtuse or right angle.



Identify angles



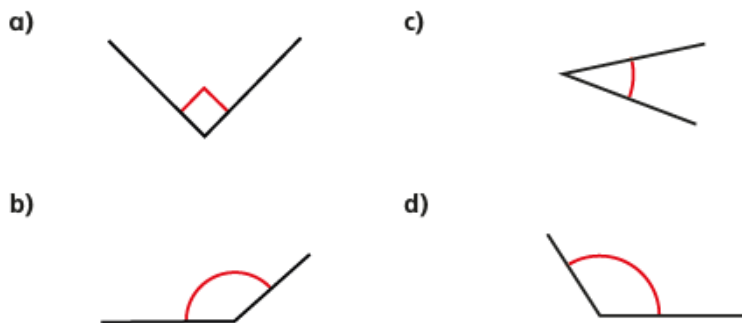
4 Which are acute angles?



5 Which are obtuse angles?



6 Label the angles: acute, obtuse or right angle.



7 Is the angle acute, obtuse or a right angle?

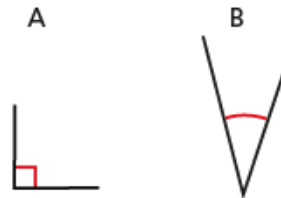
- a) 35° c) 90° e) 121°
- b) 99° d) 89° f) 179°

How do you know?

8



Angle B is obtuse because it's bigger than the right angle.



Do you agree with Teddy?

Explain your answer.

9 Are the statements always true, sometimes true or never true?

Explain your answer.

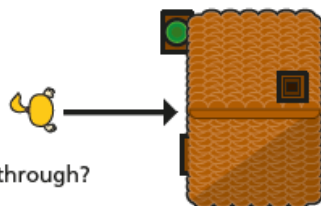
- a) An obtuse angle is a greater turn than an acute angle.
- b) An acute angle is a greater turn than a right angle turn.
- c) If you turn through two acute angles you will have turned through an obtuse angle.



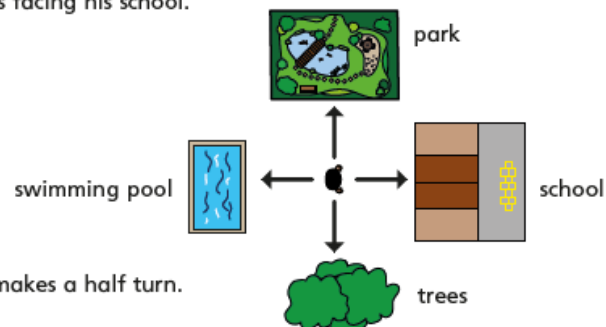
Measuring angles in degrees

1 Eva is facing her house.
She makes a full turn.

- a) What is Eva facing now?
- b) How many degrees has Eva turned through?



2 Mo is facing his school.

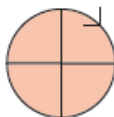


Mo makes a half turn.

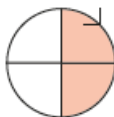
- a) What is Mo facing now?
- b) How many degrees did Mo turn through?

3 Complete the sentences.

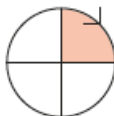
a) There are degrees in a full turn.



b) There are degrees in half a full turn.

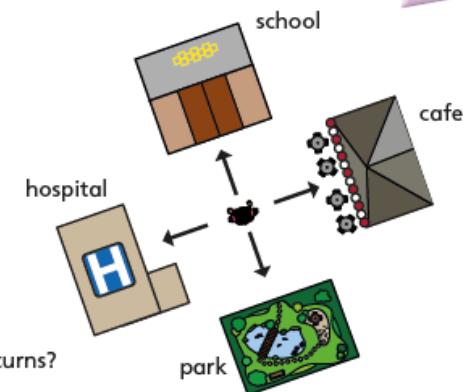


c) There are degrees in quarter of a full turn.

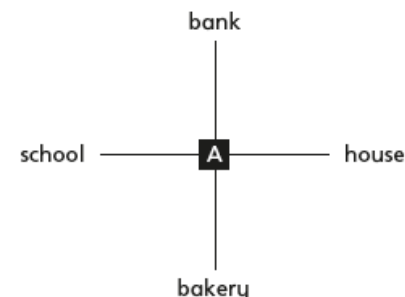


4 Whitney is facing the school.

Whitney turns half a turn.
What is she now facing?
Does it matter which way she turns?

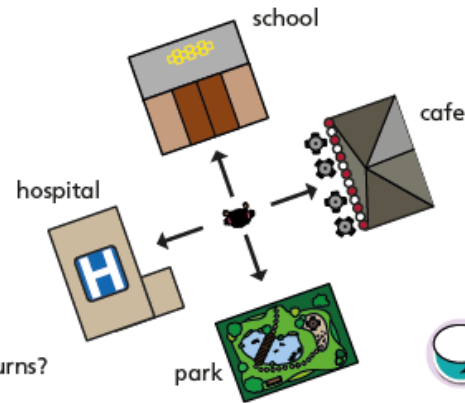


5 Amir, Annie, Jack and Filip are standing at point A.



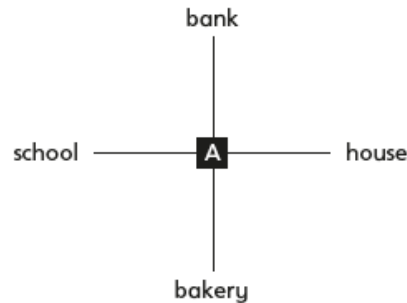
- a) Amir is facing the bank.
He turns 90 degrees clockwise.
What is Amir facing now?
- b) Amir faces the bank again.
This time he turns 90° anticlockwise.
What is he now facing?
- c) Jack is facing the house.
He makes a 90° turn.
What could he now be facing?

- 4 Whitney is facing the school.



Whitney turns half a turn.
What is she now facing?
Does it matter which way she turns?

- 5 Amir, Annie, Jack and Filip are standing at point A.



- Amir is facing the bank.
He turns 90 degrees clockwise.
What is Amir facing now?
- Amir faces the bank again.
This time he turns 90° anticlockwise.
What is he now facing?
- Jack is facing the house.
He makes a 90° turn.
What could he now be facing?

- Filip is facing the school.
He turns to face the house.
How many degrees did he turn through?
- Annie is facing the bakery.
She turns to face the school.
Describe two different turns she could have made.

- 6 Ron is standing in the park.
He is facing forward and looking at a slide.
He makes a 180 degree turn and is now facing a bench.
He now makes a 90 degree turn and is facing a tree.
Draw a possible diagram of the park.

Compare your diagram with a partner's diagram.
What is the same and what is different about your diagrams?

- 7 The diagram shows the direction of some places in relation to the centre of a town.



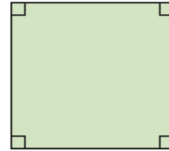
I am in the town centre, facing the cinema. I make a 90° turn clockwise.



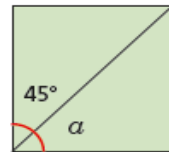
What is Tommy facing now?
Create your own problem like this for a partner.

Calculating lengths and angles in shapes

1 Here is a square.

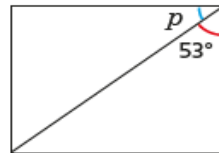


a) What is the size of each of the angles?
A diagonal line is drawn across the square.



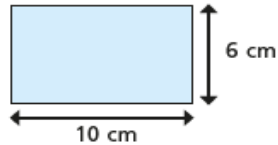
b) Explain why angle α is also 45° .

2 Here is a rectangle.



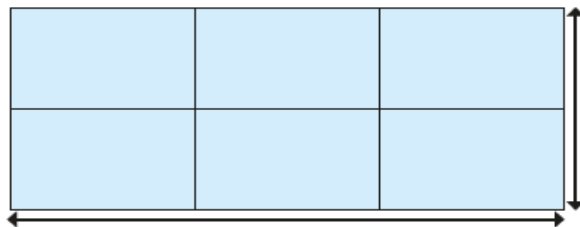
What is the size of the angle marked p ?

3 Tom has some identical paper rectangles.

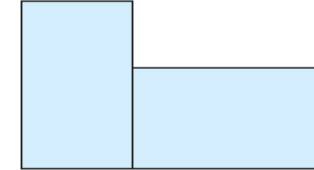


He makes shapes with the rectangles.

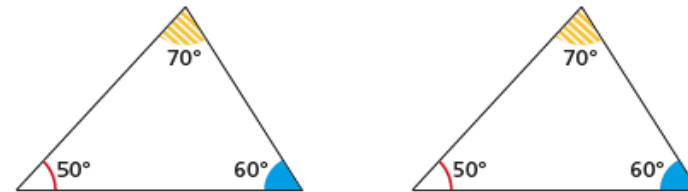
a) Work out the missing length and width of this shape.



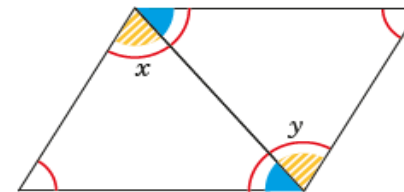
b) Work out the perimeter of this shape.



4 Dani has two identical triangles.

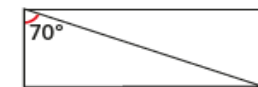


The two triangles are put together to make a quadrilateral.
What are the sizes of angles x and y ?



5 The rectangle is cut in half across the diagonal.

The two triangles are put together to form an isosceles triangle.



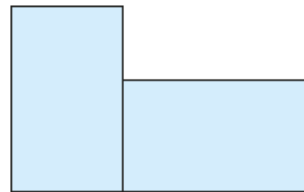
Work out the size of the angles in the isosceles triangle.



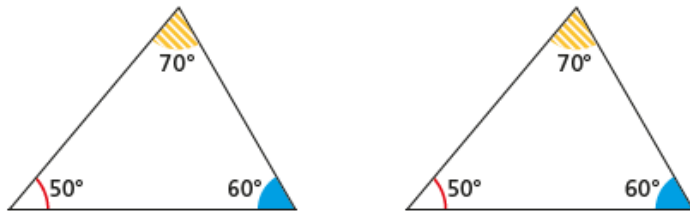
How did you work this out? Talk about it with a partner.



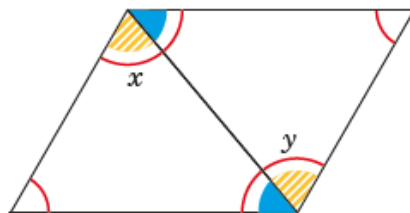
b) Work out the perimeter of this shape.



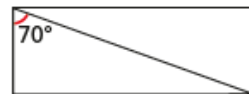
4 Dani has two identical triangles.



The two triangles are put together to make a quadrilateral.
What are the sizes of angles x and y ?



5 The rectangle is cut in half across the diagonal.



The two triangles are put together to form an isosceles triangle.

Work out the size of the angles in the isosceles triangle.

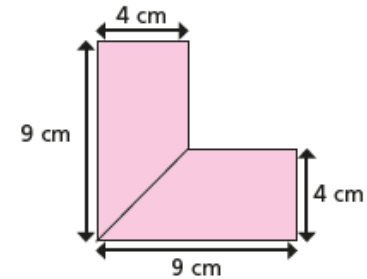


How did you work this out? Talk about it with a partner.



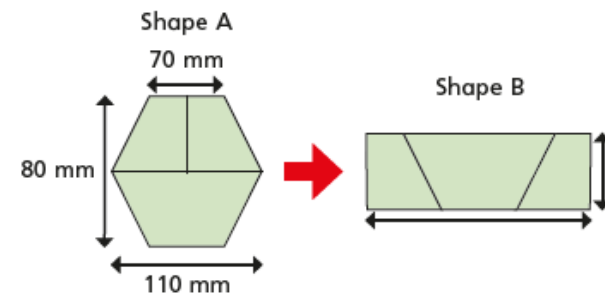
6 A hexagon has these dimensions.

Brett cuts the shape in half and fits the pieces together to make a rectangle.
What is the length and width of the rectangle?



7 Shape A is a regular hexagon.

Shape A is cut up to make shape B.

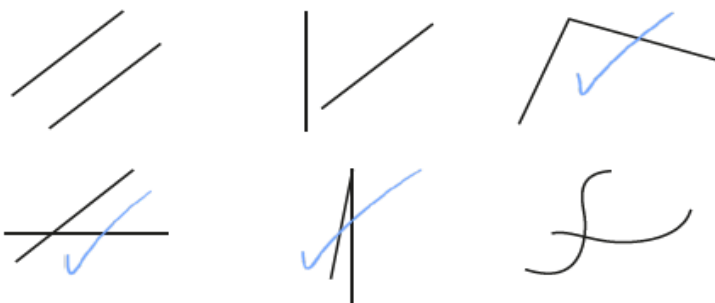


What is the length and width of the new rectangle?

Turns and angles



1 Which pictures show at least one angle? Tick your answers.

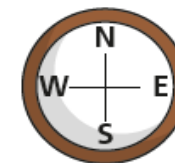


Compare answers with a partner.

2 The arrows are being turned clockwise.

Match the picture to the turn.

3 Here is a compass.



a) Aisha is facing north.

She turns a quarter turn clockwise.

What direction is she facing now?

East

b) Tommy is facing north.

He turns a quarter turn anticlockwise.

What direction is he facing now?

West

c) Annie is facing east.

She turns a three-quarter turn clockwise.

What direction is she facing now?

North

4 Mo and Eva are answering a question.

Mr Lee is facing west. He turns a half turn.
What direction is he facing now?



Mo

I cannot answer this because we don't know what direction he turns in.



Eva

It does not matter about the direction!

Who do you agree with?

Eva

Talk about it with a partner.

- 5 Esther and Brett are showing what time it will be in a quarter of an hour.

Here is the time now.



Here are their answers.

Esther



Brett



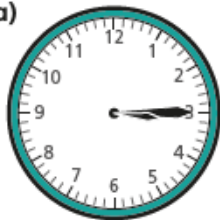
Who is correct?

Brett

Talk about it with a partner.

- 6 Draw hands on the clocks to show the new times.

a)



half an hour later



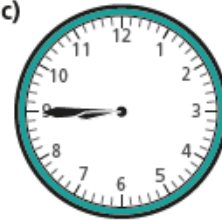
b)



quarter of
an hour later



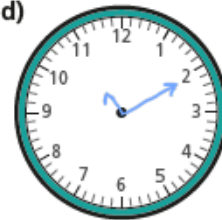
c)



three-quarters of
an hour later



d)



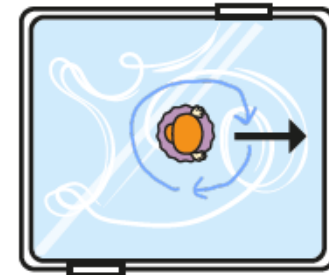
half an hour later



7

A figure skater is facing the direction shown.

She turns a quarter turn clockwise and then a three-quarter turn clockwise.



- a) Draw on the picture to show that she ends up facing the same way as she started.
- b) What other turns could she make and still end up facing the same way?

Various answers

Compare answers with a partner.

Identify angles

1 Complete the sentences.

Use the word bank to help you.

- 90 180 greater less

- a) A right angle is 90 degrees.
 b) An acute angle is less than 90 degrees.
 c) An obtuse angle is greater than 90 degrees but less than 180 degrees.

2 Match the angles to the labels.

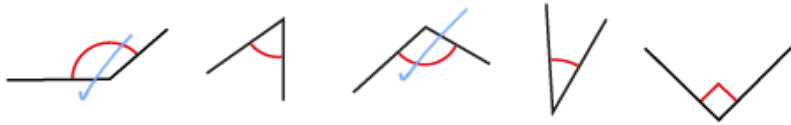
	right angle
	acute angle
	obtuse angle

3 Label the angles: acute, obtuse or right angle.

<p>a) </p> <p><u>acute</u></p>	<p>d) </p> <p><u>obtuse</u></p>
<p>b) </p> <p><u>right angle</u></p>	<p>e) </p> <p><u>right angle</u></p>
<p>c) </p> <p><u>acute</u></p>	<p>f) </p> <p><u>obtuse</u></p>

4 Tick all the acute angles.

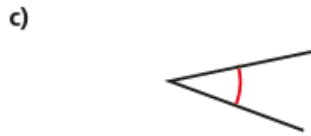
5 Tick all the obtuse angles.



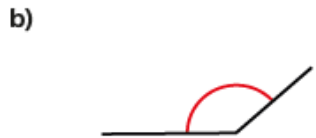
6 Label the angles: acute, obtuse or right angle.



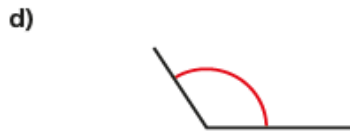
right angle



acute



obtuse



obtuse

7 Is the angle acute, obtuse or a right angle?

a) 35° acute

d) 89° acute

b) 99° obtuse

e) 121° obtuse

c) 90° right angle

f) 179° obtuse

How do you know?

8



Angle B is obtuse because it's bigger than the right angle.

A



B



Do you agree with Teddy? No

Explain your answer.

9

Are the statements always true, sometimes true or never true?

Explain your answer.

a) An obtuse angle is a greater turn than an acute angle.

Always. Obtuse angles are greater than 90° therefore greater than acute angles which are less than 90° .

b) An acute angle is a greater turn than a right angle turn.

Never. Acute angles are less than 90° i.e. less than a right angle.

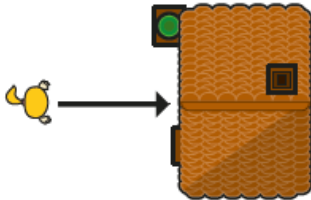
c) If you turn through two acute angles you will have turned through an obtuse angle.

Sometimes. E.g. $12^\circ + 12^\circ = 24^\circ$ (acute) but $50^\circ + 50^\circ = 100^\circ$ (obtuse)



Measuring angles in degrees

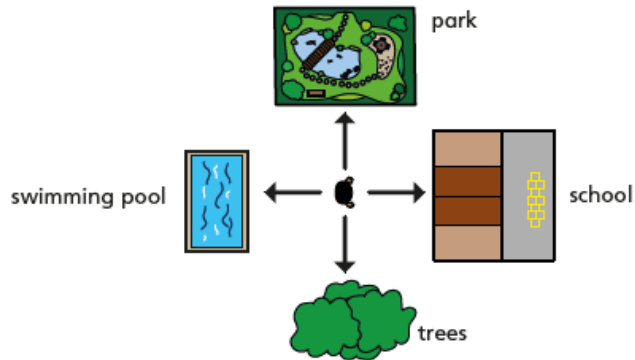
1 Eva is facing her house.



She makes a full turn.

- a) What is Eva facing now? House
- b) How many degrees has Eva turned through? degrees

2 Mo is facing his school.

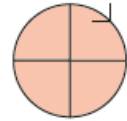


Mo makes a half turn.

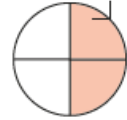
- a) What is Mo facing now? Swimming pool
- b) How many degrees did Mo turn through? degrees

3 Complete the sentences.

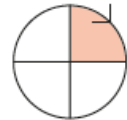
a) There are degrees in a full turn.



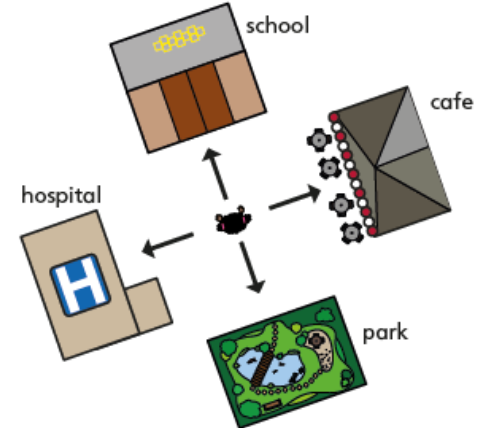
b) There are degrees in half a full turn.



c) There are degrees in quarter of a full turn.



4 Whitney is facing the school.



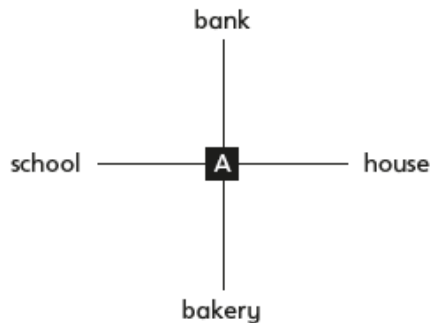
Whitney turns half a turn.

What is she now facing? park

Does it matter which way she turns?



5 Amir, Annie, Jack and Filip are standing at point A.



a) Amir is facing the bank. He turns 90 degrees clockwise.

Where is Amir facing now? house

b) Amir faces the bank again.

This time he turns 90° anticlockwise.

Where is now facing? school

c) Jack is facing the house.

He makes a 90° turn.

Where could he now be facing?

bank or bakery

d) Filip is facing the school.

He turns to face the house.

How many degrees did he turn through? 180

e) Annie is facing the bakery.

She turns to face the school.

Describe two different turns she could have made.

6 Ron is standing in the park.

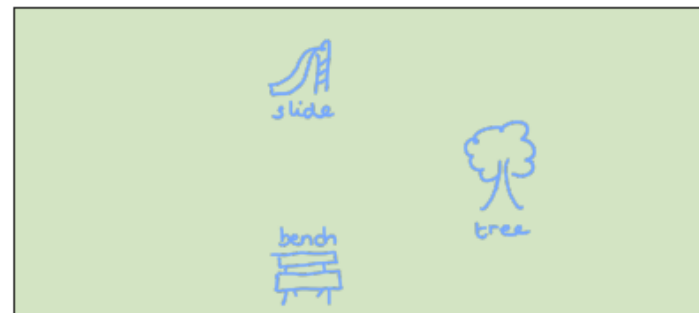
He is facing forward and looking at a slide.

He makes a 180 degree turn and is now facing a bench.

He now makes a 90 degree turn and is facing a tree.

Draw a possible diagram of the park.

e.g.



Compare your diagram with a partner's diagram.

What is the same and what is different about your diagrams?

7 The diagram shows the direction of some places in relation to the centre of a town.



I am in the town centre, facing the cinema. I make a 90° turn clockwise.

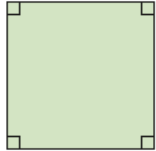


What is Tommy facing now? restaurant

Create your own problem like this for a partner.

Calculating lengths and angles in shapes

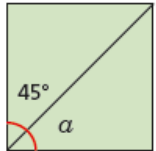
1 Here is a square.



a) What is the size of each of the angles?

90°

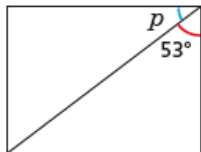
A diagonal line is drawn across the square.



b) Explain why angle α is also 45° .

A right angle is 90° and $90^\circ - 45^\circ = 45^\circ$

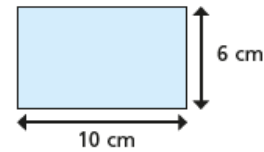
2 Here is a rectangle.



What is the size of the angle marked p ?

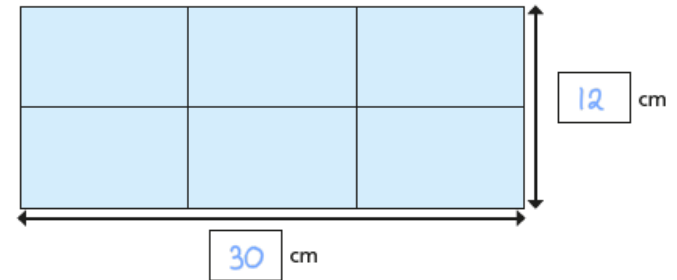
$p = 37^\circ$

3 Tom has some identical paper rectangles.

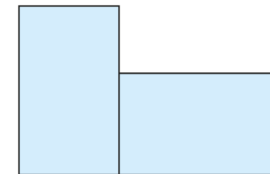


He makes shapes with the rectangles.

a) Work out the missing length and width of this shape.

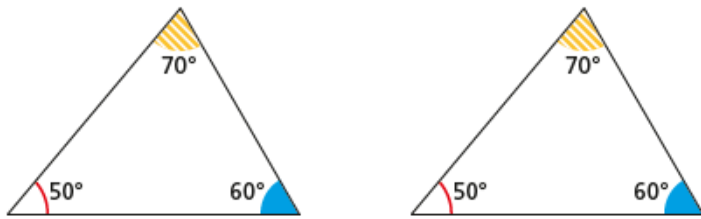


b) Work out the perimeter of this shape.

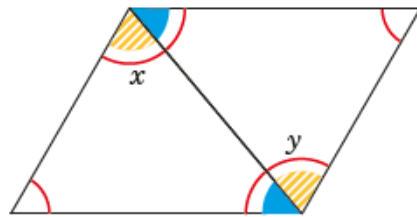


perimeter = 52 cm

- 4 Dani has two identical triangles.



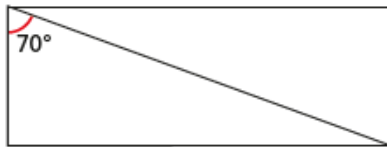
The two triangles are put together to make a quadrilateral.
What are the sizes of angles x and y ?



$$x = 130^\circ$$

$$y = 130^\circ$$

- 5 The rectangle is cut in half across the diagonal.



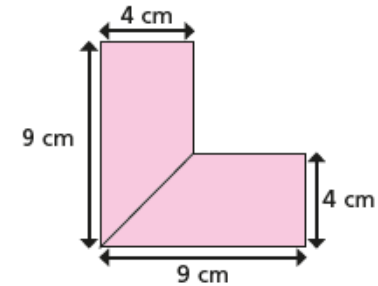
The two triangles are put together to form an isosceles triangle.



Work out the size of the angles in the isosceles triangle and label them on the diagram.

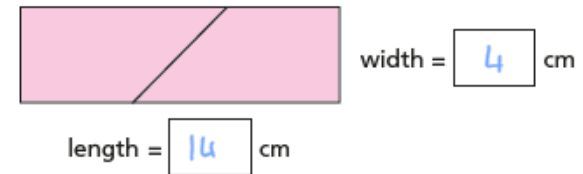
How did you work this out? Talk about it with a partner.

- 6 A hexagon has these dimensions.

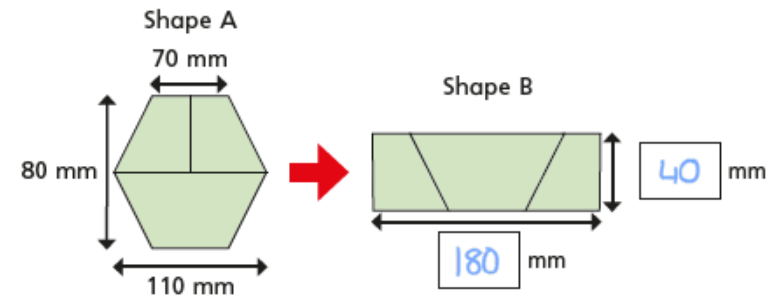


Brett cuts the shape in half and fits the pieces together to make a rectangle.

What is the length and width of the rectangle?



- 7 Shape A is a regular hexagon.
Shape A is cut up to make shape B.



What is the length and width of the new rectangle?

Label the diagram.