Properties of Shape

Master The Curriculum

3

Fluency & Reasoning Teaching Slides

Turns and Angles

3

Fluency & Reasoning Teaching Slides

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Turns and Angles

Do you remember turns?

What does clockwise mean?

What does anticlockwise mean?

How do we know what a full turn is?

How do we know what a three-quarter turn is?

How do we know what a half turn is?

How do we know what a quarter turn is?

Activity 1 Turns and Angles

You will now practise turning from different starting points.

Listen to the instructions. Can you turn:

A $\frac{1}{2}$ turn?

A $\frac{1}{4}$ turn?

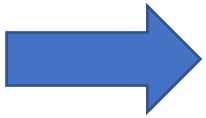
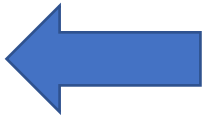
A $\frac{3}{4}$ turn?

?

Will it be a whole turn?

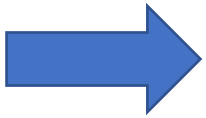
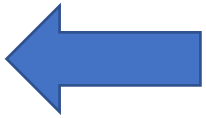
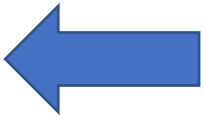
Activity 2 Turns and Angles

Draw what the arrow will look like once it has turned.

	After a quarter turn clockwise	
	After a three-quarter turn anticlockwise	
	After a full turn anticlockwise	
	After a half turn clockwise	

Activity 2 Turns and Angles

Draw what the arrow will look like once it has turned.

	After a quarter turn clockwise	
	After a three-quarter turn anticlockwise	
	After a full turn anticlockwise	
	After a half turn clockwise	

Activity 3 Turns and Angles

Turn the minute hand one quarter of a turn clockwise.

Start

?

What number is the minute hand pointing at now?

Activity 3 Turns and Angles

Turn the minute hand one quarter of a turn clockwise.

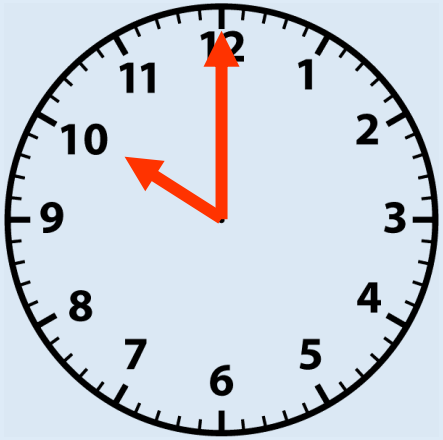
Start

Finish

Activity 4 Turns and Angles

Turn the minute hand a three-quarter turn clockwise.

Start



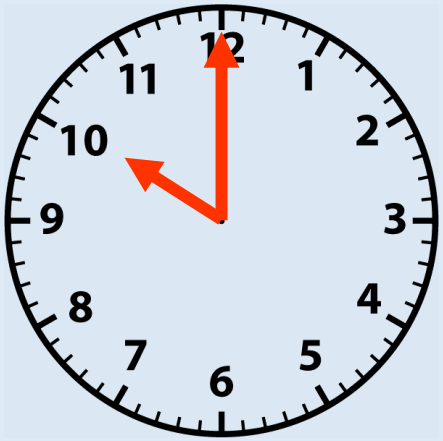
?

What number is the minute hand pointing at now?

Activity 4 Turns and Angles

Turn the minute hand a three-quarter turn clockwise.

Start



Finish

Activity 5 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned __ of a turn clockwise.

Activity 5 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned $\frac{1}{2}$ of a turn clockwise.

Activity 6 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned _____ of a turn clockwise.

Activity 6 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned _____3/4_____ of a turn clockwise.

Activity 6 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned _____ of a turn anticlockwise.

Activity 6 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned ½ of a turn anticlockwise.

Activity 6 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned _____ turn clockwise.

Activity 6 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned _____a full_____ turn clockwise.

Activity 6 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned _____ of a turn clockwise.

Activity 6 Turns and Angles

Look at the clock hands.

Start

Finish

The minute hand has turned ¼ of a turn clockwise.

Activity 6 Turns and Angles

Turn the minute hand a quarter turn clockwise.

What number will the minute hand be pointing to?

Activity 6 Turns and Angles

Turn the minute hand a quarter turn clockwise.

What number will the minute hand be pointing to?

12

Activity 6 Turns and Angles

Turn the minute hand a three-quarter turn anticlockwise.

What number will the minute hand be pointing to?

Activity 6 Turns and Angles

Turn the minute hand a three-quarter turn anticlockwise.

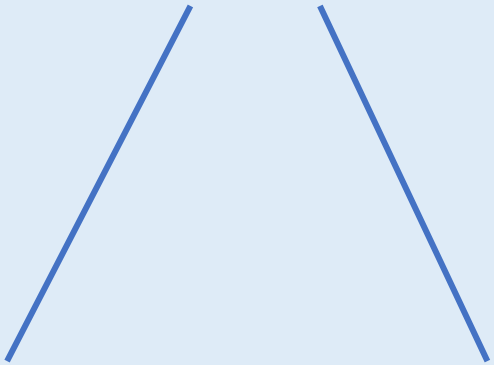
What number will the minute hand be pointing to?

12

Turns and Angles

How are angles and turns connected?

An angle is created when two straight lines meet at a point.



Not an angle

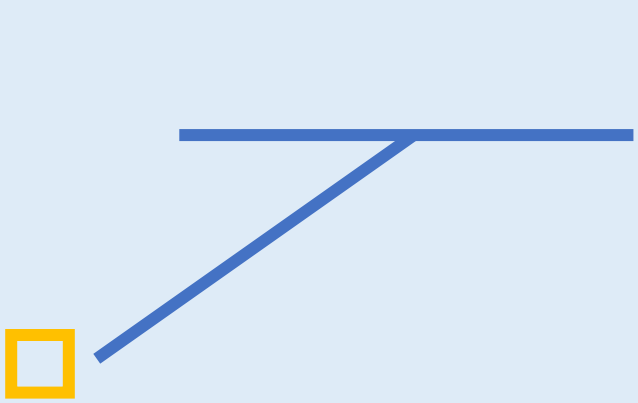
Angle

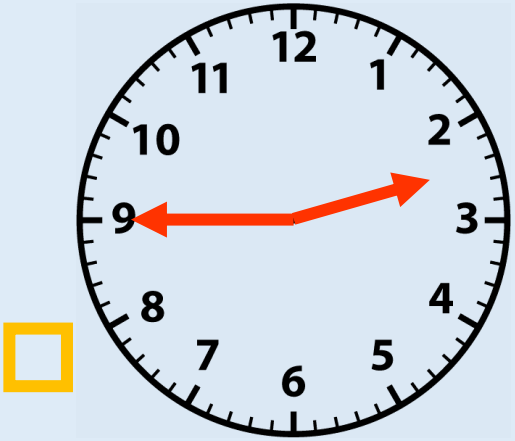
?

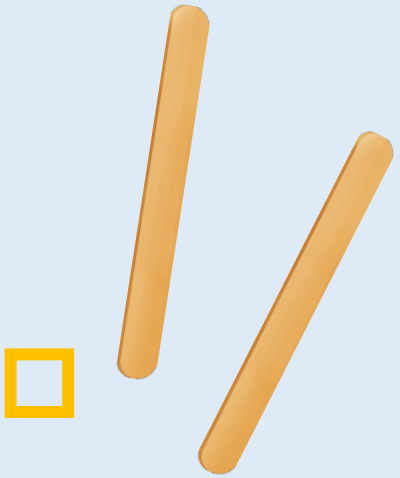
Can you see any angles around the classroom?

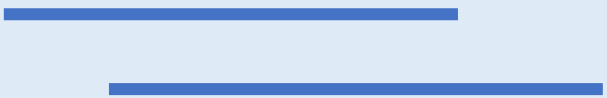
Activity 7 Turns and Angles

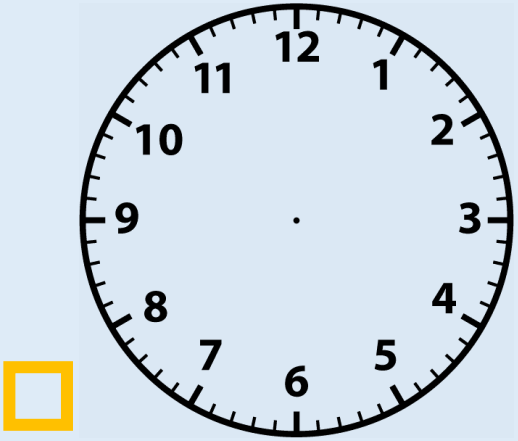
Which pictures contain angles?

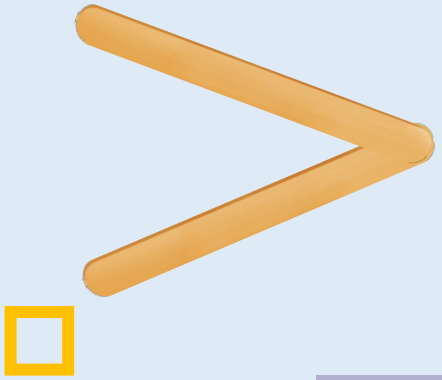






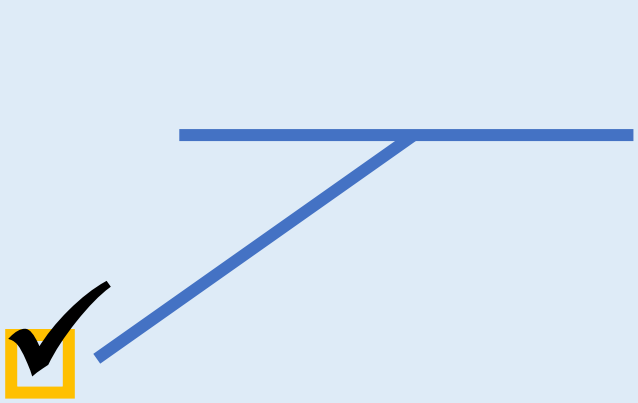


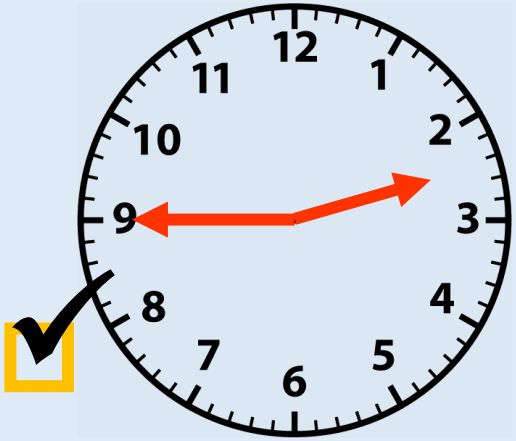


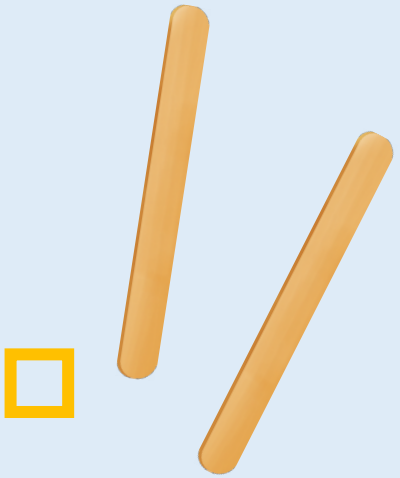


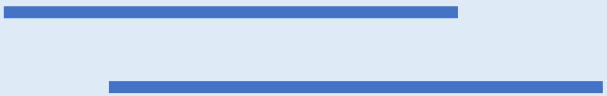
Activity 7 Turns and Angles

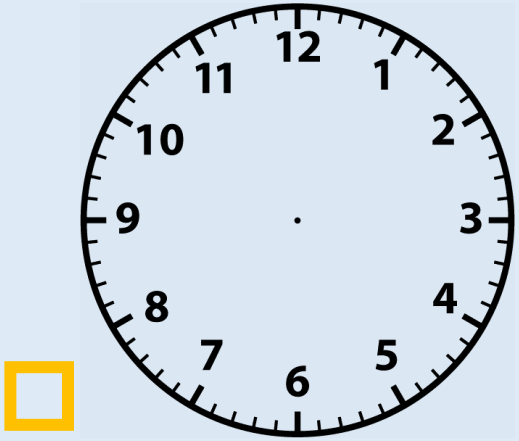
Which pictures contain angles?

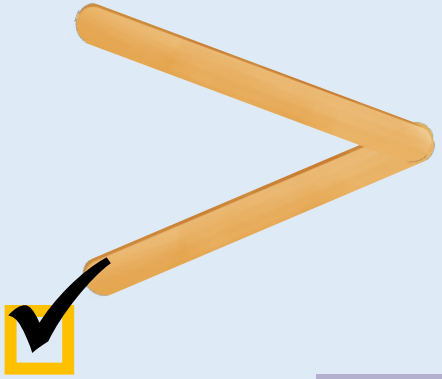












Activity 7 Turns and Angles

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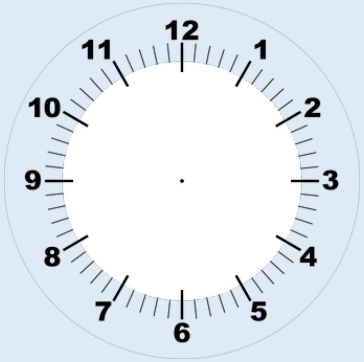

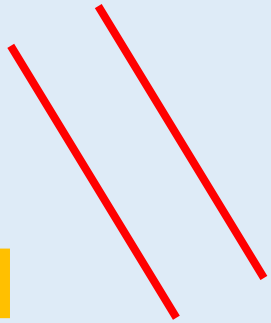

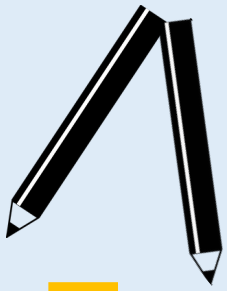

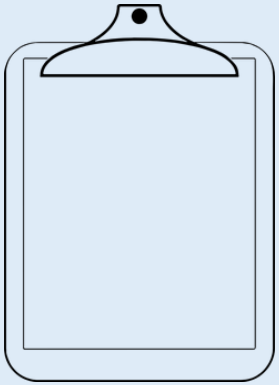

Activity 7 Turns and Angles

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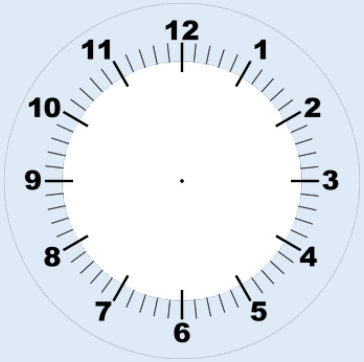
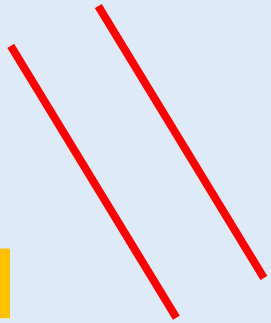
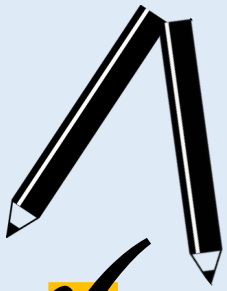
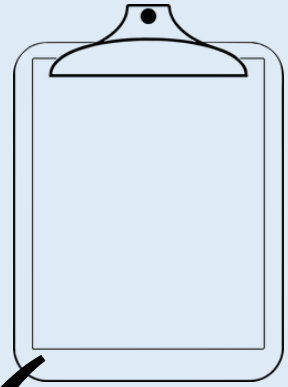




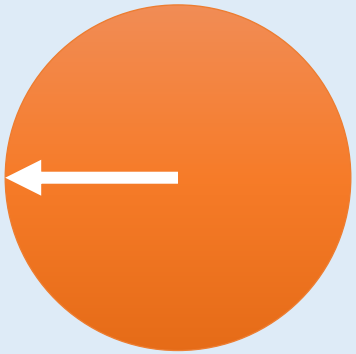




Reasoning 1 Turns and Angles

Who do you agree with?

Start



Finish

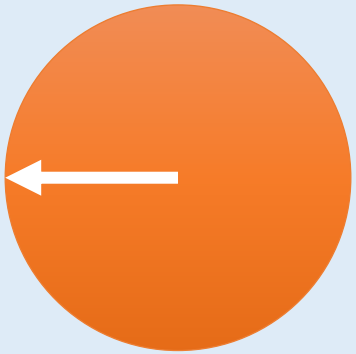
The arrow has moved a quarter anticlockwise.

The arrow has moved three-quarters clockwise.

Reasoning 1 Turns and Angles

Who do you agree with?

Start



Finish

They are both correct.

The arrow has moved a quarter anticlockwise.

The arrow has moved three-quarters clockwise.

Discuss

Turns and Angles

If we start by facing ____ and make a ____ turn, what direction will we be facing?

If we face ____ and turn to face ____, what turn have we made?

If we face north and make a quarter turn clockwise, which direction will we be facing? What if we turn anticlockwise?

What would the time be if the minute hand started at 1, then made a quarter of a turn?

Can you see any angles around the classroom?

Right Angles in Shapes

3

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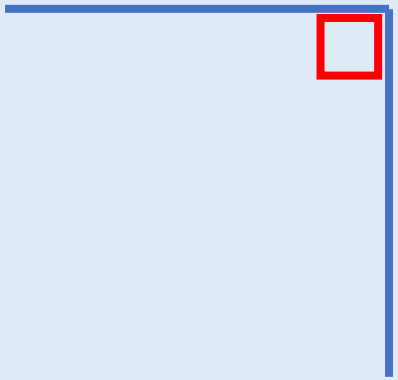
Right Angles in Shapes

This is a right angle.

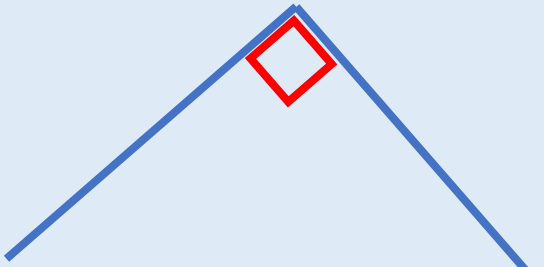


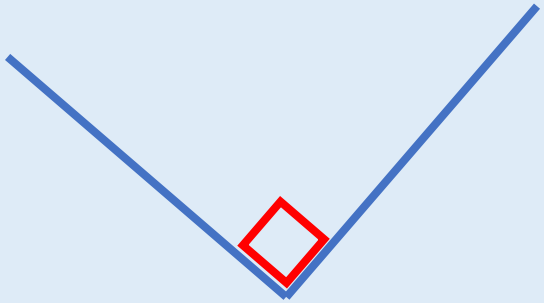
You may see a square in the corner.

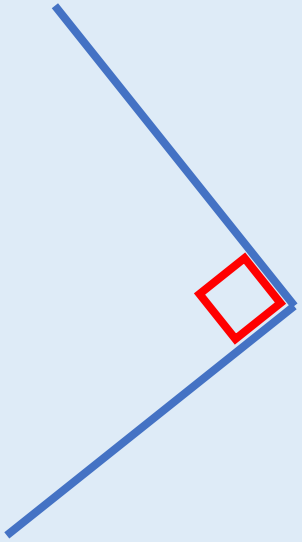
This symbolises a right angle.

Right Angles in Shapes

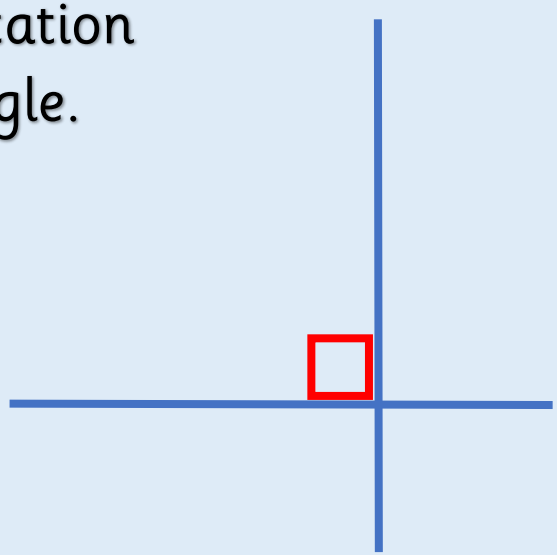
This is a right angle.





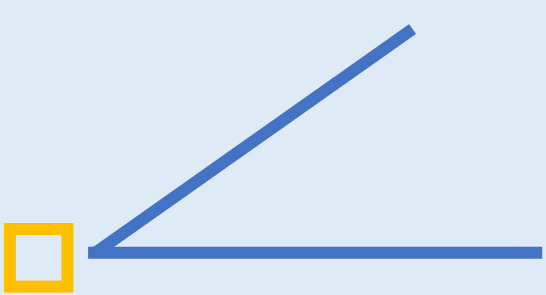


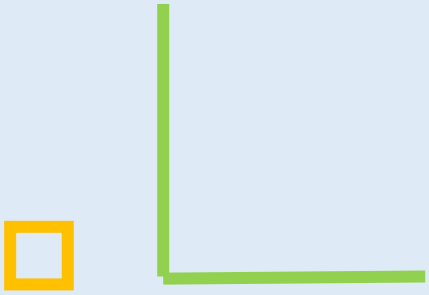
It can be in any orientation
- it is still a right angle.



Activity 1 Right Angles in Shapes

Which angles are right angles?

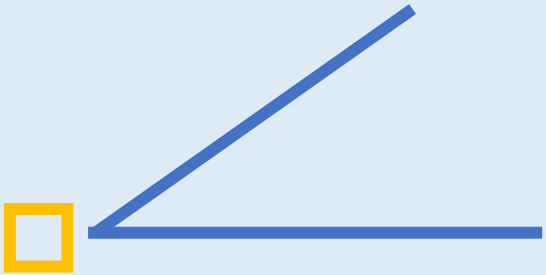


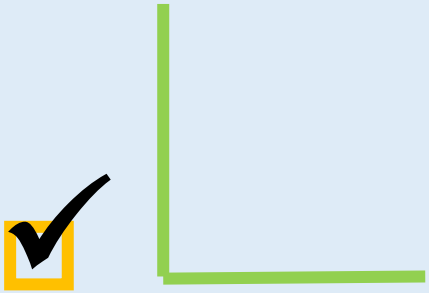


Can you make a right angle tester?

Activity 1 Right Angles in Shapes

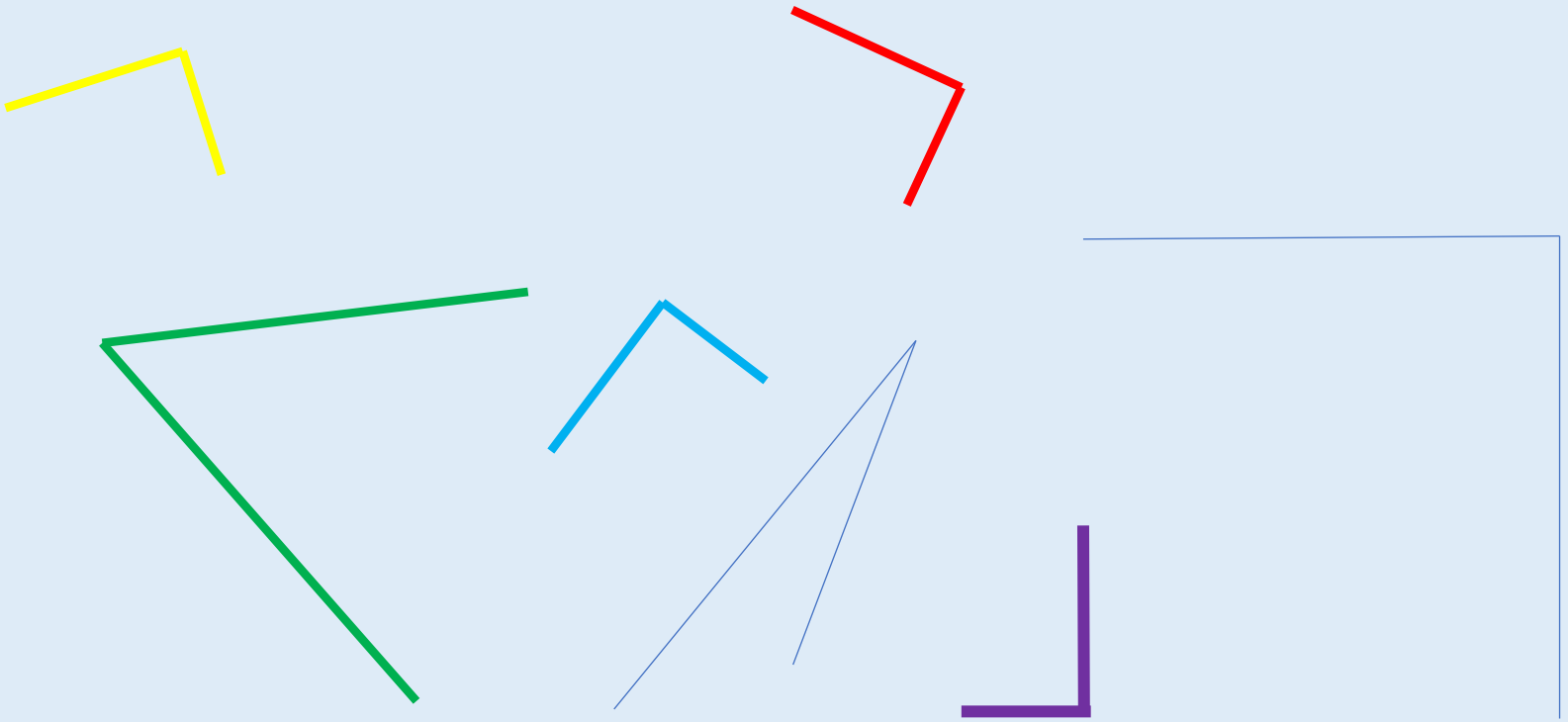
Which angles are right angles?





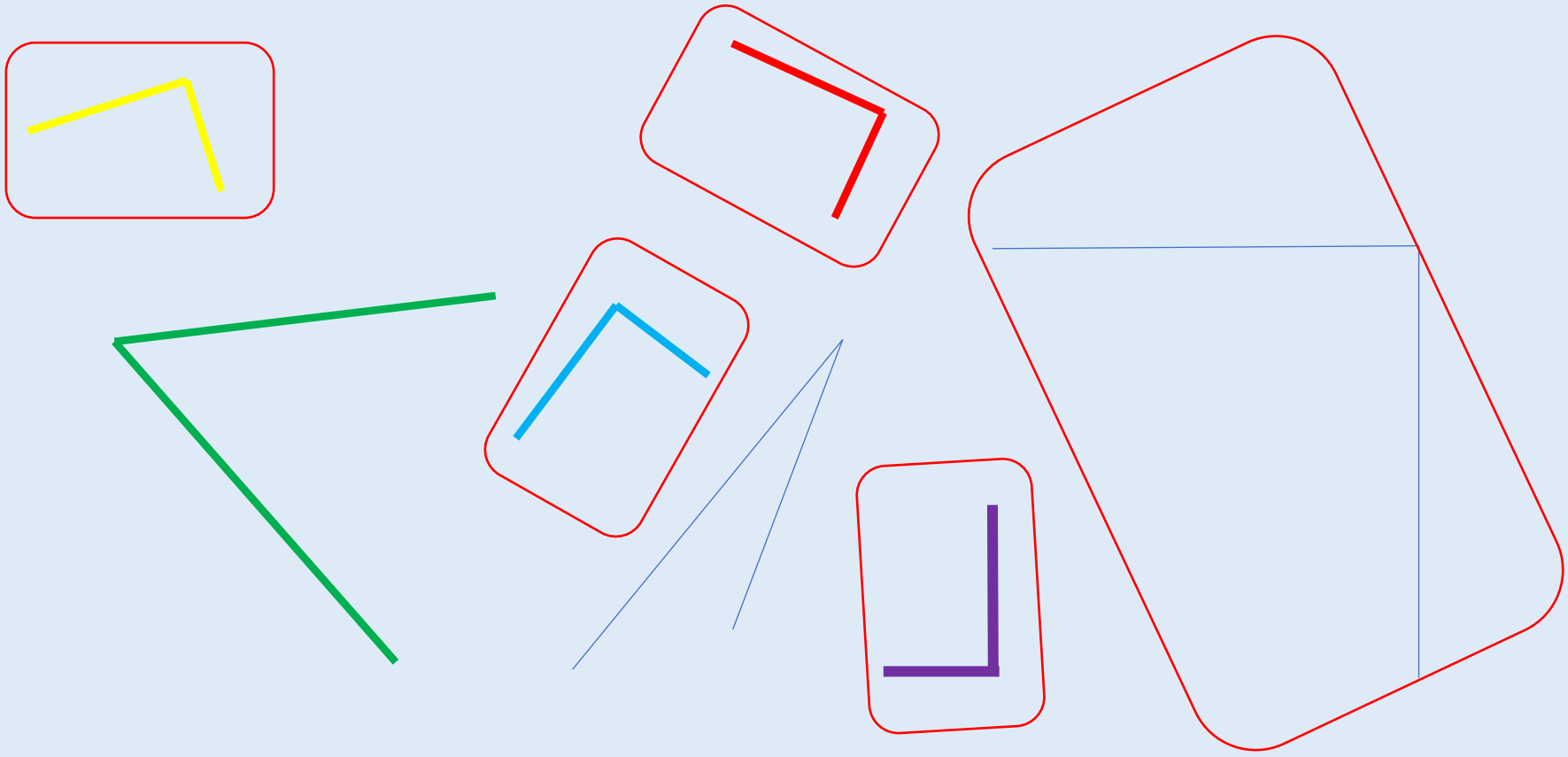
Activity 1 Right Angles in Shapes

Which angles are right angles?



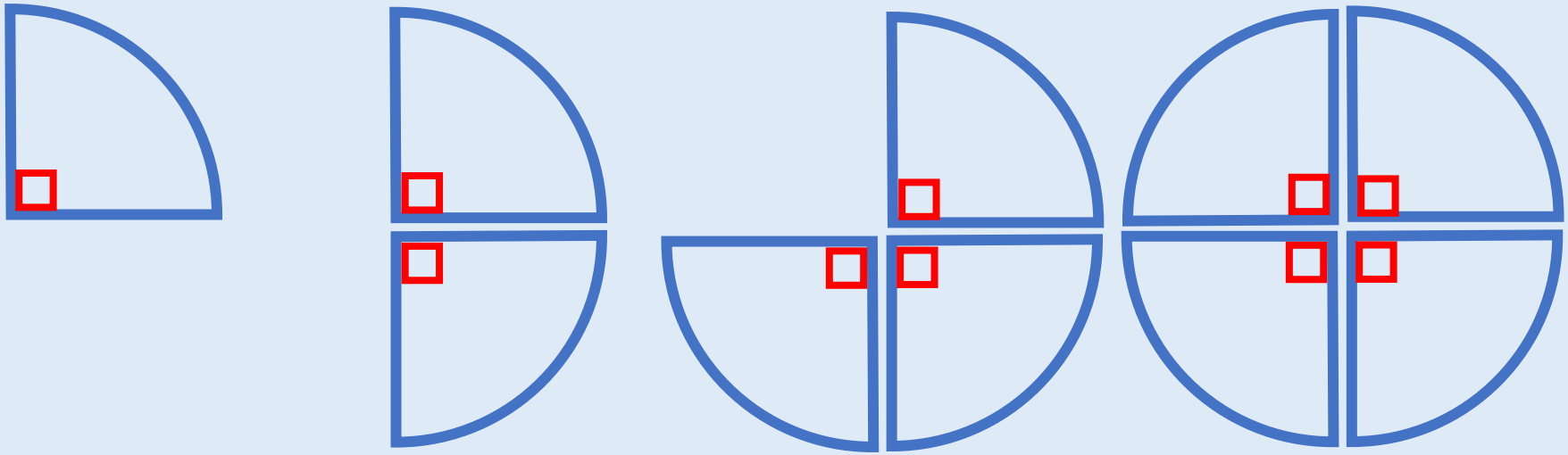
Activity 1 Right Angles in Shapes

Which angles are right angles?



Activity 2 Right Angles in Shapes

Fill in the blanks.



$\frac{1}{4}$ of a turn =

1 right angle.

$\frac{1}{2}$ of a turn =

__ right angles.

__ of a turn =

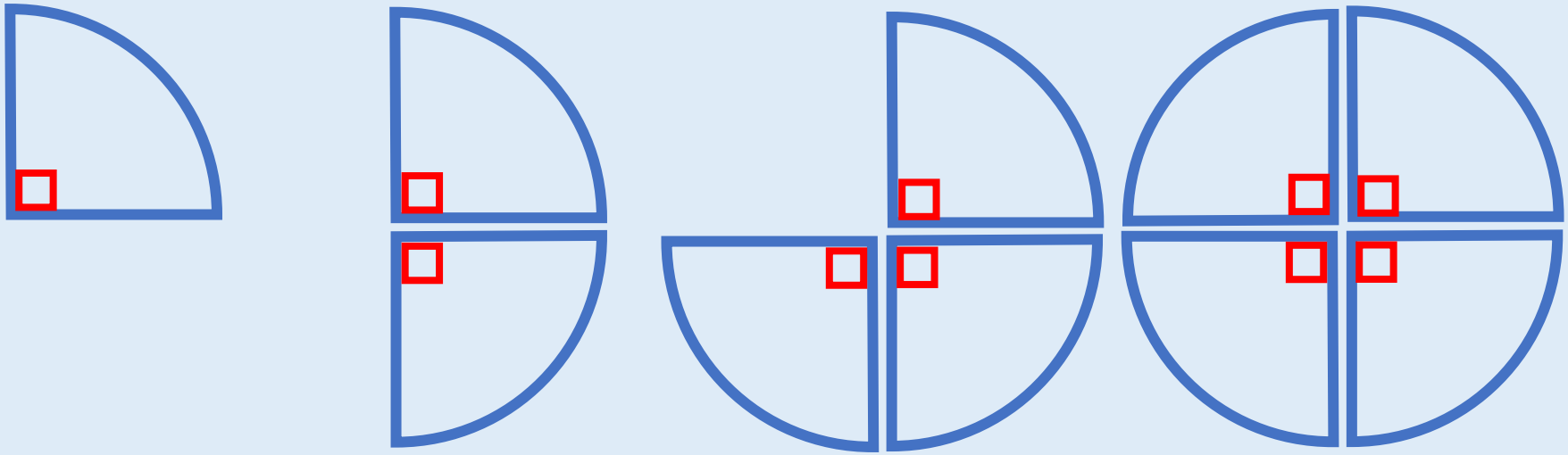
__ right angles.

__ full turn =

__ right angles.

Activity 2 Right Angles in Shapes

Fill in the blanks.



$\frac{1}{4}$ of a turn =

1 right angle.

$\frac{1}{2}$ of a turn =

2 right angles.

$\frac{3}{4}$ of a turn =

3 right angles.

1 full turn =

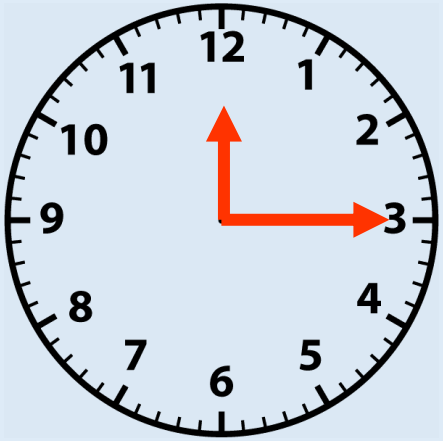
4 right angles.

Activity 3 Right Angles in Shapes

Practise making turns with a clock.

Start at 12 o'clock.
Move your minute hand one quarter of a turn.

Your clock should look like this.



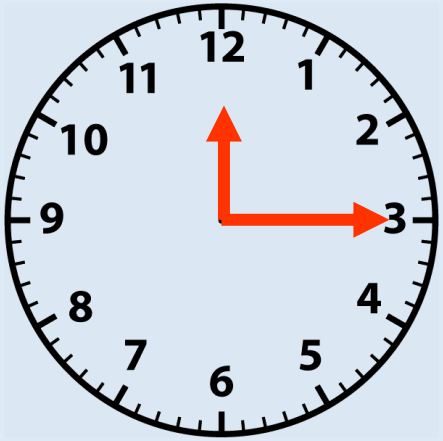
The angle between the hands is called a _____ angle. A right angle = __ of a turn.

Activity 3 Right Angles in Shapes

Practise making turns with a clock.

Start at 12 o'clock.
Move your minute hand one quarter of a turn.

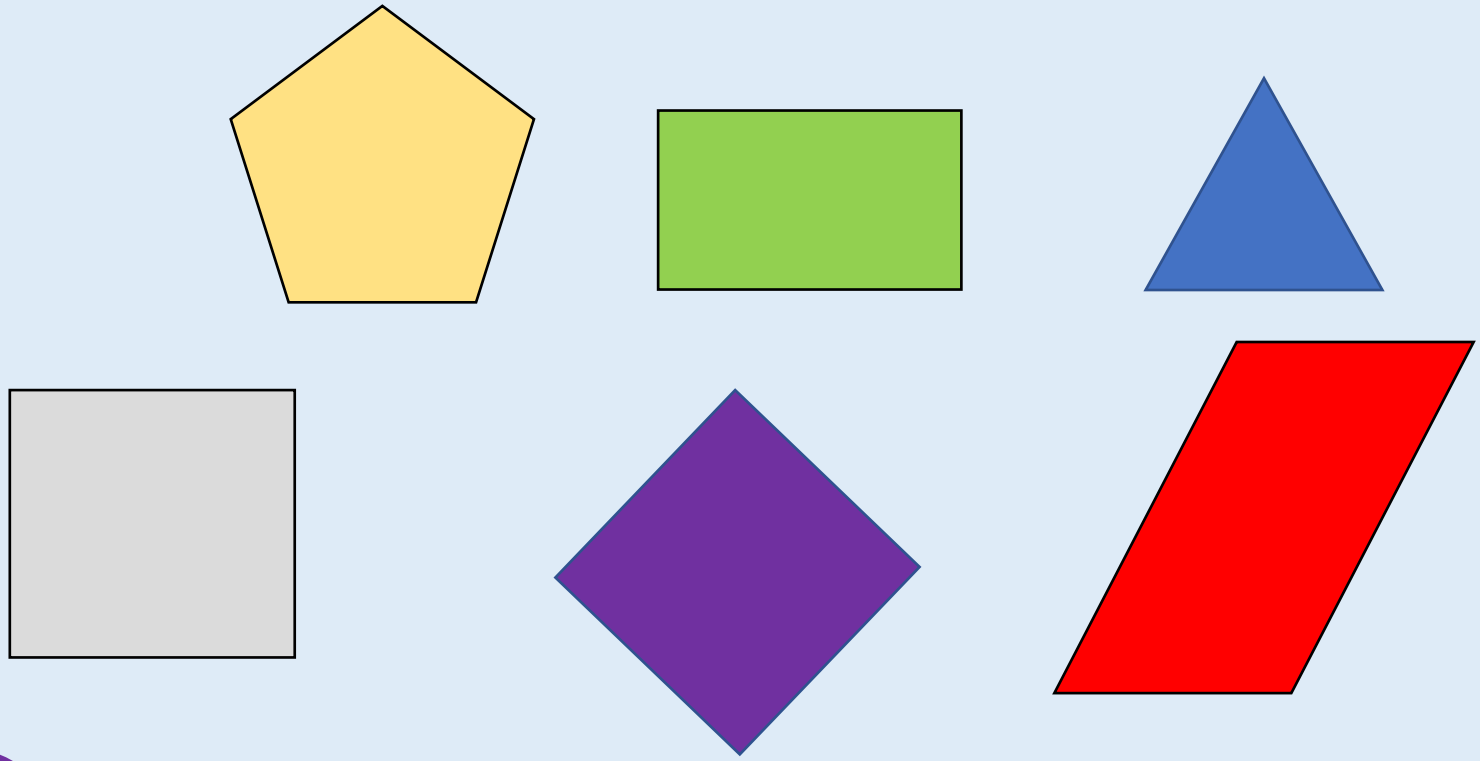
Your clock should look like this.



The angle between the hands is called a **right** angle. A right angle = $\frac{1}{4}$ of a turn.

Activity 3 Right Angles in Shapes

Shapes have angles.

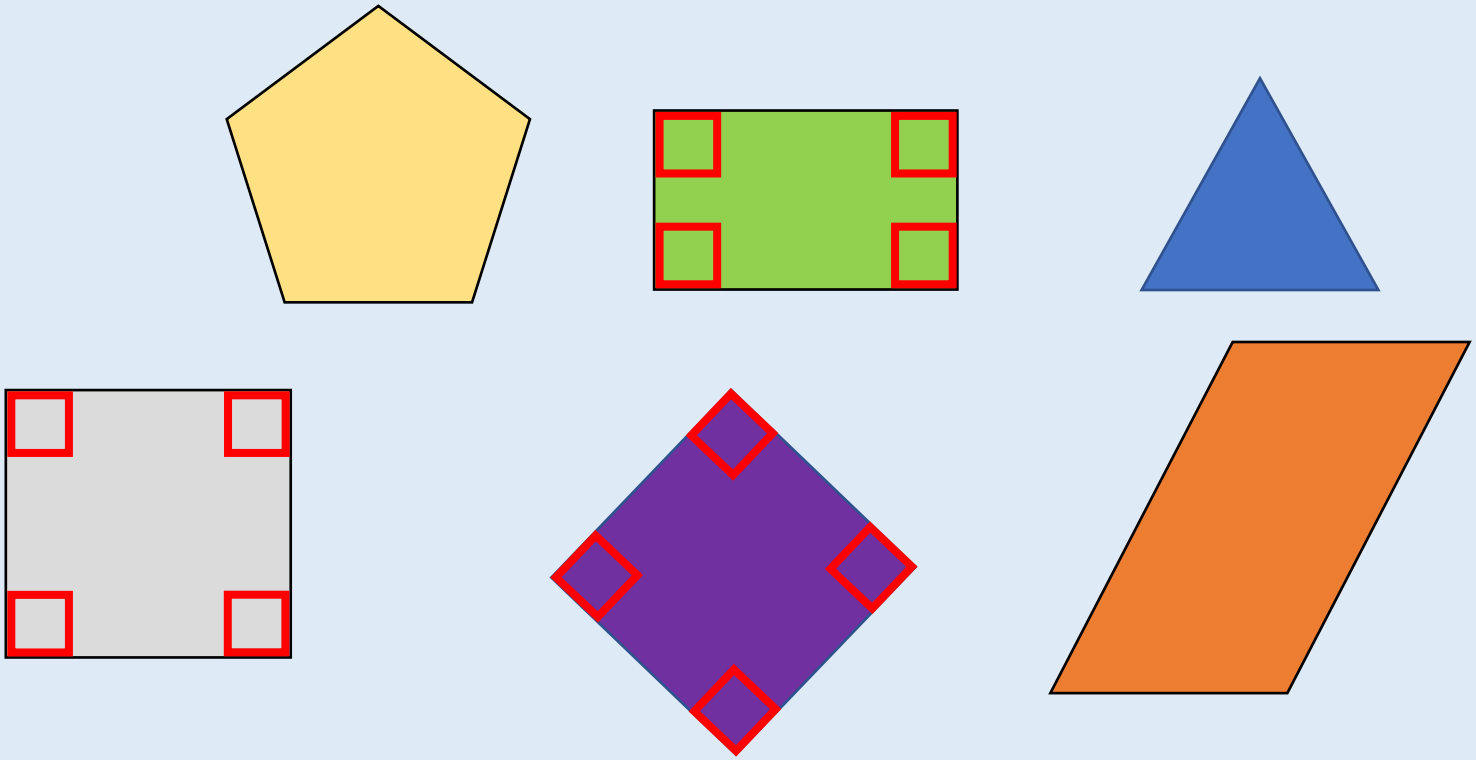


?

Can you spot any shapes with right angles?

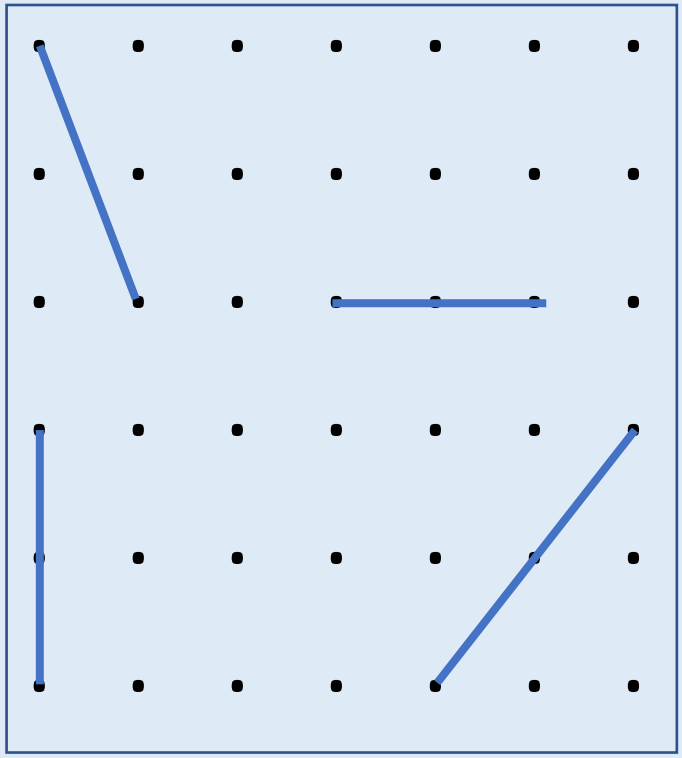
Activity 3 Right Angles in Shapes

Shapes have angles.



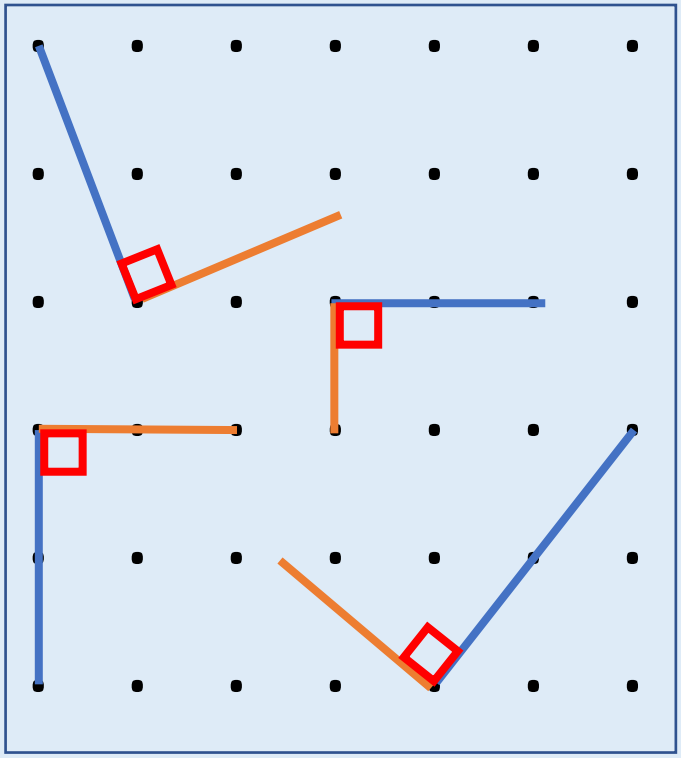
Reasoning 1 Right Angles in Shapes

Draw a line along the dots to make a right angle with each of these lines.



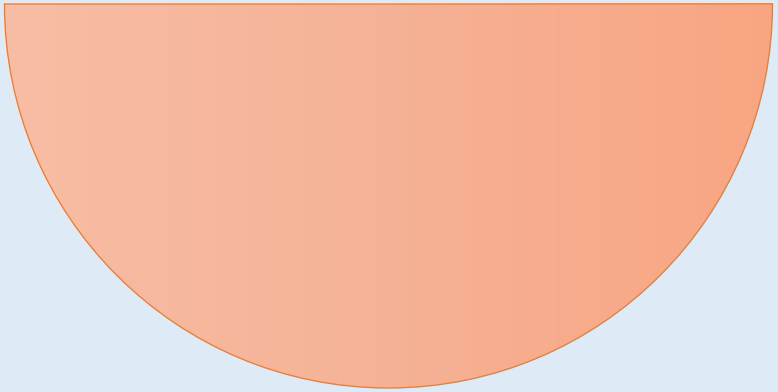
Reasoning 1 Right Angles in Shapes

Draw a line along the dots to make a right angle with each of these lines.



Reasoning 2 Right Angles in Shapes

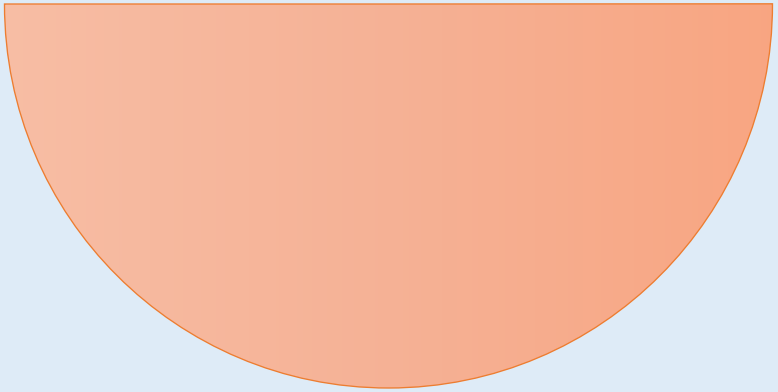
True or False?



This shape has two right angles.

Reasoning 2 Right Angles in Shapes

True or False?



This shape has two right angles.

False.

Try using the corner of a page to check that there are not any right angles.

Discuss

Right Angles in Shapes

How many right angles make a half turn/three-quarter turn/full turn?

Where can you see a right angle in the classroom/around school/outside?

Which shapes contain right angles?

Can you think of a shape which does not have any right angles?

What headings would we place in our table?

Compare Angles

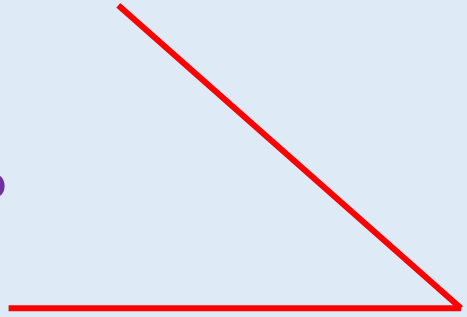
3

Fluency & Reasoning Teaching Slides

Activity 1 Compare Angles

Look at the right angle below.

Is this angle less or greater than a right angle?

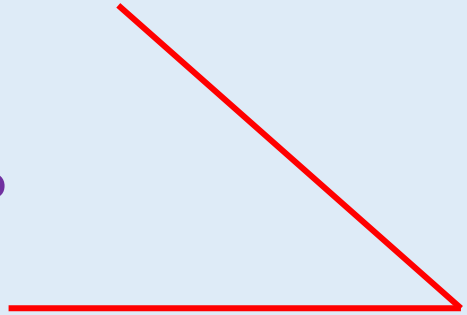


Activity 1 Compare Angles

Look at the right angle below.

Less than a right angle

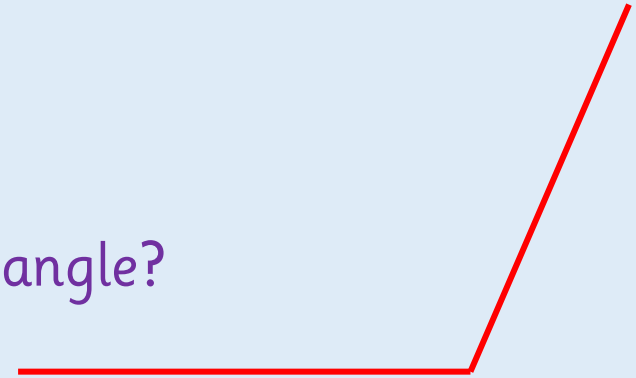
Is this angle less or greater than a right angle?



Activity 1 Compare Angles

Look at the right angle below.

Is this angle less or greater than a right angle?

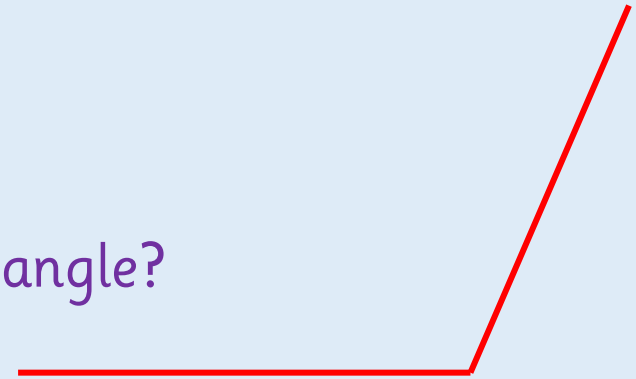


Activity 1 Compare Angles

Look at the right angle below.

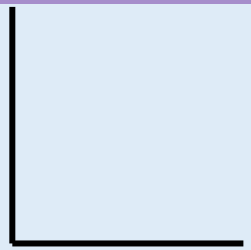
Greater than a right angle

Is this angle less or greater than a right angle?

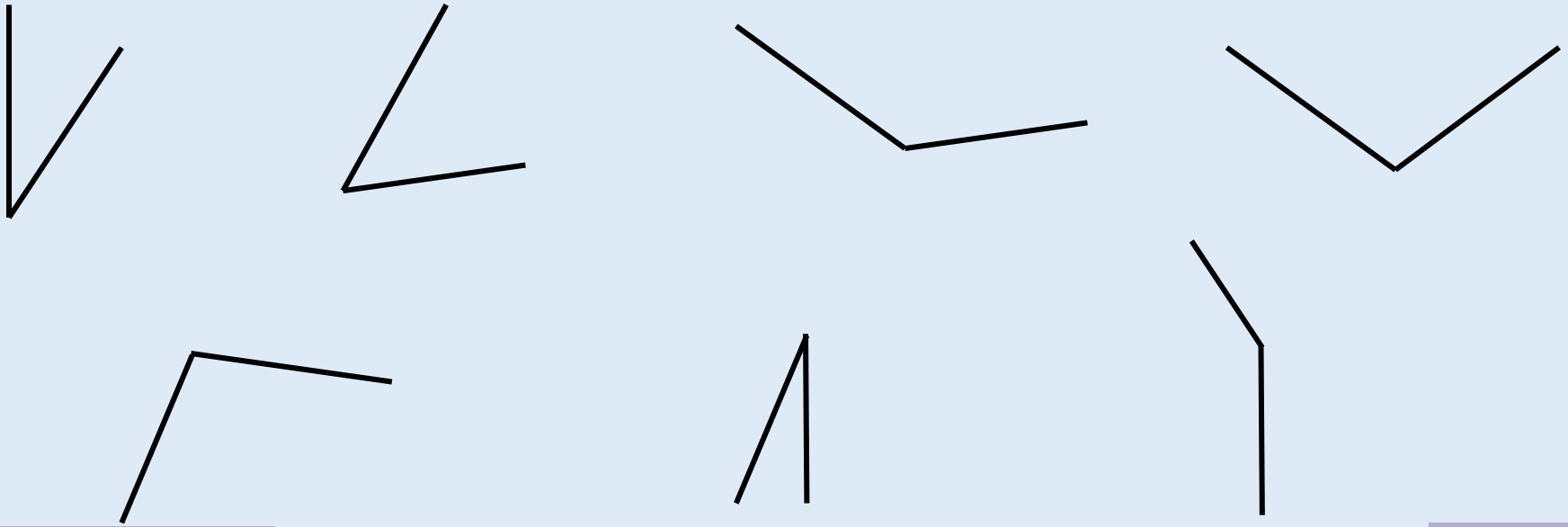


Activity 2 Compare Angles

Look at the angles below.
Discuss whether they are greater or less than a right angle.

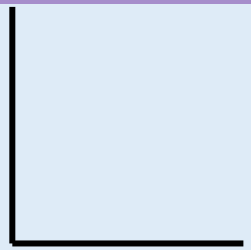


= right angle

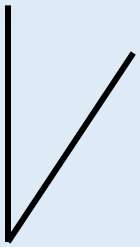


Activity 2 Compare Angles

Look at the angles below.
Discuss whether they are greater or less than a right angle.

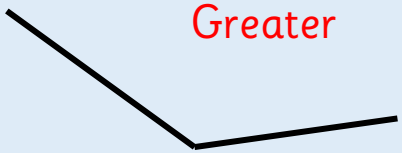


= right angle



Less

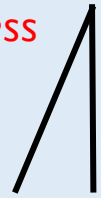
Less



Greater

Greater

Greater

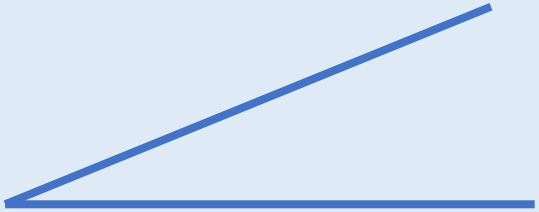


Less

Greater

Activity 3 Compare Angles

Are these angles less or greater than a right angle?

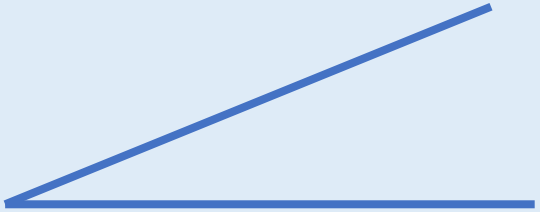


This angle is _____ than a right angle.

This angle is _____ than a right angle.

Activity 3 Compare Angles

Are these angles less or greater than a right angle?



This angle is **less** than a right angle.

This is called an acute angle.

This angle is **greater** than a right angle.

This is called an obtuse angle.

Activity 4 Compare Angles

Look at the clock hands.

This angle is _____ than a right angle, it is an _____ angle.

This angle is _____ than a right angle, it is an _____ angle.

Activity 4 Compare Angles

Look at the clock hands.

This angle is **less** than a right angle, it is an **acute** angle.

This angle is **greater** than a right angle, it is an **obtuse** angle.

Activity 5 Compare Angles

Look at the clock hands.

The angle between the hands is greater than a right angle.
This is called an obtuse angle.

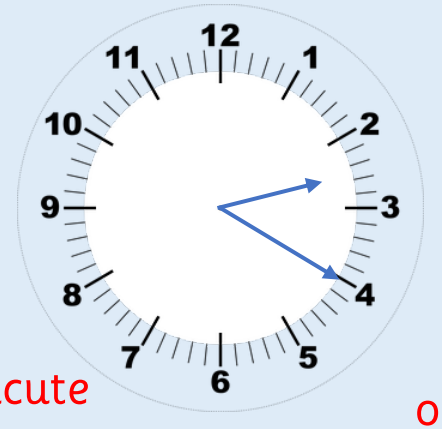
Describe the angles of these clock hands.

Activity 5 Compare Angles

Look at the clock hands.

The angle between the hands is greater than a right angle.
This is called an obtuse angle.

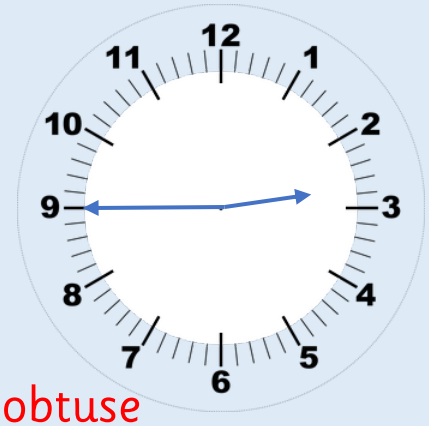
Describe the angles of these clock hands.



acute

obtuse

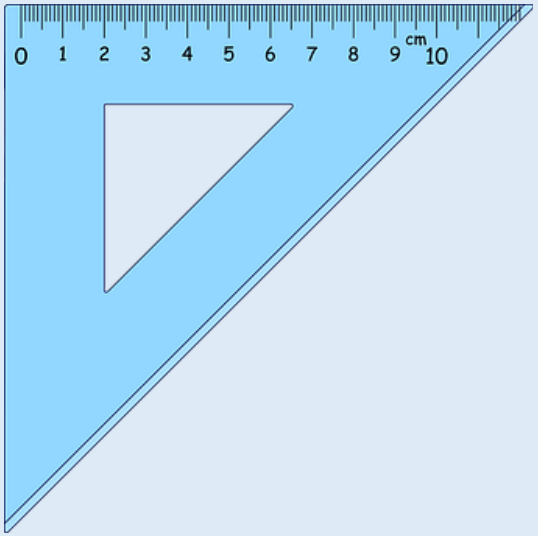
acute



obtuse

Activity 6 Compare Angles

What type of angle are the images showing?

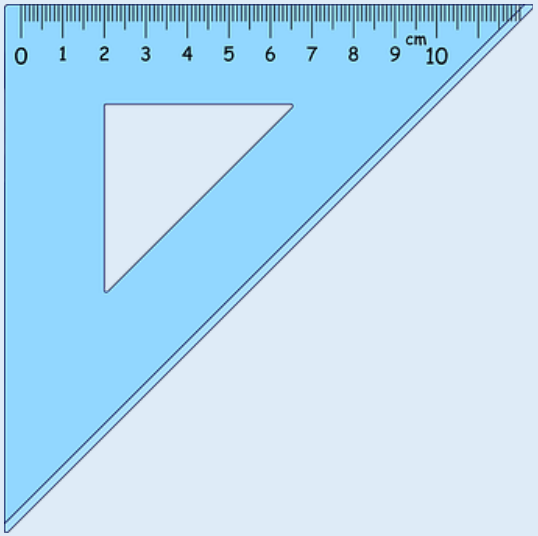


?

Do some pictures show more than one angle?

Activity 6 Compare Angles

What type of angle are the images showing?



Obtuse Angle

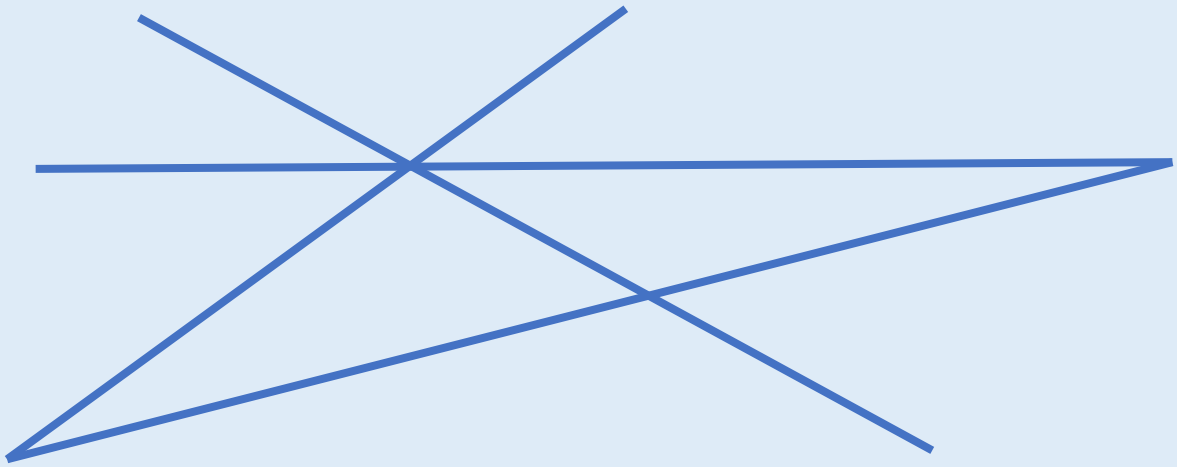
Right Angle

Acute Angle

Acute Angle

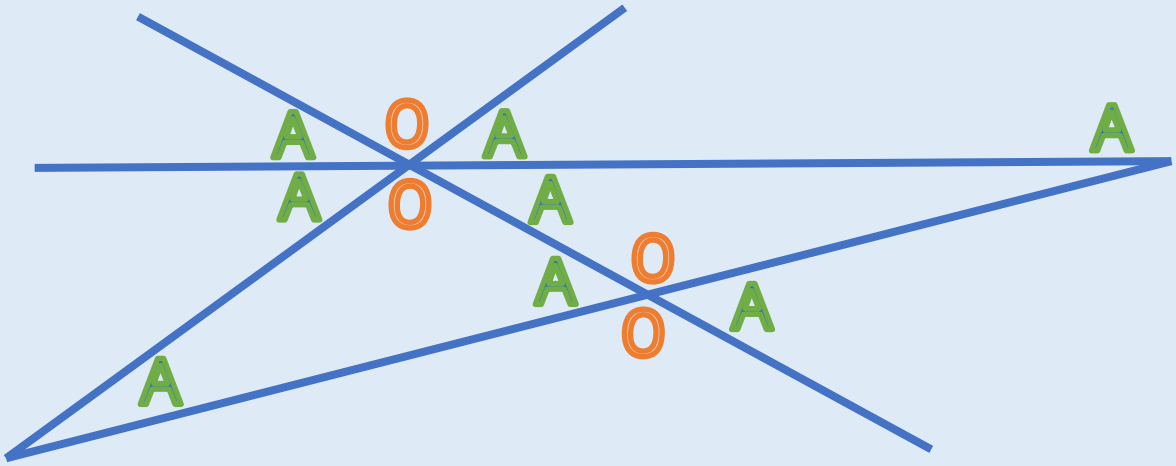
Reasoning 1 Compare Angles

Label the acute angles (A) and obtuse angles (O) in the diagram below.



Reasoning 1 Compare Angles

Label the acute angles (A) and obtuse angles (O) in the diagram below.



Discuss

Compare Angles

What is an acute angle?

What is an obtuse angle?

Can you give me a time where the hands on the clock make an acute/obtuse angle?

Can you see an acute/obtuse angle around the classroom?

Can you draw me a shape that contains acute/obtuse angles?

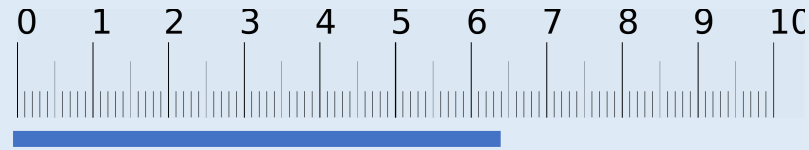
Draw Accurately

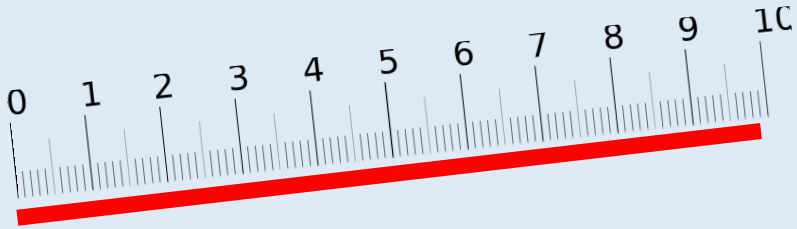
3

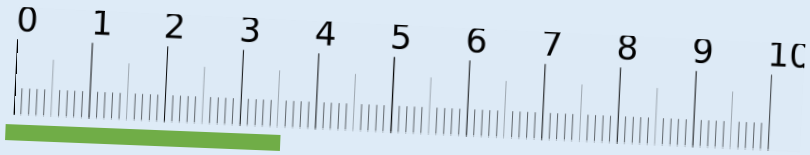
Fluency & Reasoning Teaching Slides

Activity 1 Draw Accurately

Measure these lines.
Record your answers in centimetres and milimetres.







_____ cm and _____ mm

_____ cm and _____ mm

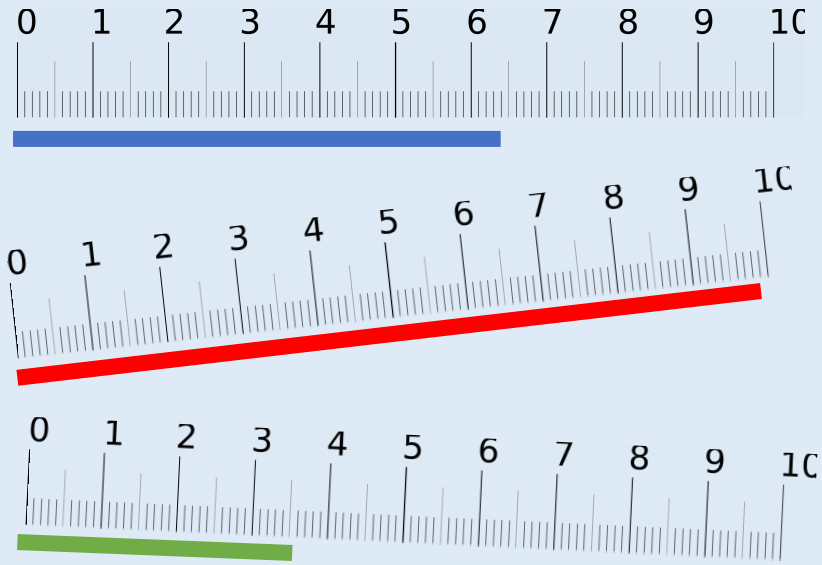
_____ cm and _____ mm

?

Where should we position the ruler when measuring a line? Why?

Activity 1 Draw Accurately

Measure these lines.
Record your answers in centimetres and milimetres.



6 cm and 4 mm

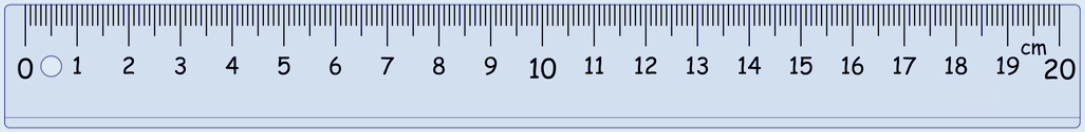
9 cm and 8 mm

3 cm and 5 mm

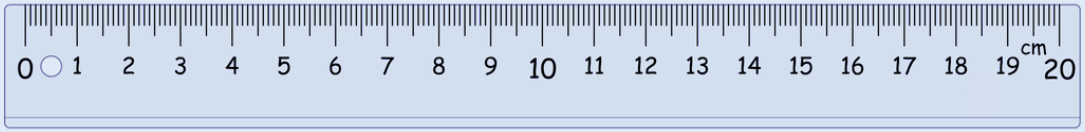
Activity 2 Draw Accurately

Draw straight lines of these measurements:

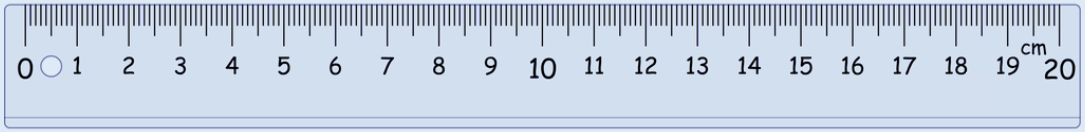
3 cm 7 mm



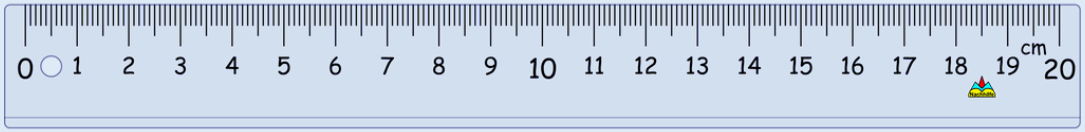
10 cm 1 mm



17 cm 5 mm



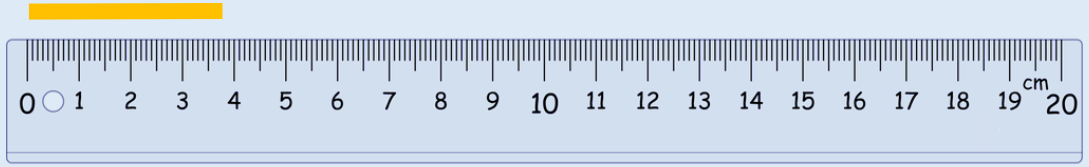
7 ½ cm



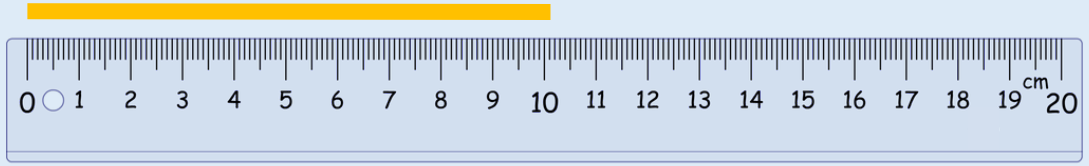
Activity 2 Draw Accurately

Draw straight lines of these measurements:

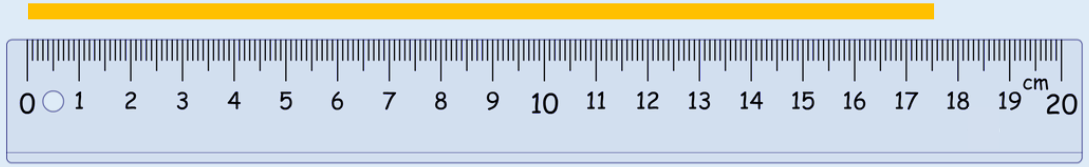
3 cm 7 mm



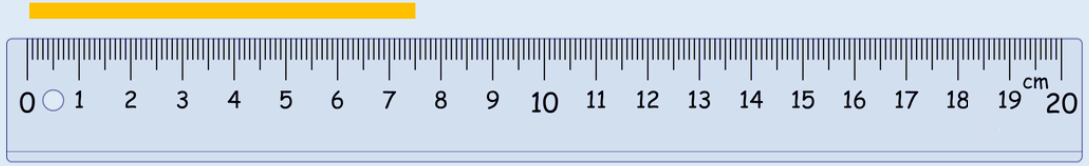
10 cm 1 mm



17 cm 5 mm

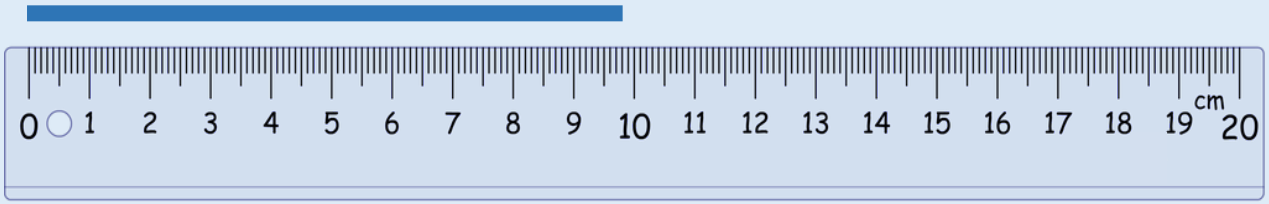


7 ½ cm



Activity 3 Draw Accurately

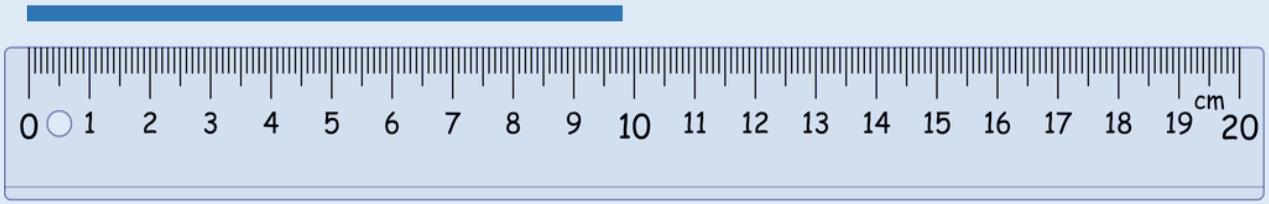
This line measures 9 cm and 8 mm.



It measures ___ cm to the nearest centimetre.

Activity 3 Draw Accurately

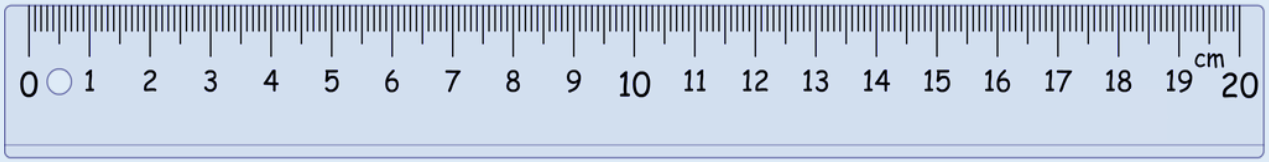
This line measures 9 cm and 8 mm.



It measures 10 cm to the nearest centimetre.

Reasoning 1 Draw Accurately

Tia measures the line.



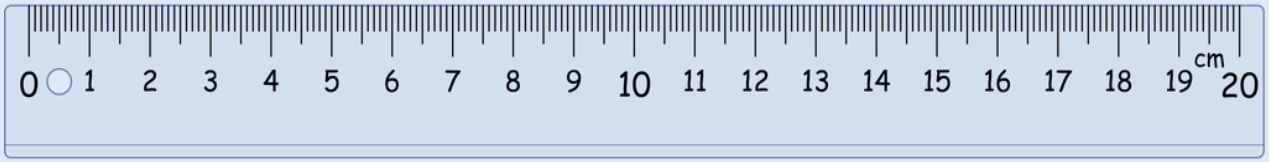
It is 11 cm and 5 mm.

?

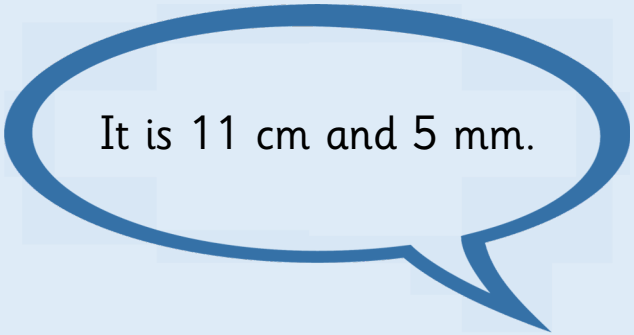
Is Tia correct? Explain why.

Reasoning 1 Draw Accurately

Tia measures the line.



Tia is not correct because she has started measuring the line from the end of ruler instead of from '0'.



Discuss

Draw Accurately

Where should we position the ruler when measuring each line? Why?

How long is each line in millimetres?

Why does 9 cm and 9 mm round to 10 cm and not 9 cm? Look at the ruler/number line to explain your answer.

Do we round 10 cm and 5 mm to 10 cm or 11 cm? Why?

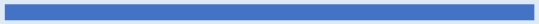
Horizontal and Vertical

3

Fluency & Reasoning Teaching Slides

Activity 1 Horizontal and Vertical

Fill in the blanks.

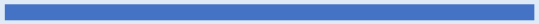


A line that runs from left to right across the page is called a _____ line.

A line that runs straight up and down the page is called a _____ line.

Activity 1 Horizontal and Vertical

Fill in the blanks.

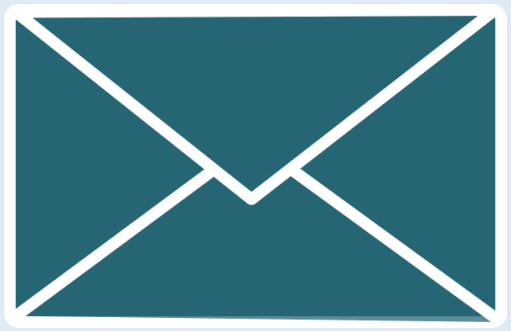


A line that runs from left to right across the page is called a **horizontal** line.

A line that runs straight up and down the page is called a **vertical** line.

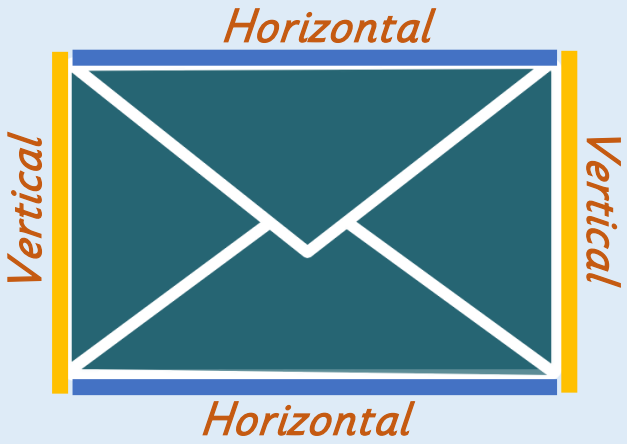
Activity 2 Horizontal and Vertical

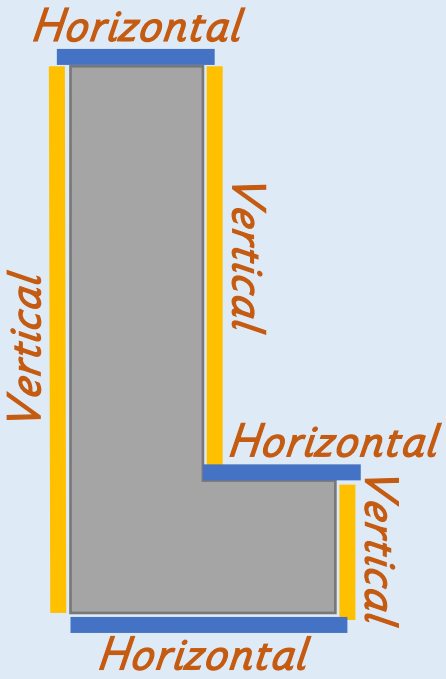
Label the horizontal and vertical lines in each of these images.



Activity 2 Horizontal and Vertical

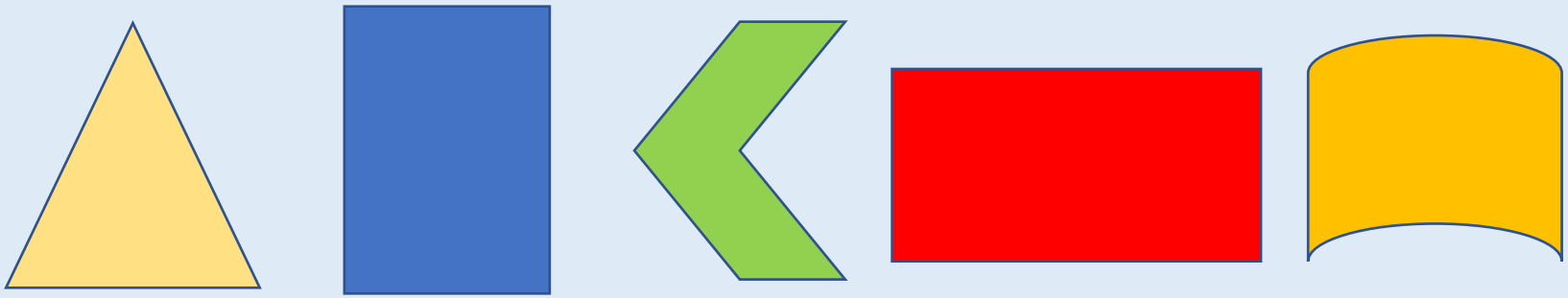
Label the horizontal and vertical lines in each of these images.





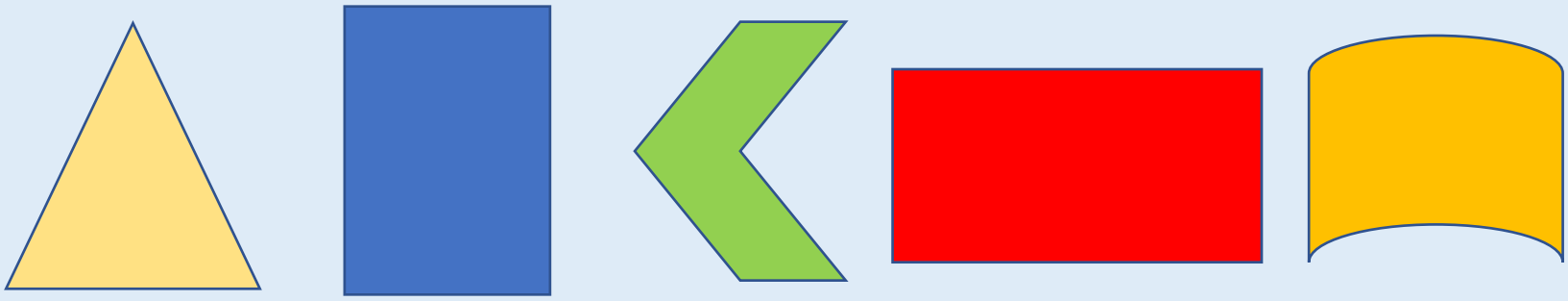
Activity 3 Horizontal and Vertical

Decide if these shapes have a horizontal line of symmetry, a vertical line of symmetry or both.



Activity 3 Horizontal and Vertical

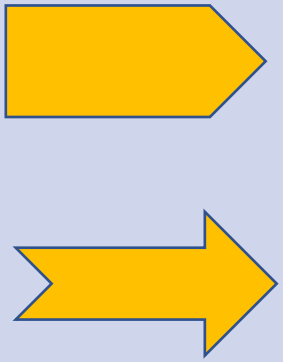
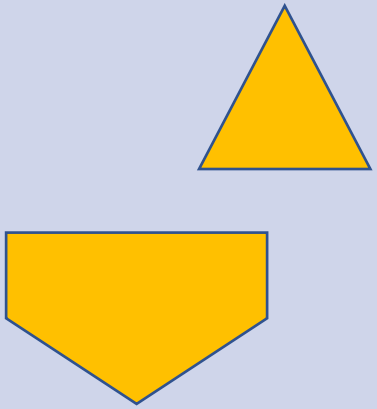
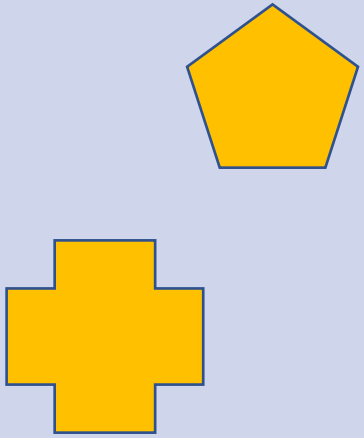
Decide if these shapes have a horizontal line of symmetry, a vertical line of symmetry or both.



Vertical BOTH Horizontal BOTH Vertical

Reasoning 1 Horizontal and Vertical

Leanna completes the table by drawing shapes.

Horizontal line of symmetry	Vertical line of symmetry	Horizontal and vertical lines of symmetry
		

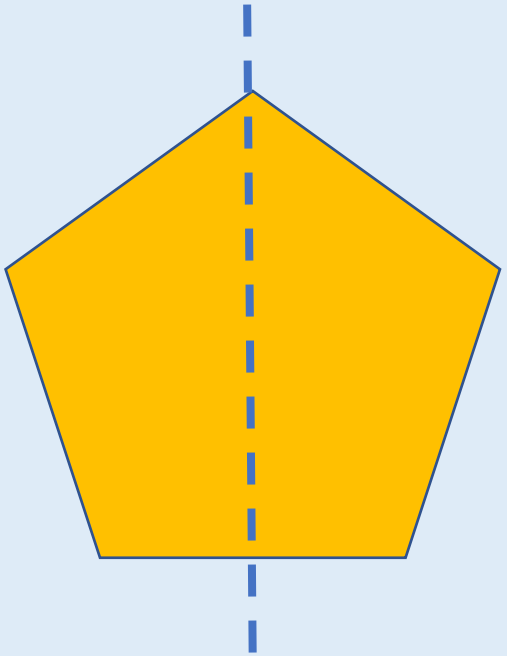
?

Can you spot and correct her mistake?

Reasoning 1 Horizontal and Vertical

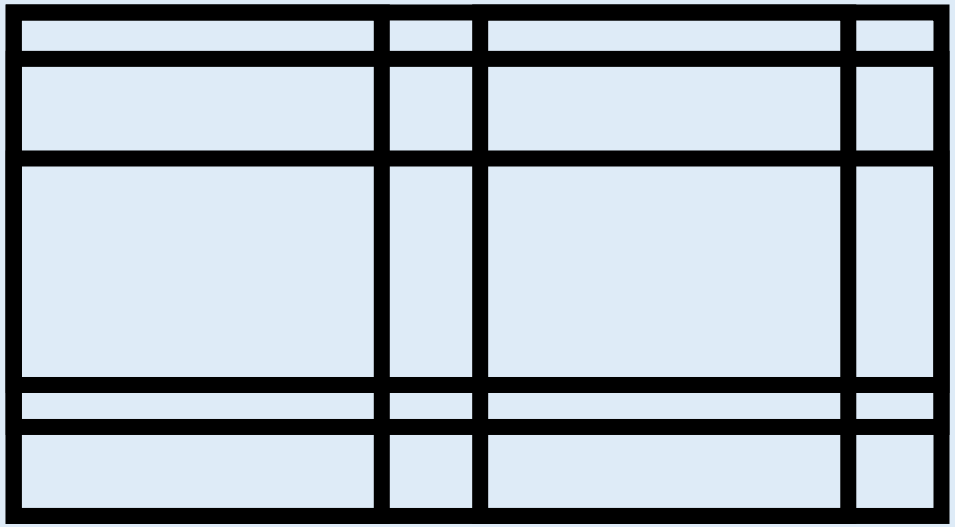
Leanna completes the table by drawing shapes.

Leanna thinks the pentagon has both lines of symmetry, but it only has a vertical line of symmetry.



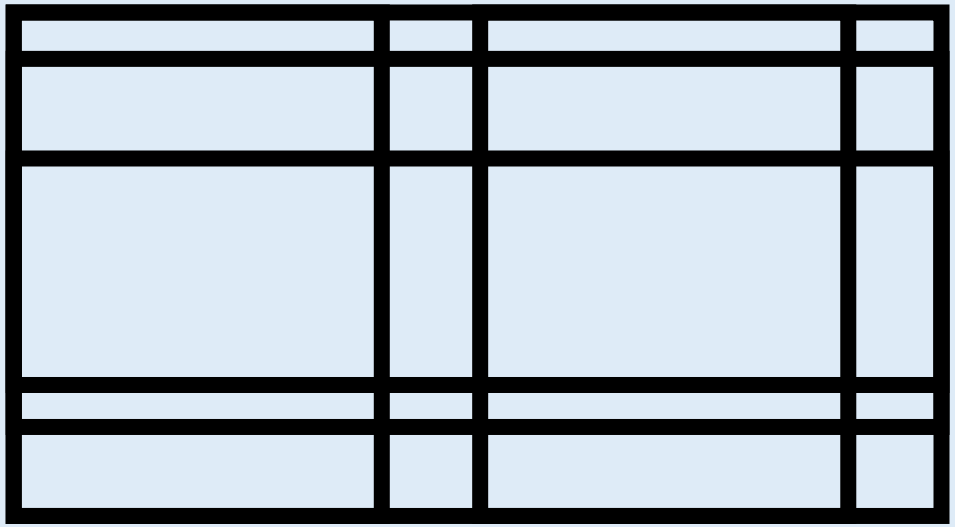
Reasoning 2 Horizontal and Vertical

How many horizontal and vertical lines can you spot in this image?



Reasoning 2 Horizontal and Vertical

How many horizontal and vertical lines can you spot in this image?



6 horizontal lines
5 vertical lines

?

Create your own piece of artwork using only horizontal and vertical lines.

Discuss

Horizontal and Vertical

What can you use to help you remember what a horizontal line looks like?

Can you see horizontal and vertical lines around the classroom?

What do we call a line that is not horizontal or vertical?

Which shapes/symbols/letters have a horizontal/vertical line of symmetry? Which have both?

Can you draw your own shape that has a horizontal and vertical line of symmetry?

Parallel and Perpendicular

3

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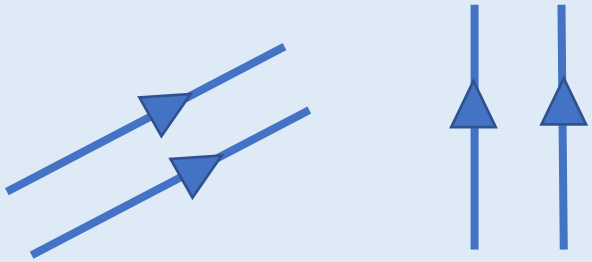
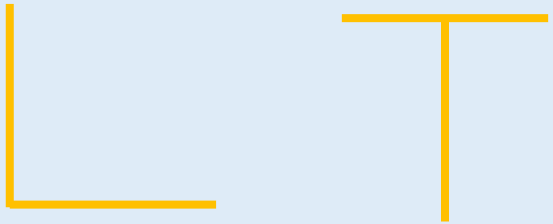
Activity 1 Parallel and Perpendicular

Fill in the blanks.



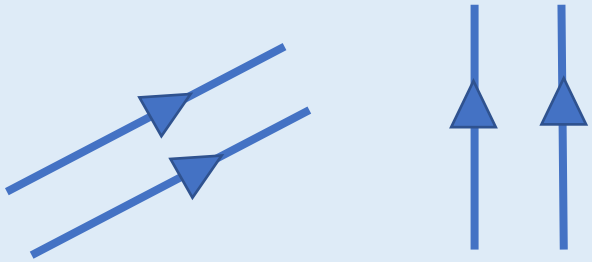
Lines that never meet are called _____ lines.



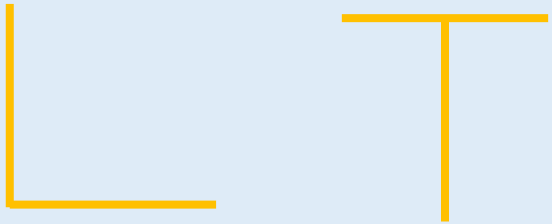
Straight lines that meet at a right angle are called _____ lines.

Activity 1 Parallel and Perpendicular

Fill in the blanks.



Lines that never meet are called **parallel** lines.

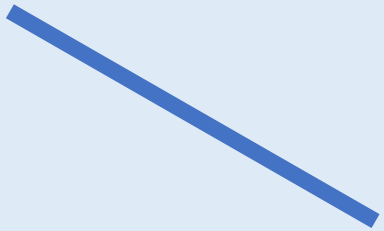


Straight lines that meet at a right angle are called **perpendicular** lines.

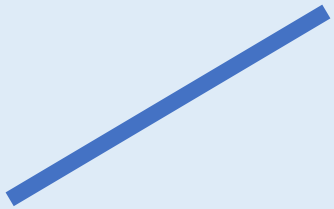
Activity 2 Parallel and Perpendicular

Draw a line that is:

Parallel to this one:



Perpendicular to this one:

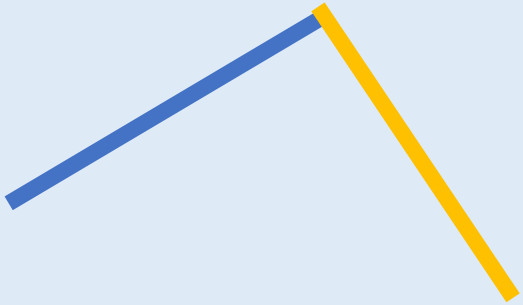


Activity 2 Parallel and Perpendicular

Draw a line that is:

Parallel to this one:

Perpendicular to this one:

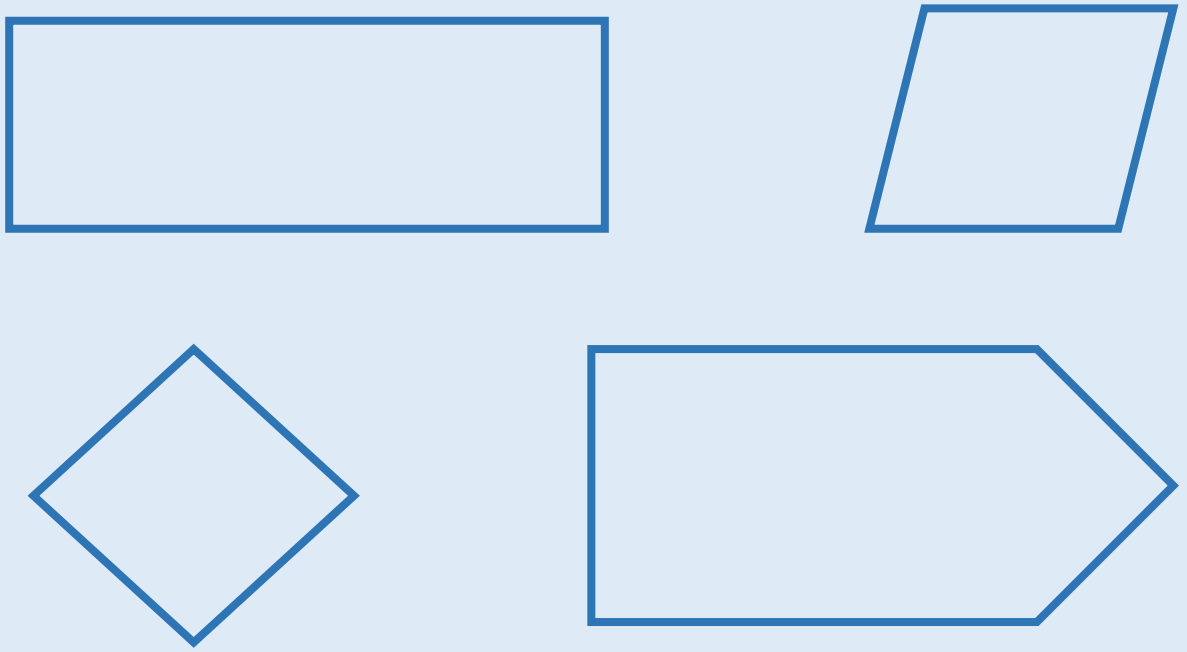


?

Find three horizontal and three vertical lines in the classroom.

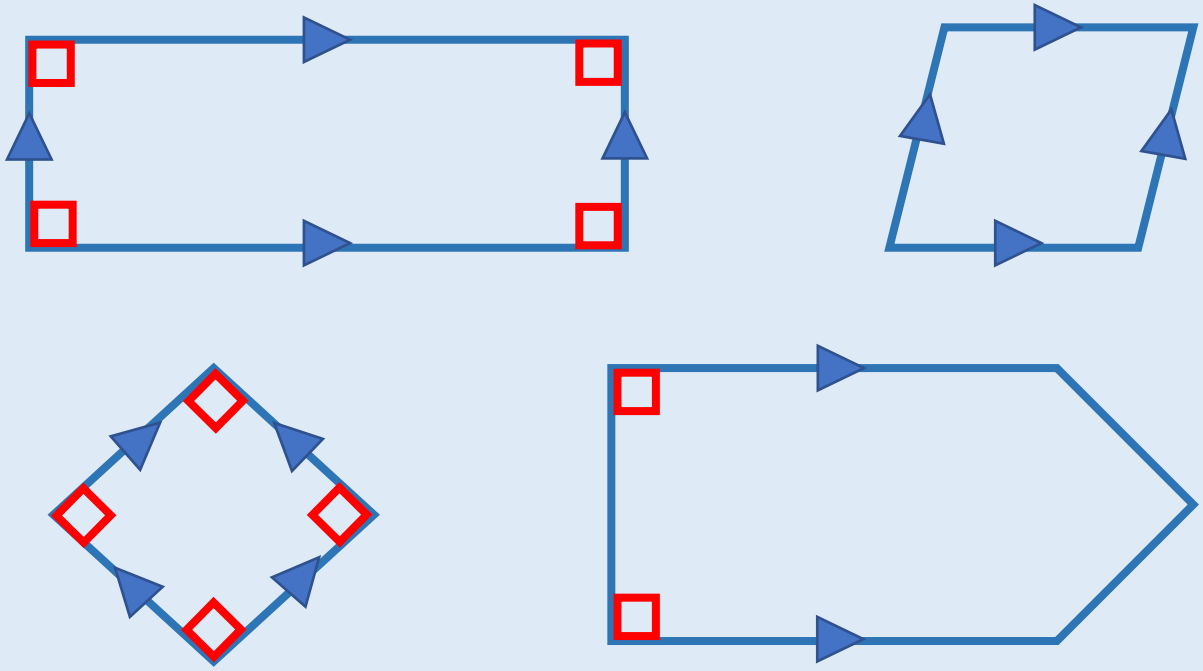
Activity 3 Parallel and Perpendicular

Use arrows to show the parallel lines in these shapes and use the right-angle notation to show the perpendicular lines.



Activity 3 Parallel and Perpendicular

Use arrows to show the parallel lines in these shapes and use the right-angle notation to show the perpendicular lines.



Reasoning 1 Parallel and Perpendicular

True or False?

Line AC is parallel to BD

Line CD is parallel to AB

Line BD is perpendicular with CD

Reasoning 1 Parallel and Perpendicular

True or False?

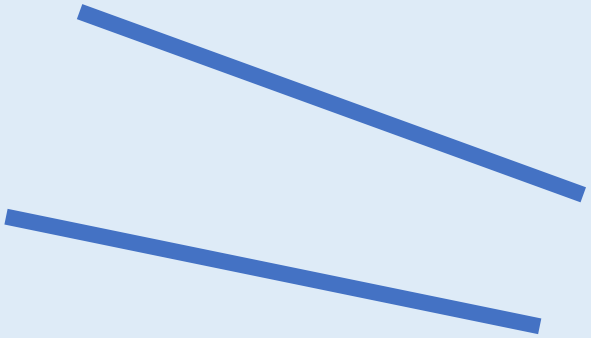
Line AC is parallel to BD — True

Line CD is parallel to AB — True

Line BD is perpendicular with CD — False

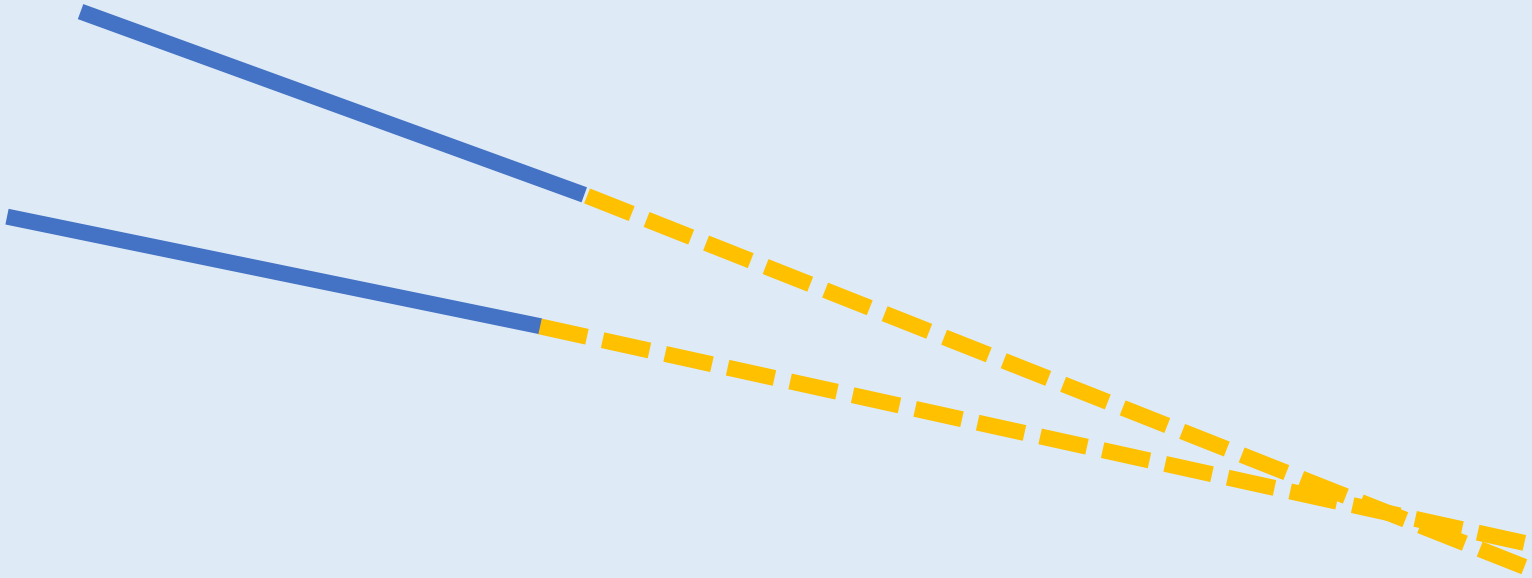
Reasoning 2 Parallel and Perpendicular

Are these lines parallel to each other?



Reasoning 2 Parallel and Perpendicular

Are these lines parallel to each other?



No, they are not parallel.

Discuss

Parallel and Perpendicular

Where might you see sets of parallel lines in everyday life?

Can you see sets of parallel and perpendicular lines around the classroom?

Which shapes have only parallel lines?

Which shapes have perpendicular lines?

Which shapes have both parallel and perpendicular lines?

2D Shapes

3

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Activity 1 — 2D Shapes

Describe this quadrilateral.

It has __ angles.
It has __ right angles.
It has __ obtuse angle.
It has __ acute angle.
It has __ lines of symmetry.

Activity 1 2D Shapes

Describe this quadrilateral.

It has 4 angles.
It has 2 right angles.
It has 1 obtuse angle.
It has 1 acute angle.
It has 0 lines of symmetry.

Activity 2 2D Shapes

Can you identify what these shapes are?

It has 3 angles.
It has 0 right angles.
It has 0 obtuse angles.
It has 3 acute angles.
It has 1 line of symmetry.

It has 4 angles.
It has 4 right angles.
It has 0 obtuse angles.
It has 0 acute angles.
It has 2 lines of symmetry.

It has 5 angles.
It has 0 right angles.
It has 5 obtuse angles.
It has 0 acute angles.
It has 1 vertical line of symmetry.

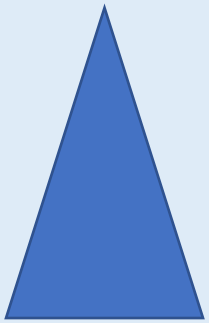
?

Discuss it with your friends, can they identify the shapes?

Activity 2 2D Shapes

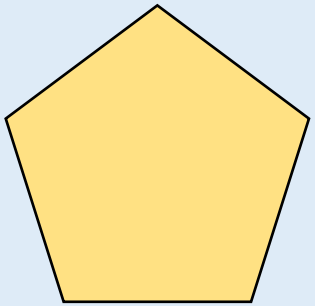
Can you identify what these shapes are?

It has 3 angles.
It has 0 right angles.
It has 0 obtuse angles.
It has 3 acute angles.
It has 1 line of symmetry.



It has 4 angles.
It has 4 right angles.
It has 0 obtuse angles.
It has 0 acute angles.
It has 2 lines of symmetry.

It has 5 angles.
It has 0 right angles.
It has 5 obtuse angles.
It has 0 acute angles.
It has 1 vertical line of symmetry.



Activity 3 2D Shapes

Draw the following shapes.

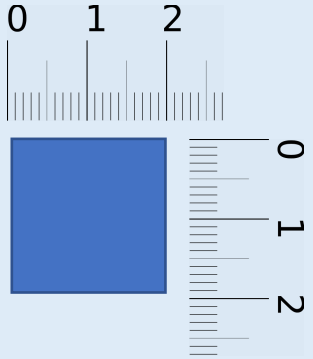
- A triangle with two equal sides.
- A square with 2 cm sides.
- A rectangle with sides of 2 cm and 4 cm.

Activity 3 2D Shapes

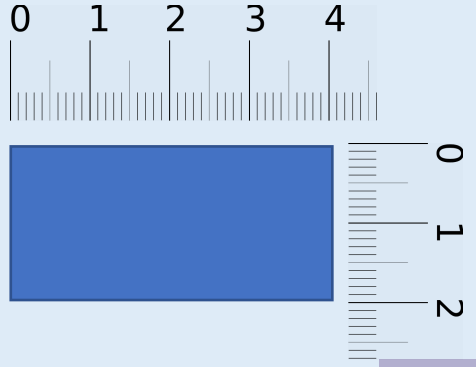
Draw the following shapes.

- A triangle with two equal sides.

- A square with 2 cm sides.

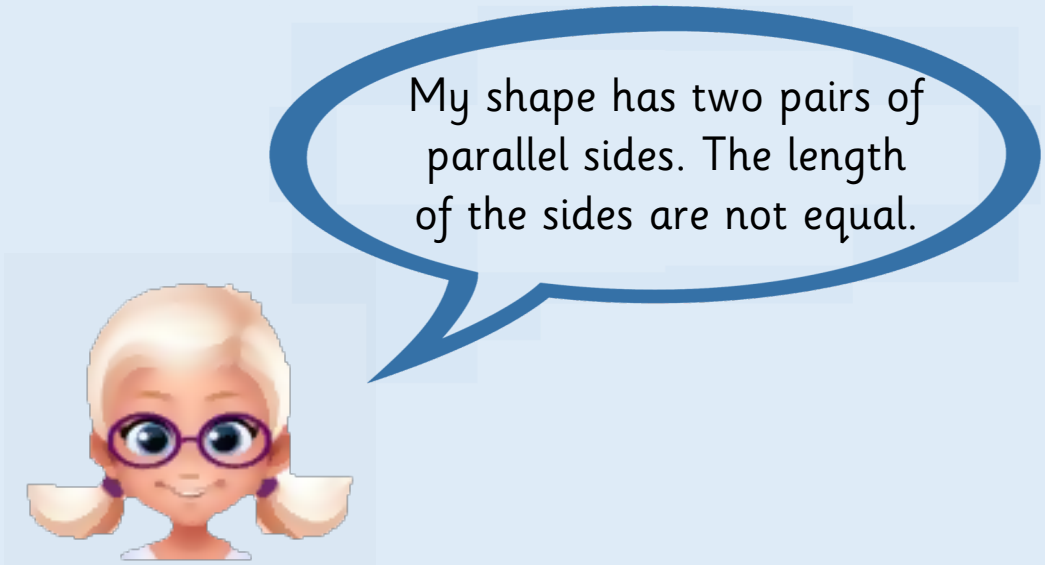


- A rectangle with sides of 2 cm and 4 cm.



2D Shapes

Esin describes a 2D shape.



?

Draw the shape that Esin is describing.

Reasoning 1 — 2D Shapes

Esin describes a 2D shape.

My shape has two pairs of parallel sides. The length of the sides are not equal.

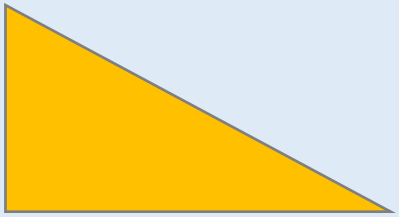
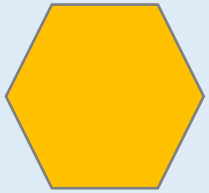
Reasoning 2 2D Shapes

Draw at least one shape in each section.

	At least one right angle	No right angles
4 sided		
Not 4 sided		

Reasoning 2 2D Shapes

Draw at least one shape in each section.

	At least one right angle	No right angles
4 sided		
Not 4 sided		

Discuss 2D Shapes

How many angles does a _____ have?

What types of angles does a _____ have?

How many lines of symmetry does a _____ have?

What kind of lines of symmetry does a _____ have?

What types of lines can you spot in a _____?

3D Shapes

3

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Activity 1 — 3D Shapes

Fill in the blanks.

This shape is a _____.

It has __ faces.
It has __ edges.
It has __ vertices.

Activity 1 — 3D Shapes

Fill in the blanks.

This shape is a **cuboid**.

It has **6** faces.
It has **12** edges.
It has **8** vertices.

Activity 2 — 3D Shapes

Can you identify what these shapes are?

It has 5 faces.
It has 8 edges.
It has 5 vertices.

It has 3 faces.
It has 2 edges.
It has 0 vertices.

It has 2 faces.
It has 1 edge.
It has 1 vertex.

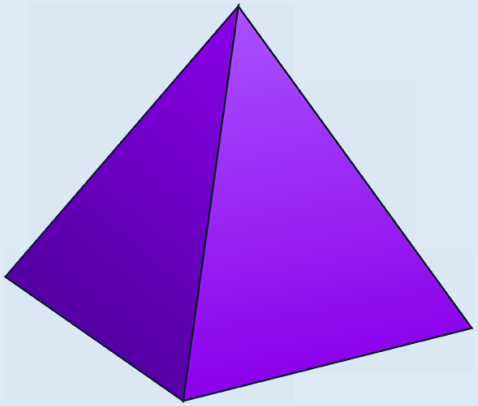
?

Discuss it with your friends, can they identify the shapes?

Activity 2 — 3D Shapes

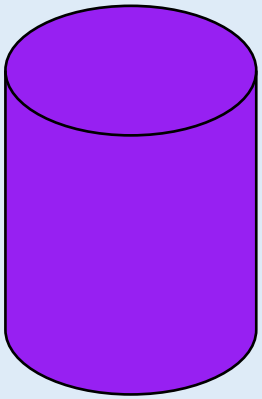
Can you identify what these shapes are?

It has 5 faces.
It has 8 edges.
It has 5 vertices.



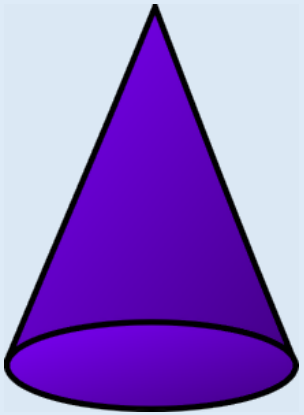
square-based pyramid

It has 3 faces.
It has 2 edges.
It has 0 vertices.



cylinder

It has 2 faces.
It has 1 edge.
It has 1 vertex.



cone

3D Shapes

Zach says:

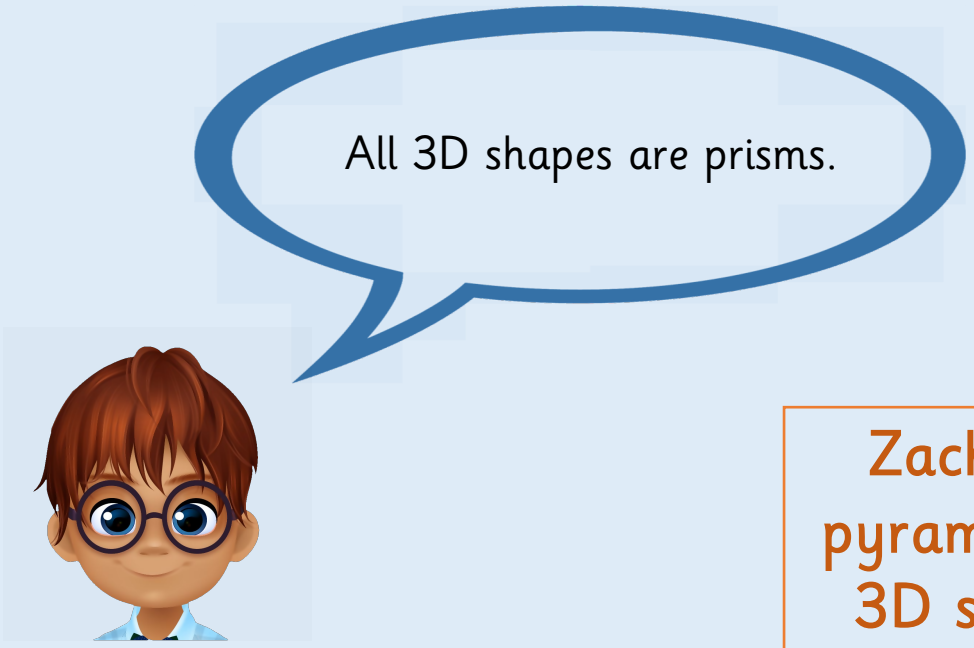
All 3D shapes are prisms.

?

Do you agree with Zach? Explain why.

Reasoning 1 — 3D Shapes

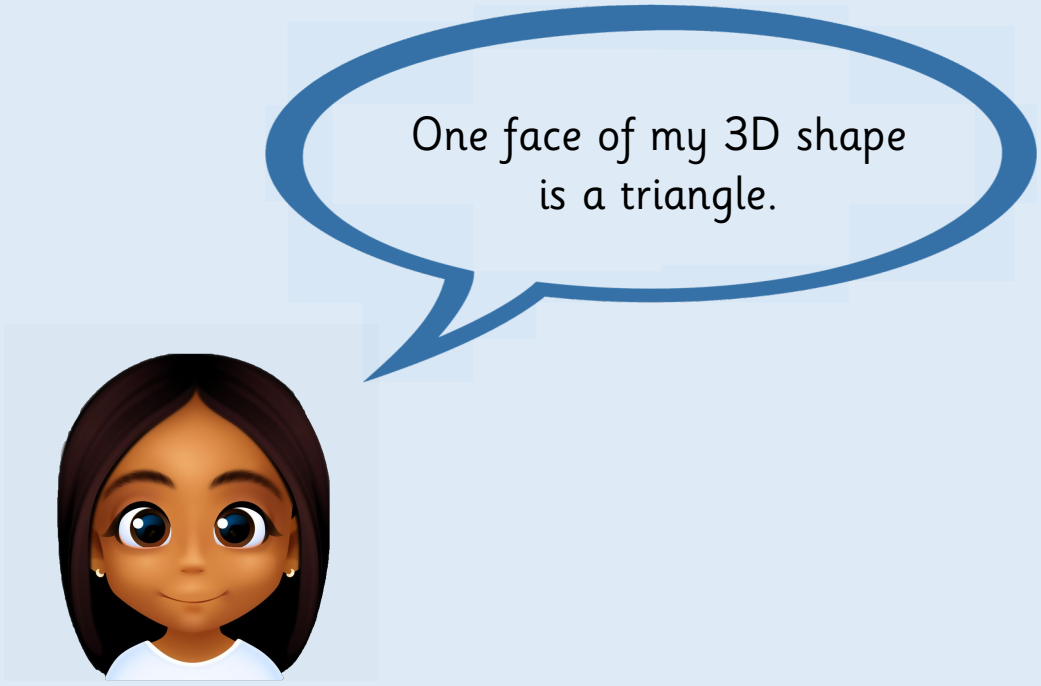
Zach says:



Zach is wrong. Cones, pyramids, spheres, are all 3D shapes that are not prisms.

3D Shapes

Rosie describes a 3D shape.

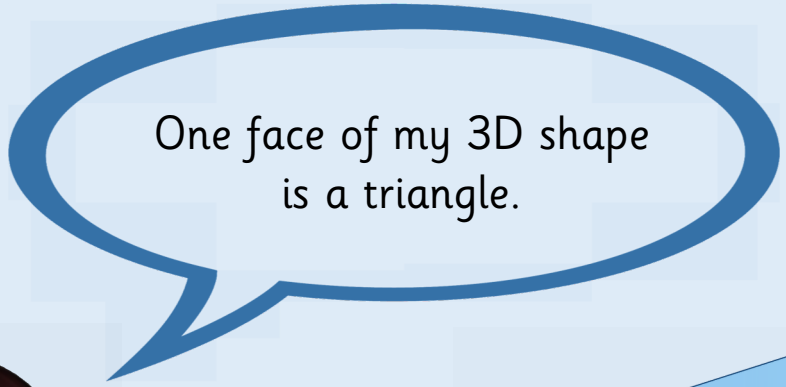


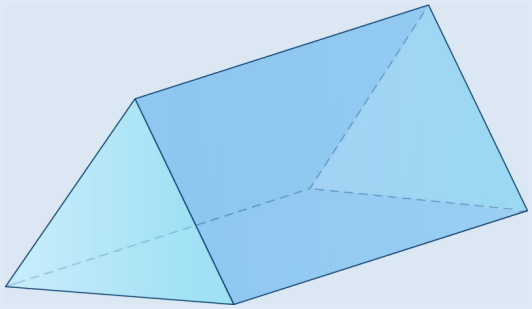
?

What could Rosie's shape be?

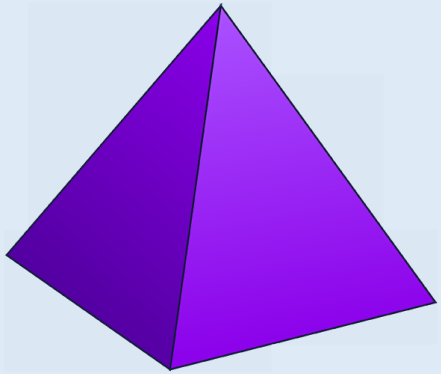
3D Shapes

Rosie describes a 3D shape.





triangular prism



square-based pyramid

Discuss 3D Shapes

How many faces/edges/vertices/curved surfaces does a _____ have?

What shapes are the faces of a _____?

What types of lines can you see on a _____?

Can you spot objects around the classroom that are cubes/cuboids etc.?

Construct 3D Shapes

3

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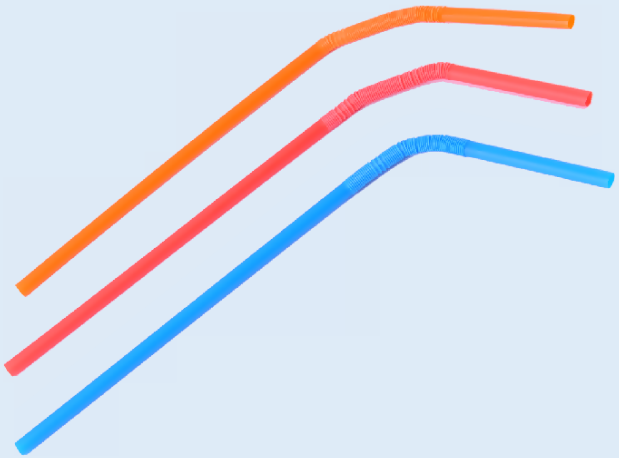
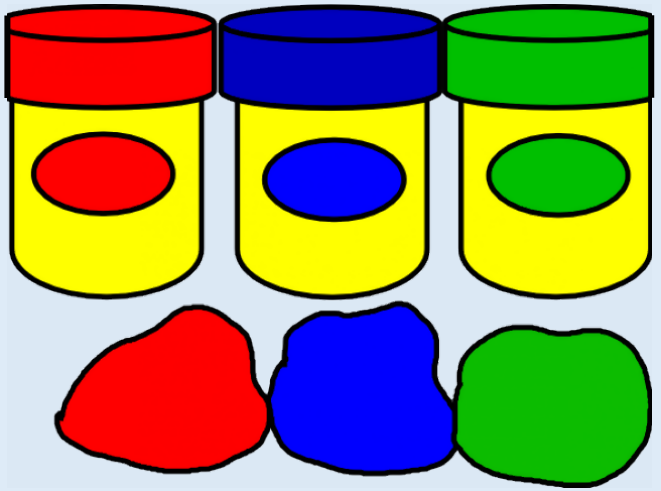
Activity 1 Construct 3D Shapes

Use straws and Play-Doh to create a 3D model.



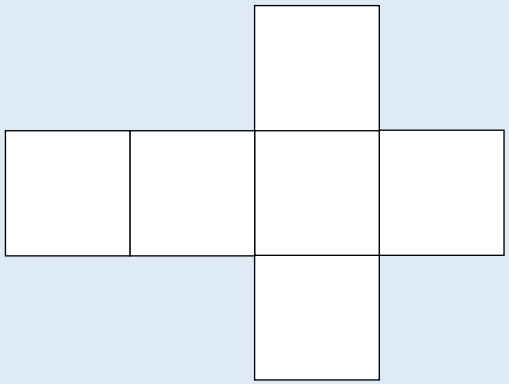


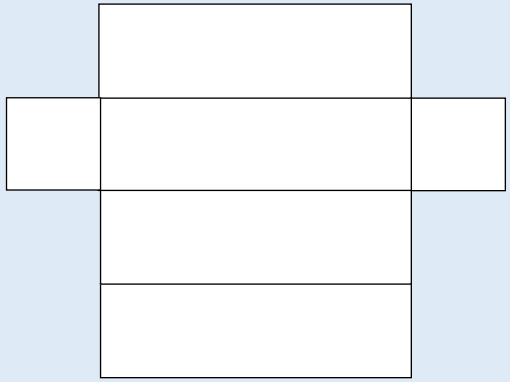
?

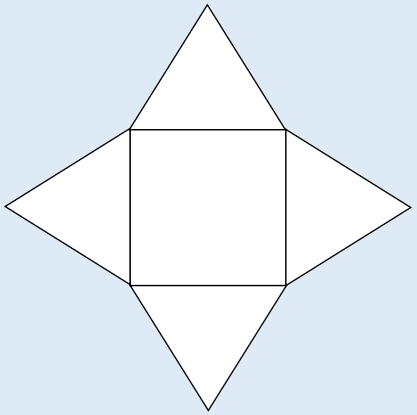
What shapes can you create?

Activity 2 Construct 3D Shapes

Cut and fold these into 3D shapes.





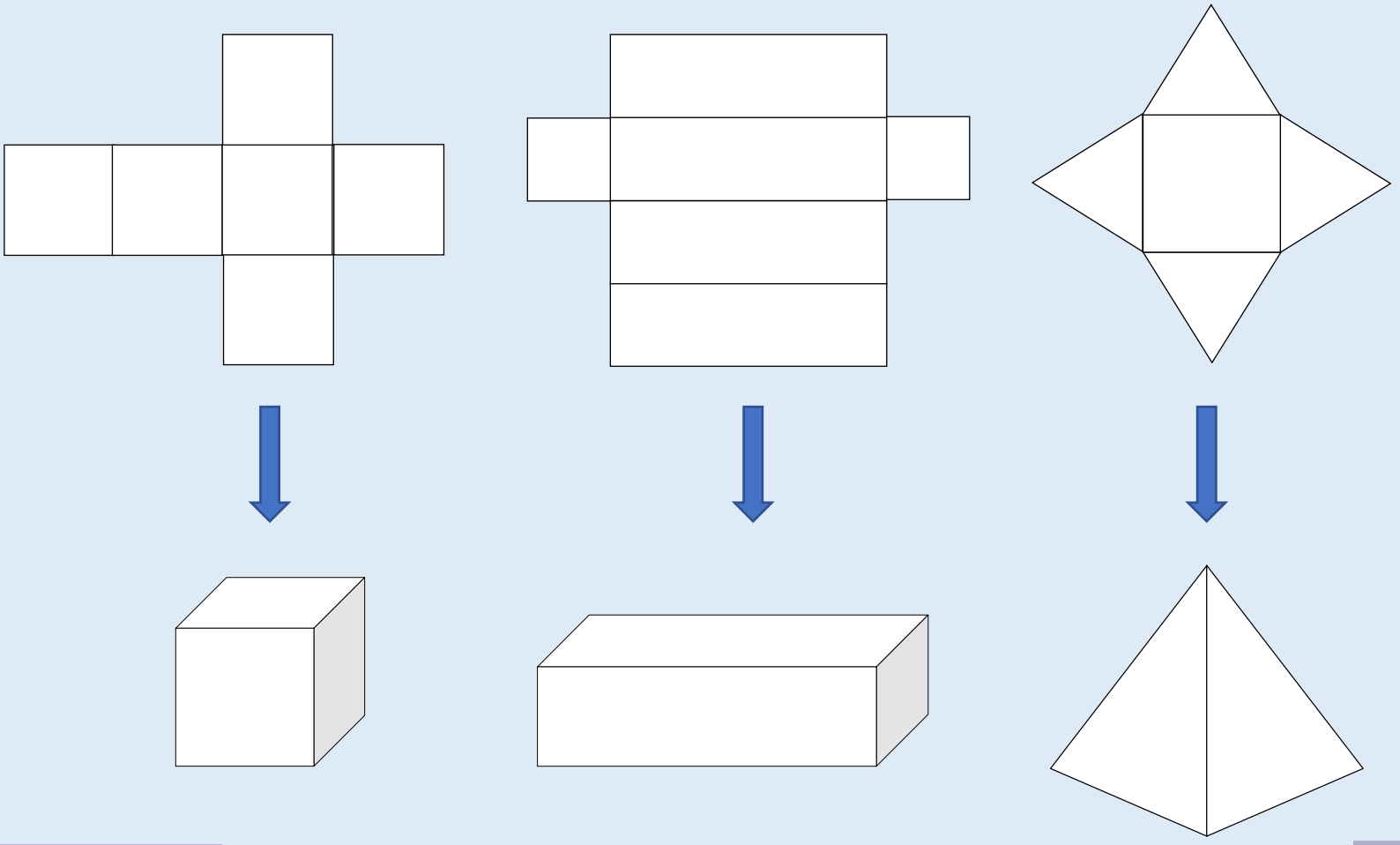


?

What shapes can you create?

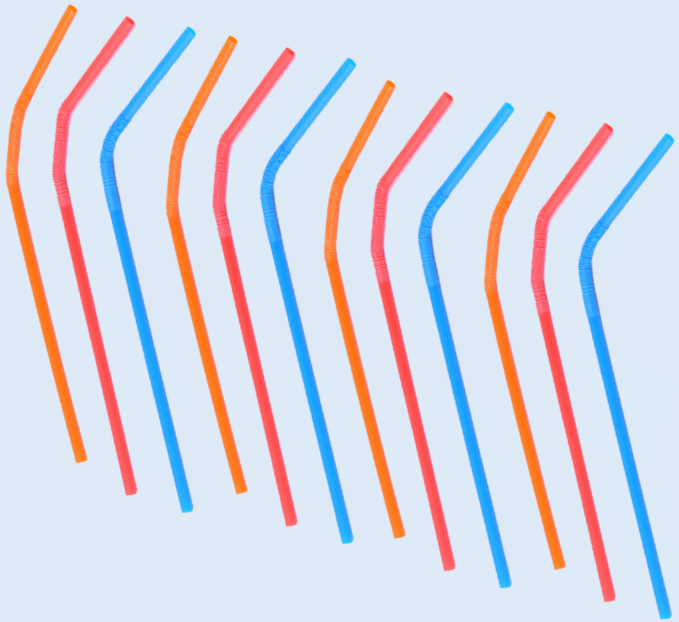
Activity 2 Construct 3D Shapes

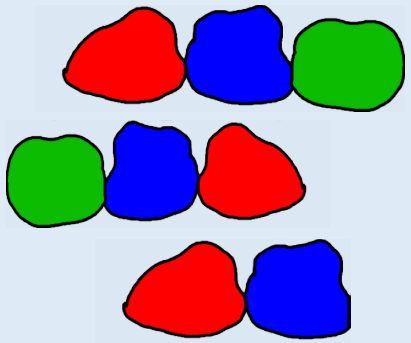
Cut and fold these into 3D shapes.



Reasoning 1 Construct 3D Shapes

I have 12 straws and 8 balls of Play-Doh.



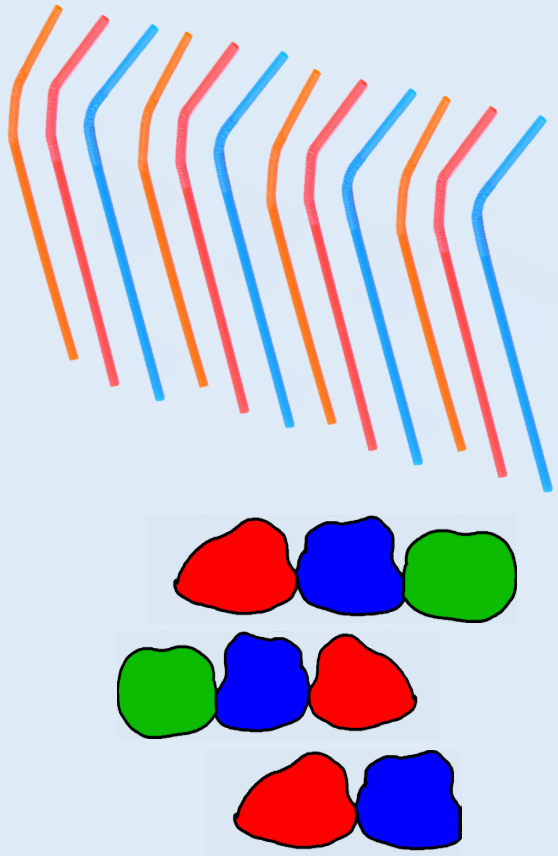


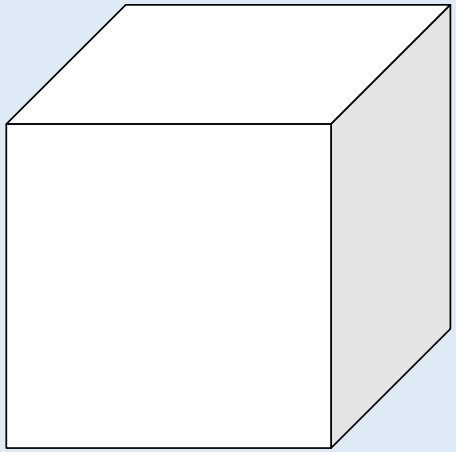
?

What 3D shapes can I create?

Reasoning 1 Construct 3D Shapes

I have 12 straws and 8 balls of Play-Doh.





Reasoning 2 Construct 3D Shapes

True or False?

- You can cut several triangles to make a 3D shape.

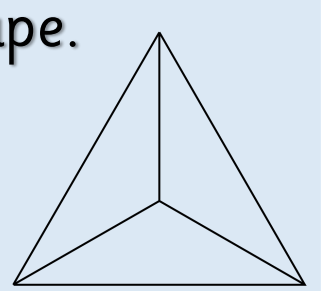
- You can cut circles and a rectangle to make a 3D shape.

Construct 3D Shapes

True or False?

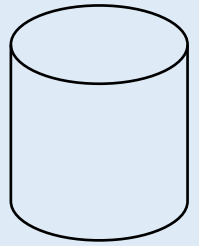
- You can cut several triangles to make a 3D shape.

True,
a tetrahedron



- You can cut circles and a rectangle to make a 3D shape.

True,
a cylinder



Discuss

Construct 3D Shapes

How many faces/edges/vertices/curved surfaces does this shape have?

What is the same and what is different about your shape compared to your partner's?

What do the straws represent?

What does the Play-Doh represent?

How many straws/balls of Play-Doh do you need to create a _____?