Right angles in shapes

1 There is at least one right angle in each picture.
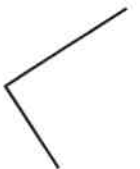
Mark the right angles on the pictures.

The first one has been done for you.

a)

b)

c)

d)

e)

f)

Compare answers with a partner.

2 A rectangle has four right angles.

Mark the right angles on the rectangle.

3 Alex and Jack are identifying right angles.

Alex: Both of the angles are right angles.

Jack: I disagree. The first one is a right angle but the second one is a left angle because it is on the left of the line.
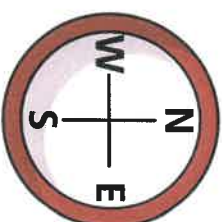
Who do you agree with?

Talk about it with a partner.

4 Dexter is facing north.

He turns a quarter turn.

Dexter: This is the same as one right angle.

N W S E

Do you agree with Dexter? _____

Talk about it with a partner.
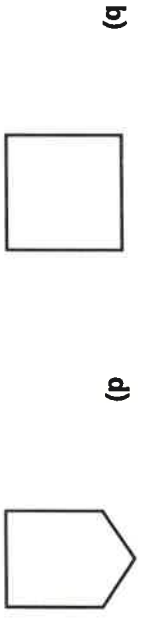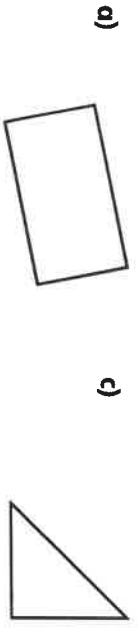
5 Complete the sentences.

A quarter turn is equal to ☐ right angle.

A half turn is equal to ☐ right angles.

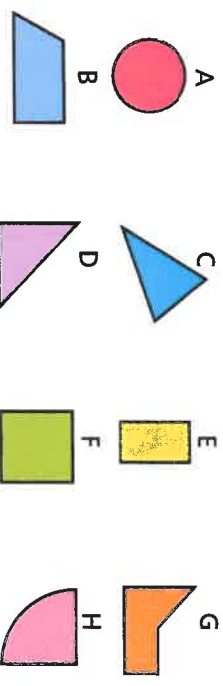A three-quarter turn is equal to ☐ right angles.

A full turn is equal to ☐ right angles.
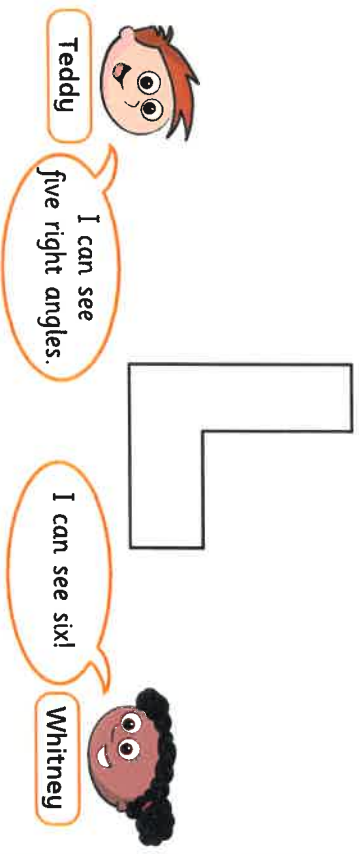
6 Draw the right angles on each shape.

a)

b)

c)

d)

**7** Look at the number of right angles in each shape.
Sort the shapes into the table.

A B C D E F G H

0 right angles	1 right angle	2 right angles	3 right angles	4 right angles

8 Teddy and Whitney are identifying right angles.

Teddy: I can see five right angles.

Whitney: I can see six!

Who do you agree with? _____

Draw on the shape to show your thinking.

9 How many right angles can you find in the picture?
Mark them on the picture.
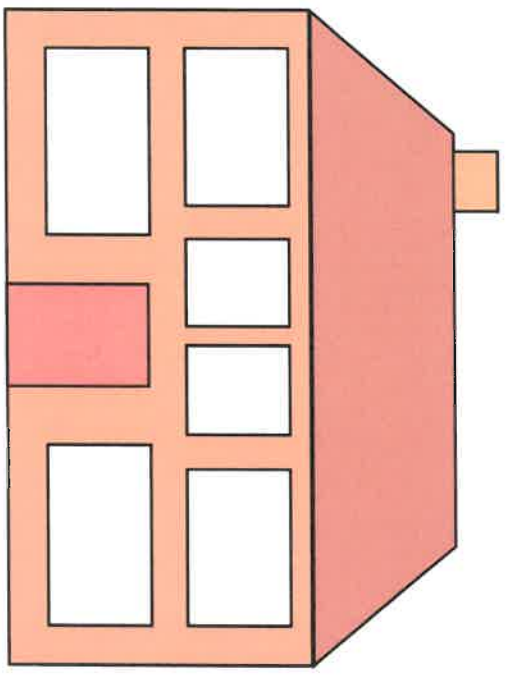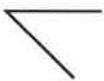
Create your own problem like this for a partner.

Wk 9 - Lesson 2

1

Here are some angles.

a) Circle the angle that is greater than a right angle.

b) Circle the angle that is less than 90 degrees.

2

Draw three different angles that are less than a right angle.

Compare answers with a partner.

Complete the sentence.

These are all examples of _____ angles.

3

Draw two different obtuse angles.

Compare answers with a partner.

Complete the sentence.

Obtuse angles are greater than ☐ degrees

but less than ☐ degrees.

4
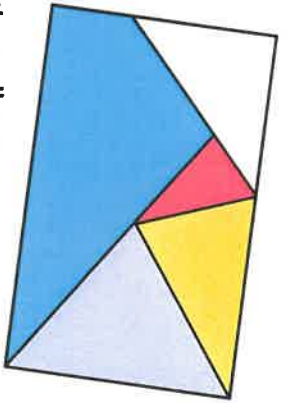
Is the angle between the hands of the clock acute or obtuse?
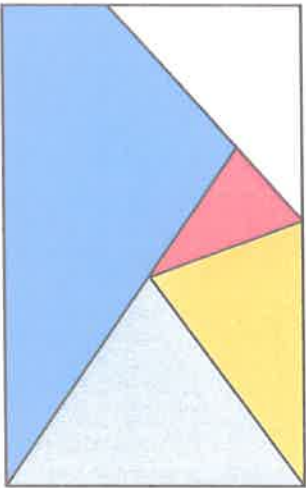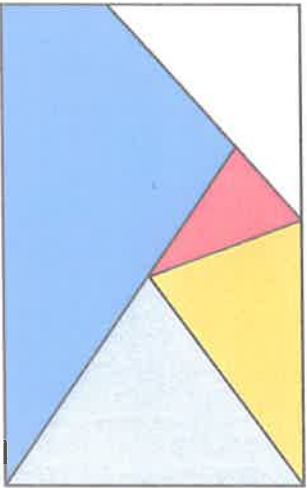
a) _____

b) _____

5 Here is a piece of wallpaper.
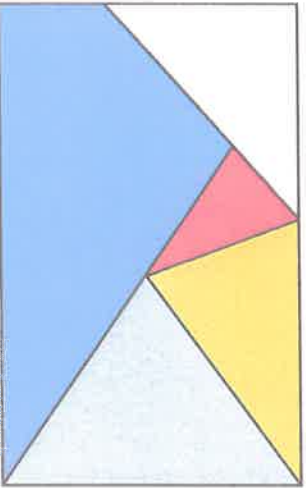

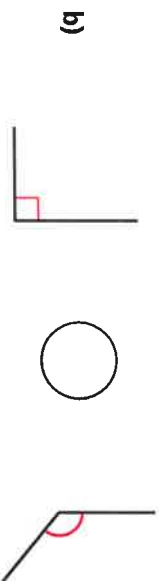**a)** Mark two right angles on the wallpaper.

b) Mark four acute angles on the wallpaper.

c) Mark two obtuse angles on the wallpaper

6 Write <, > or = to compare the sizes of the angles.

a)

b)

c)

7 Draw a shape that has one right angle, two acute angles and one obtuse angle.
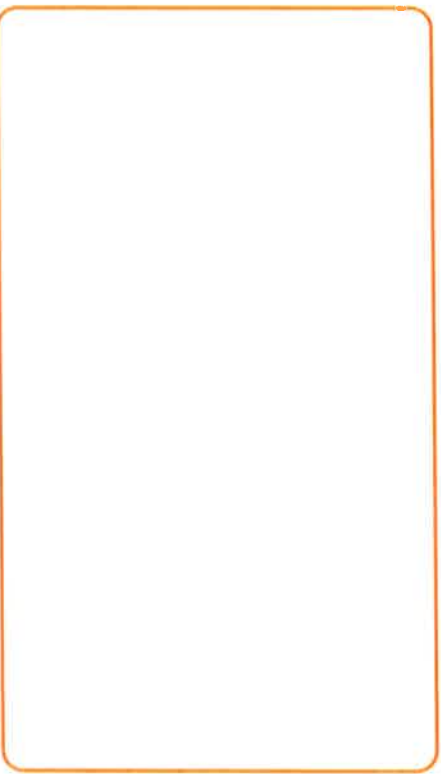
Compare answers with a partner.

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

Horizontal and vertical

1 Circle the line that is horizontal.

_____

2 Circle the line that is vertical.
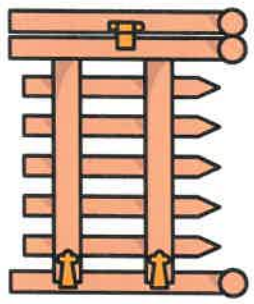
3 Use a ruler to draw the lines.

a) Draw a horizontal line 5 cm long.

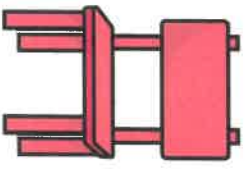b) Draw a line that is not horizontal or vertical.

c) Draw a vertical line 5 cm long.

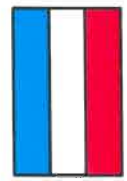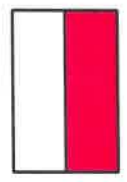**4** Tick two horizontal lines on the gate.

5 Tick three vertical lines on the chair.

6 Here are some flags.

a) Circle the flags that have horizontal stripes.

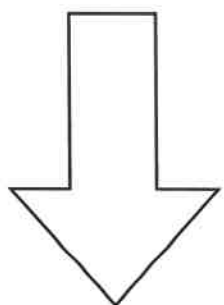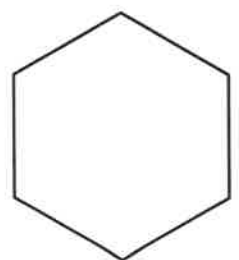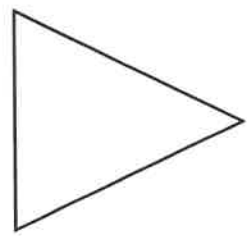**b)** Circle the flags that have vertical stripes.

c) Is the statement true or false?
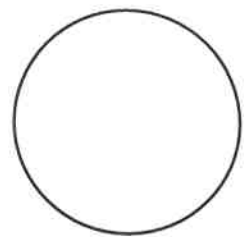
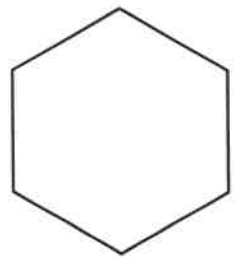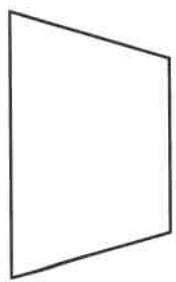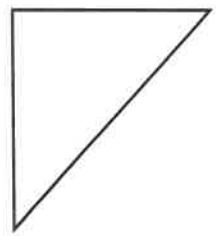> This flag has vertical and horizontal stripes.

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7 Tick the shapes that have a vertical line of symmetry.

Draw on the shapes to show the line of symmetry.

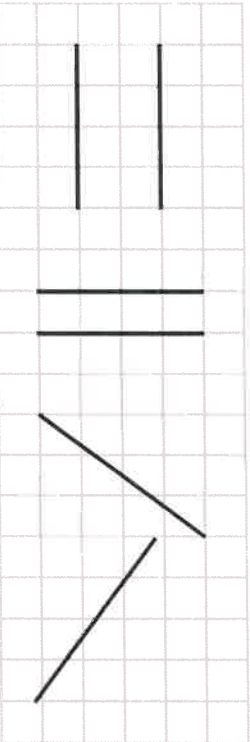**8** Tick the shapes that have a horizontal line of symmetry.

Draw on the shapes to show the line of symmetry.
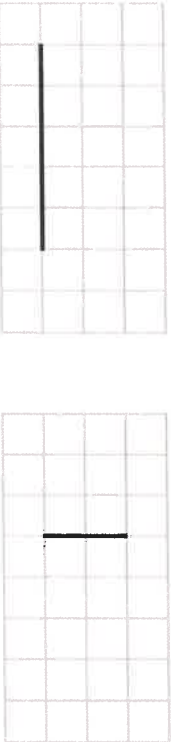
WR 9 - Lesson 4

1 Tick the pairs of lines that are not parallel.

2 Here are two lines.

Draw a line that is parallel to each.

a)

b)

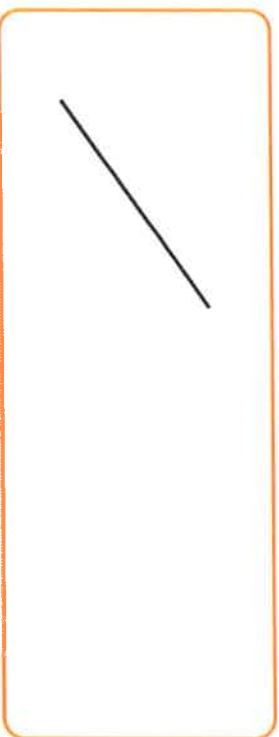**3** Amir says that the lines are not parallel because they are different lengths.
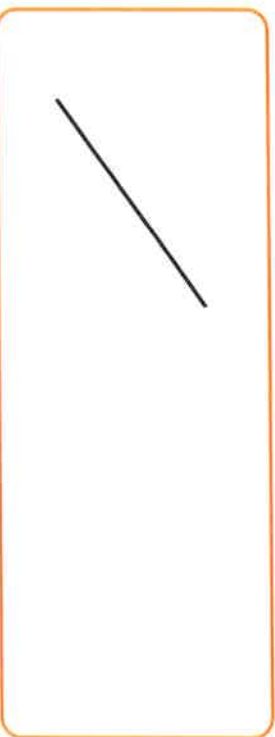
Is Amir correct? _____

Why?

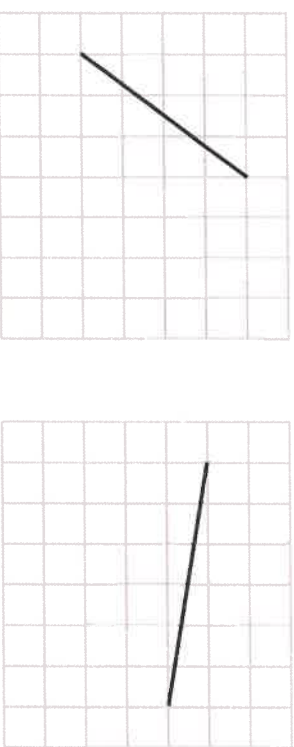**4** a) Here is a line. Draw a line that is **not** parallel to it.

b) Here is a line. Draw a line that is parallel to it.

5 Here are two lines.
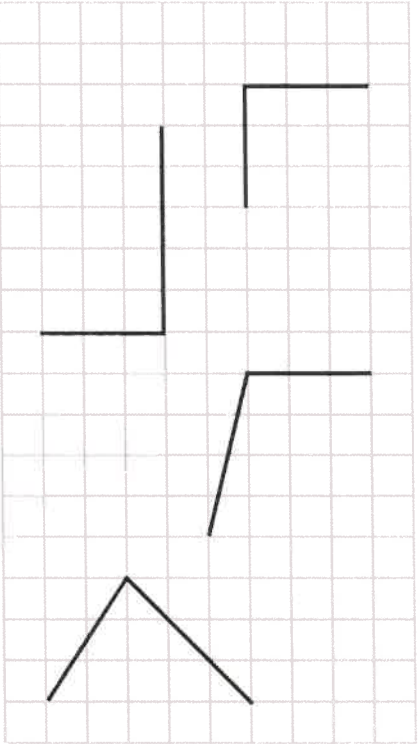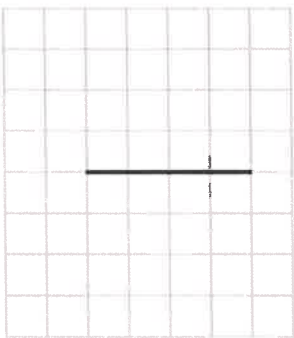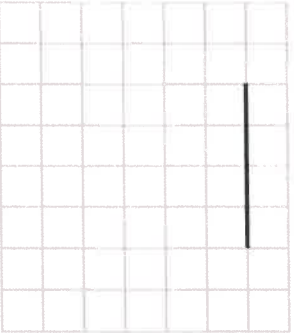
Draw a line that is parallel to each.
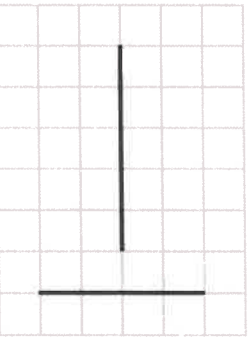
a)

b)

Talk to a partner about how you did it.

6 Tick the perpendicular lines.

7 Here are two lines. Draw a line that is perpendicular to each.

a)

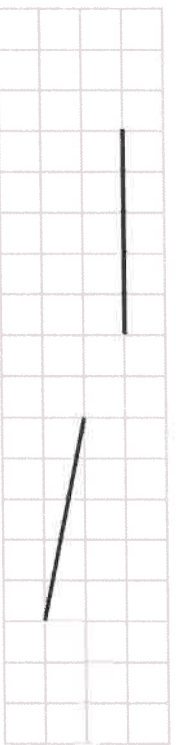b)

8 Alex has drawn some lines on grids.

a)

> The lines are not perpendicular because they don't meet.
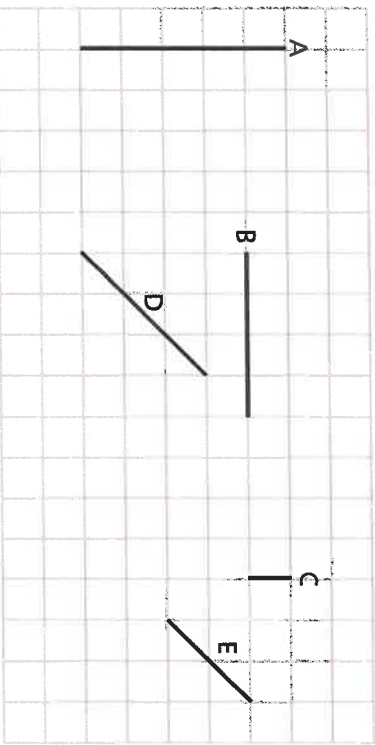
Do you agree with Alex? _____

b)

> The lines are parallel because they don't meet.

Do you agree with Alex? _____

Talk about your answers with a partner.

9 Five lines are drawn on the grid.

A

B

D

C

E

a) Which two pairs of lines are parallel?

_____

_____

b) Which two pairs of lines are perpendicular?

_____

_____

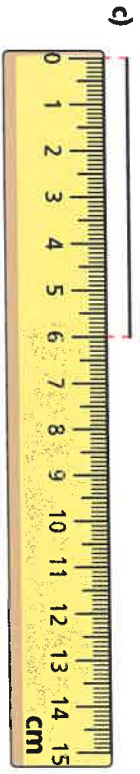## Draw accurately

1 How long is each line?

a)

☐ cm

b)

☐ cm

c)

☐ cm

2 Draw two lines that are each 5 cm long.

3 Dani says the line is 10 cm long.

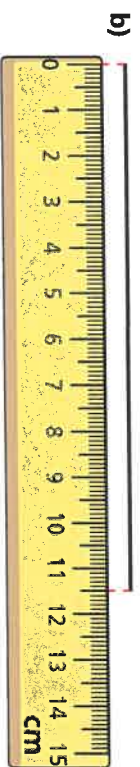a) What mistake has Dani made?

_____

b) How long is the line?

☐ cm

4 What is the length of each line in millimetres?

a)

☐ mm

b)

☐ mm

c)

_____

☐ mm

5 Use a ruler to draw the lines.

a) Draw a line 8 cm long.

b) Draw a line 80 mm long.

What do you notice about the lines you have drawn?

Why is this?

6 Use a ruler to help you answer the questions.
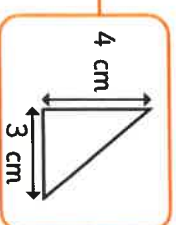
a) Draw a 4 cm by 4 cm square.

7 Draw a rectangle 8 cm long and 32 mm wide.

b) Measure the length of the diagonal.
Give your answer in millimetres.

[ ] mm

8 a) Make a sketch of the triangle.

4 cm
3 cm
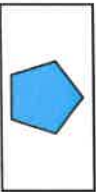
b) Use your drawing to work out the perimeter of the triangle.

[ ] cm

Recognise and describe 2D shapes

1 Match the shapes to the labels.

[hexagon] [pentagon] [square] [triangle]

square

pentagon

triangle

hexagon

2 Use the words to label the shapes.

rectangle   hexagon   circle   triangle   pentagon

a)

b)

c)

d)

3 Dora and Ron each have a shape.

a)
My shape has three sides, so it is a triangle.

Why is Dora incorrect?

b)
My shape is a house.

Why might Ron think that? Talk to a partner.
What is the mathematical name for Ron's shape?

4 Here are some shapes.

a) Circle all the quadrilaterals.

b) Draw three more quadrilaterals.

What do you notice about all the shapes you have drawn?

c) Is this shape a square?

Circle your answer.   **yes**   **no**

3 cm
3 cm   3 cm
3 cm
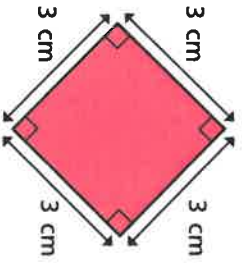
Compare answers with a partner.

5 This shape is a hexagon.
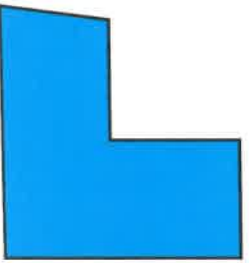
Why is it a hexagon?

_____

6 What is the name of each shape?
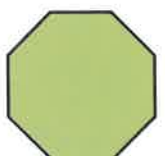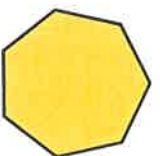
How do you know? Talk about it with a partner.

7 Each shape has at least one pair of parallel sides.

Draw on the shapes to show the parallel sides.

Wk10 - Lesson 3
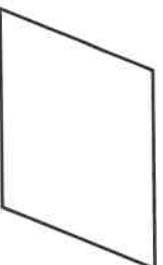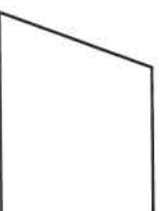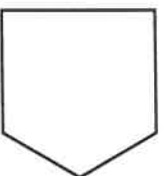
Recognise and describe 3D shapes

1 Kim paints the faces of some 3D shapes.

She stamps the faces on to a sheet of paper.

Match the stamp to the 3D shape.
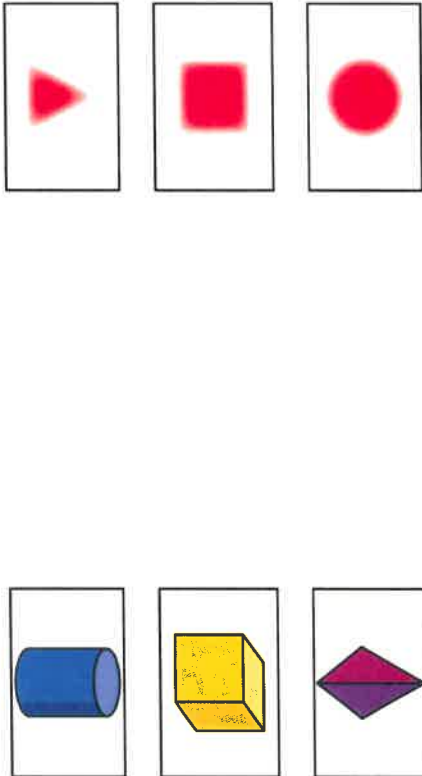
2 A cube is a special type of cuboid.

10 cm
10 cm
10 cm
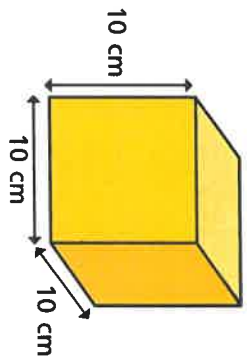
What is special about each face of a cube?

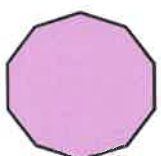Talk about it with a partner.

3 Which of the shapes is a cube? Tick your answer.

5 cm
5 cm
6 cm
5 cm
5 cm
5 cm
5 cm

4 Here is a cuboid.

3 cm
7 cm
5 cm
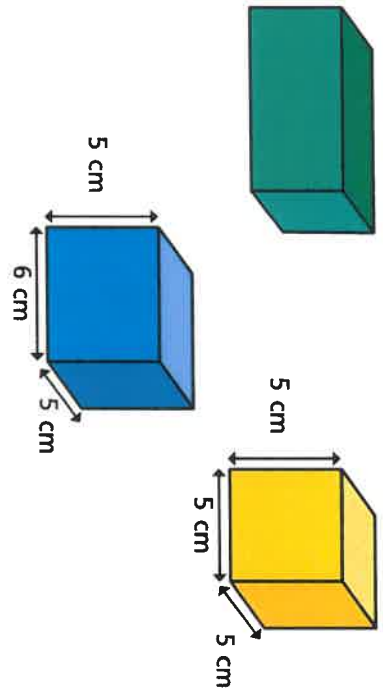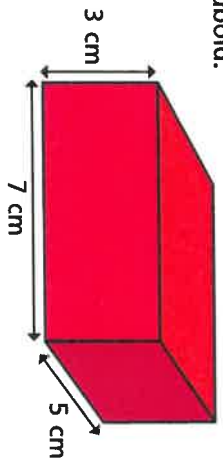
What do you notice about the opposite faces of a cuboid?

5 Match the 3D shapes to the labels.

square-based pyramid

cylinder

cone

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6 Here are some shapes.

a) Circle all the triangular prisms.
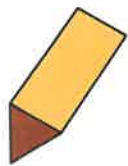
b) Circle all the spheres.

7 Complete the table.

Shape	Number of edges	Number of faces	Number of vertices

8 Here is a cuboid.

5 cm

10 cm

3 cm
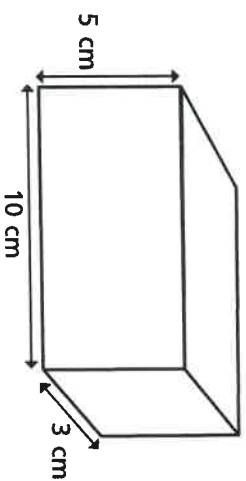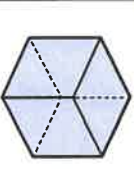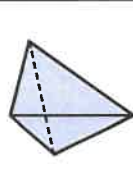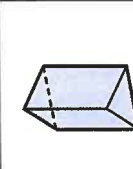
a) Shade a face that is a 5 cm by 3 cm rectangle.

b) What are the measurements of one of the other faces?

☐ cm by ☐ cm

9 Huan sorts some shapes into prisms and non-prisms.

Prisms
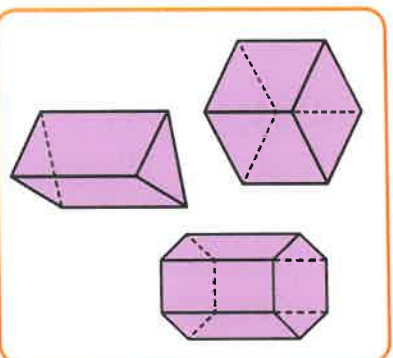
Non-prisms
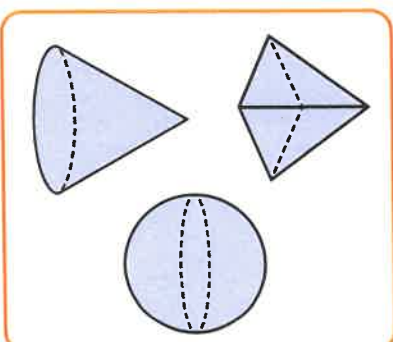
Talk to a partner about what a prism is like.

Can you find any prisms and non-prisms in your classroom?

Wk10-Lesson 4

White Rose Maths

1 Label the clock to show the number of minutes past the hour.

5 minutes

2 Label the clock to show what time would be shown if the minute hand was pointing to each interval.

35 minutes

20 minutes to

5 minutes past

Is there more than one possible answer for each label?
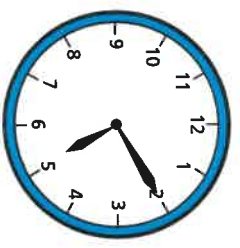
3 What mistake has Ron made?

The hour hand is pointing just after 5 and the minute hand is pointing to 2, so the time is 2 minutes past 5

What time is it? _____

4 What time is shown on each clock?

a)

[ ] minutes past

b)

[ ] minutes to [ ]

c)

[ ] minutes past

d)

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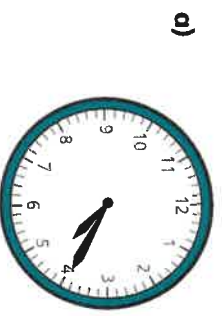
5 Draw the hands on the clocks to show the correct times.

a)

15 minutes past 6

c)

25 minutes to 9

b)

15 minutes to 9

d)
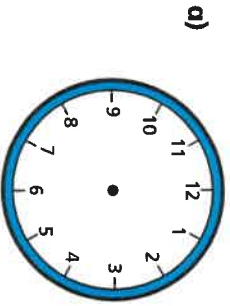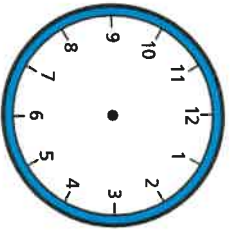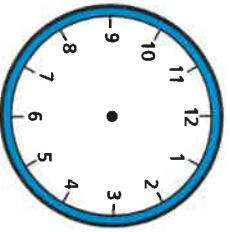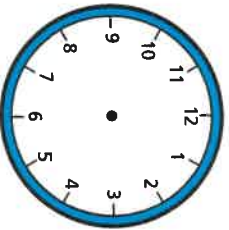
5 minutes to 12

6 Jack wants to tell the time, but the hour hand has fallen off the clock.

There are 12 different possible times it could be during a full day.

Do you agree with Jack? _____

Talk about it with a partner.

7 The minute hand and the hour hand of a clock are both pointing to an even number.

It is before midday. What times could it be?

Give three possible answers.

_____

_____

Compare answers with a partner. Can you find any more?

_____

8 The numbers of the clock face were written in Roman numerals but they have been rubbed off.

The current time has a V in the hour and a V in the minutes.
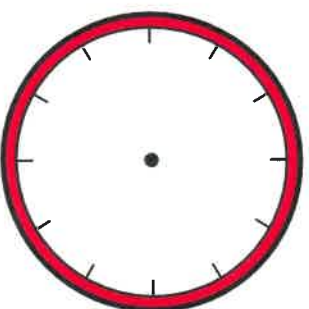
What time could it be? Draw your answer on the clock.

Are there any other answers?

_____

_____

Talk about it with a partner.

Measure mass (2)

1 What is the mass of each object?

a)

1 kg · 0 kg · 500 g

[ ] g

b)

3 kg · 0 kg · 2 kg · 1 kg

[ ] kg and [ ] g

c)

3 kg · 0 kg · 2 kg · 1 kg
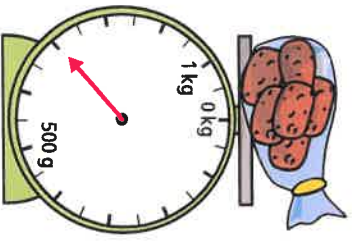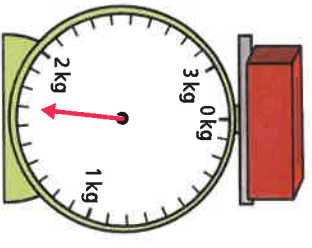
[ ] kg and [ ] g

2 The mass of each object is shown on the label.

3 kg and 100 g

4 kg and 800 g

400 g

a) Draw on the scales to show the mass of each object.

3 kg · 4 kg · 0 kg · 2 kg · 1 kg

b)

4 kg · 5 kg · 0 kg · 3 kg · 2 kg · 1 kg

c)

5 kg · 6 kg · 0 kg · 4 kg · 1 kg · 3 kg · 2 kg
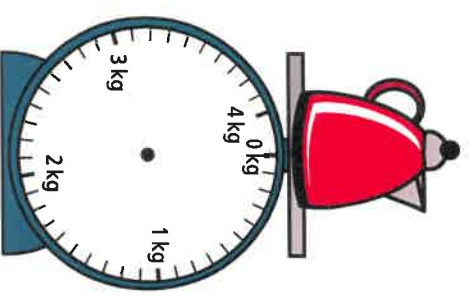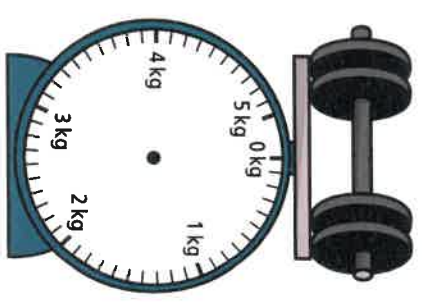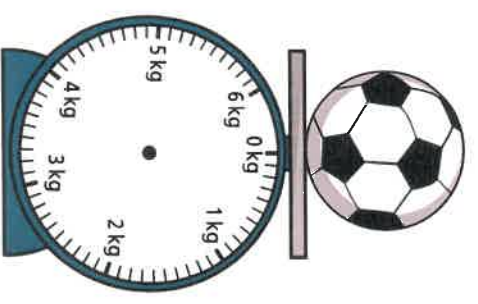
3 What is the mass of each object?

a)
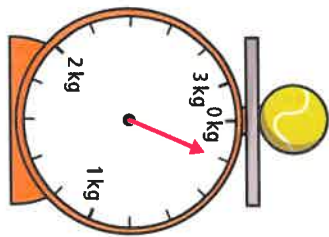
☐ g

b)
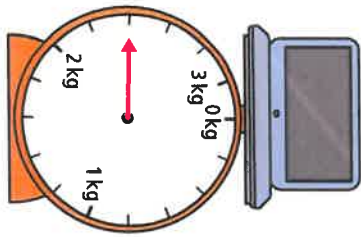
☐ kg and ☐ g

c)
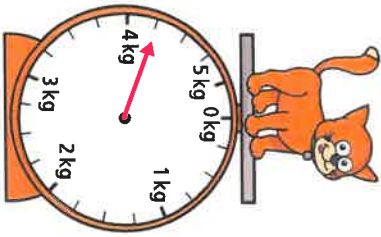
☐ kg and ☐ g

How did you work out what each interval on the scales represents?

4 Whitney is weighing some objects.
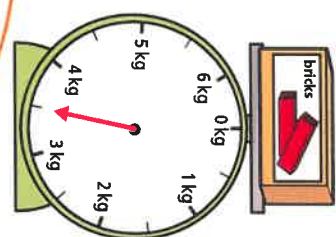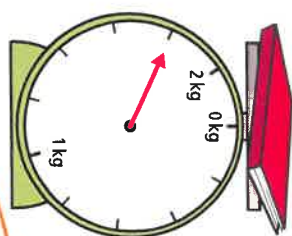
The book weighs more than the toy bricks because the arrow goes further round.

Do you agree with Whitney? _____
Why?

5 Amir and Annie each have a present.
They are working out the mass of their presents using weights.

Amir
Our presents weigh the same.

Annie
No they do not. Mine is heavier because it weighs more than one kilogram.

Who is correct? _____
How do you know?
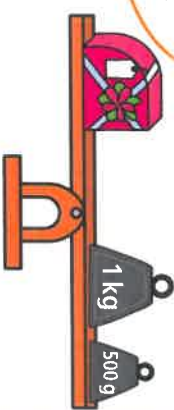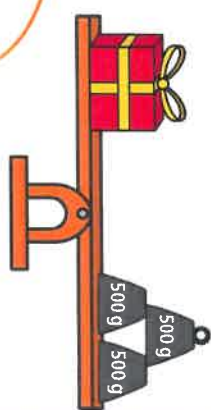
Compare mass

White Rose Maths

1 Write **heavier** or **lighter** to complete the sentences.

a)

The apple is _____ than the orange.

The orange is _____ than the apple.

b)
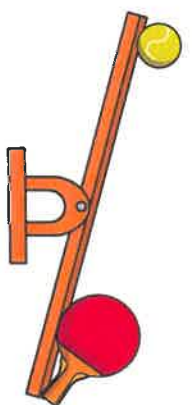
The ball is _____ than the bat.

The bat is _____ than the ball.

b) Tick the lighter crate.
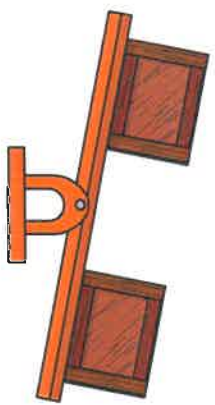
c) What can you say about the mass of the two crates?

2 a) Tick the heavier barrel.

3 The mass of a tin and a book is shown.

450 g

300 g

Scott puts the tin and book on the scales.

One side of the scales goes down.

Draw the book and the tin on the scales to show this.

4 The scales show that 2 cubes balance 6 spheres.
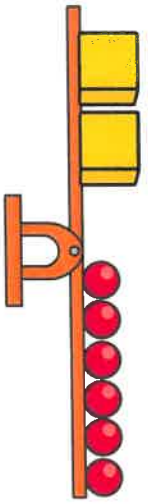
Tommy is removing shapes to see what happens to the scales.

Tick the correct image in each part.

a)
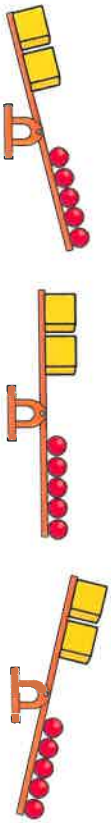
b)
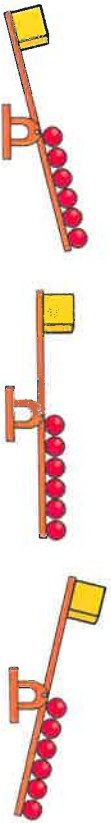
c)

Talk about your answers with a partner.

5 Circle the greater mass in each pair.

a) 50 g and 5 kg

b) 30 g and 300 g

c) 1 kg and 950 g

6 Three weights are shown on the scales.

60 kg 200 g   60 kg 350 g   55 kg 900 g

Write the weights in order, starting with the lightest.

_____

7 Is a jar or a mug heavier?

How do you know?

Talk about it with a partner.

Add and subtract mass

1 Teddy is measuring the weight of some fruit.
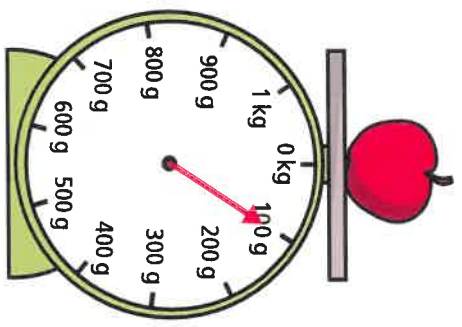
a) What is the weight of the apple?

[ ] g
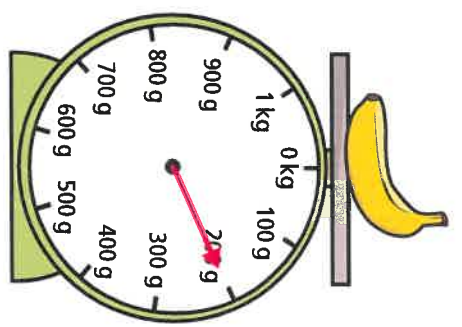
b) What is the weight of the banana?

[ ] g

c) Teddy puts both pieces of fruit on the same scale.
   What is the total weight of the apple and the banana?

[ ] g

2 Alex is measuring the weight of some ingredients.

4 kg Flour   **2 kg** Sugar   **1 kg** chocolate chips
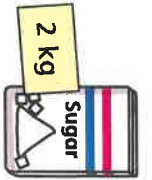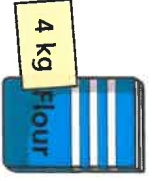
What is the total weight of the ingredients?

[ ] kg

3 Ron is measuring the mass of some objects in the classroom.
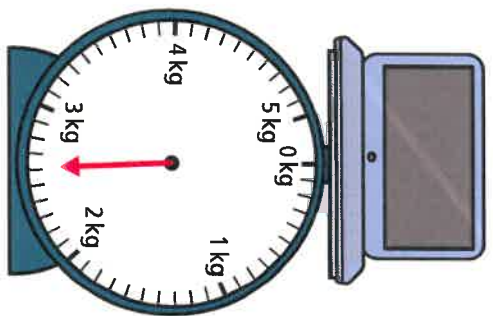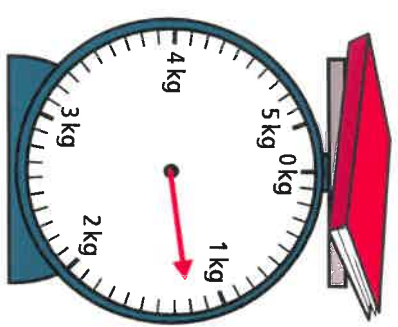
Ron puts both objects on the same scale.
What is the total mass of the objects?

[ ] kg and [ ] g

4 Aisha is weighing out some cereal.

First she puts the bowl on the scales. Then she pours out some cereal.
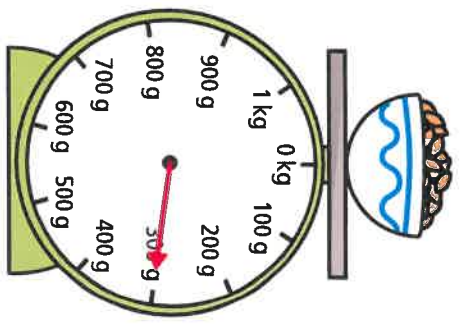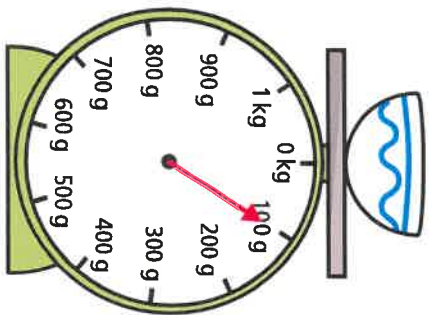
What is the weight of the **cereal** in the bowl?

[ ] g

5 A dog weighs 8 kg and 200 g when it is 8 weeks old.

The same dog weighs 12 kg and 900 g when it is 12 weeks old.

What is the difference in the dog's weight between 8 and 12 weeks?

☐ kg and ☐ g

6 The mass of a tin is 450 g.
The mass of a book is 300 g.

Draw books on the scales to balance the tins.

7 Complete the number sentences.

a) 1 kg 250 g + 5 kg 300 g = ☐ kg ☐ g

b) 3 kg 450 g + 8 kg 120 g = ☐ kg ☐ g

c) 15 kg 960 g – 11 kg 270 g = ☐ kg ☐ g

d) 36 kg 317 g – 21 kg 199 g = ☐ kg ☐ g

e) 1 kg – ☐ g = 200 g

8 Tommy and Rosie are working out the total weight of the box and the suitcase.

1 kg 700 g

4 kg 500 g
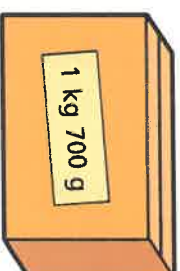
Tommy: The total weight is 5 kg and 1,200 g.
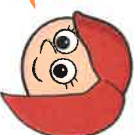
Rosie: The total weight is 6 kg and 200 g.

Who is correct? _____
Talk about it with a partner.

Measure capacity (2)

1 How much water is there in each jug?

a)

3 litres
2 litres
1 litre

[ ] l and [ ] ml

b)

1 litres
500 ml

[ ] ml

c)

3 litres
2 litres
1 litre

[ ] l and [ ] ml

d)

4 litres
3 litres
2 litres
1 litre
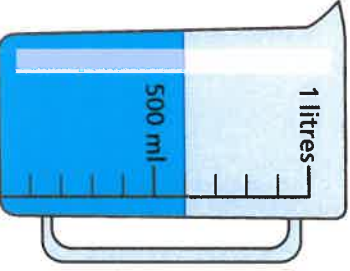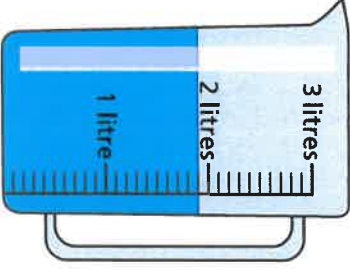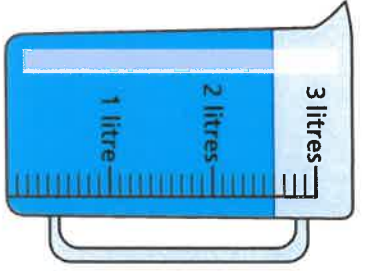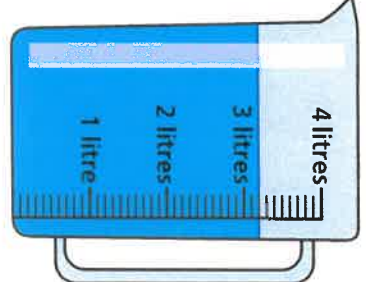
[ ] l and [ ] ml

2 The capacity of each bottle is shown on the label.

Each bottle is full of liquid.

The bottles are emptied into jugs.

Draw a line on each jug to show where the liquid will reach.

a)

2 l and 400 ml

4 litres
3 litres
2 litres
1 litre

b)

1 l and 100 ml

3 litres
2 litres
1 litre

c)

900 ml

5 litres
4 litres
3 litres
2 litres
1 litre
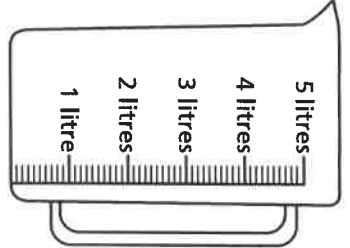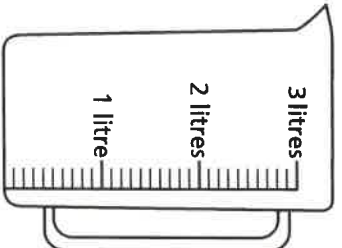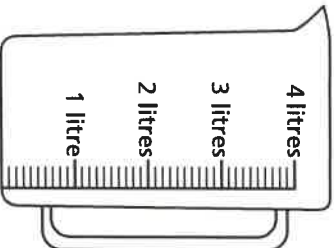
3 How much water is there in each container?

a)

[ ] l and [ ] ml

b)

[ ] l and [ ] ml

c)
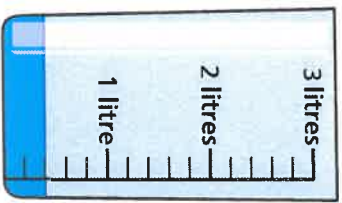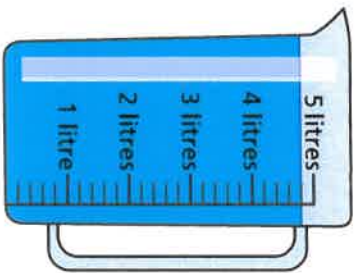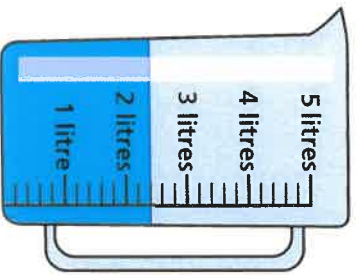
[ ] l and [ ] ml

d)
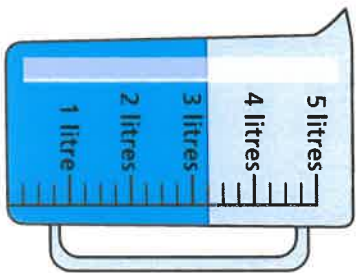
[ ] l and [ ] ml

How did you work out what each interval on the scales represents?

4 Mo has some orange juice in a jug.

He pours it into another jug.

Draw a line on the jug to show where the orange juice will reach.
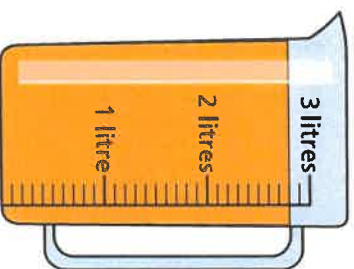
What do you notice?
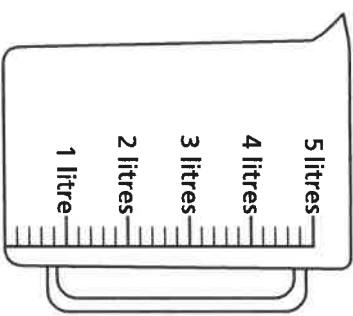
5 Different bottles hold different amounts of liquids.

Dexter

Eva

1 litre   500ml   250ml
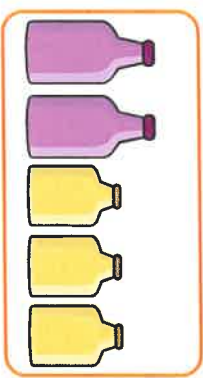
Who has more liquid? Circle your answer.

Dexter   Eva   they have the same

Talk about it with a partner.

Investigating Friction

Which surfaces will you test?

Which surface do you predict will create the most friction for the toy car?

Measure how high the ramp needs to be for the car to start to move over each surface.
Record your results below.

Surface	Height of Ramp When the Car Started Moving

Which surface created the most friction for the toy car?

Which surface created the least friction?

Was your prediction accurate?
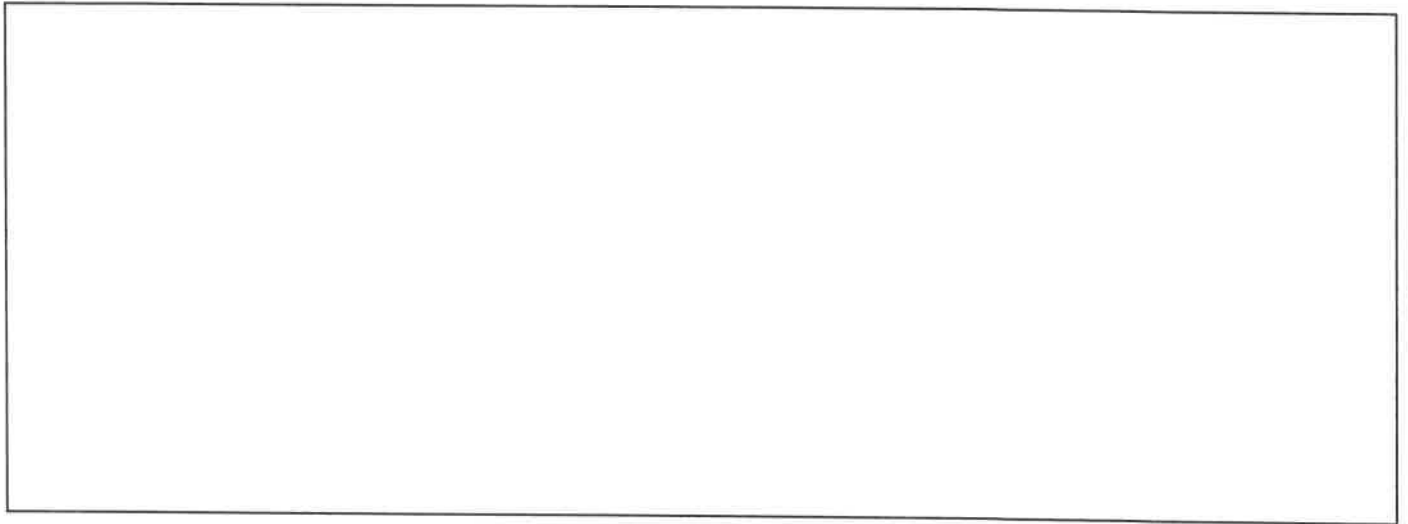
Can you explain your findings? Why did the different surfaces create different amounts of friction?

Use these words to help you explain your ideas.

rough   smooth   surface   force   friction

Magnetic Game

Design and label your magnetic game in the box below.

How does your game use magnetic forces to attract materials?

Use these words to help you explain your ideas.
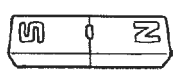
| magnet | attract | iron | steel | paper clip | force | pull |

Your partner should fill in this section when they have played your game.

What was the game like?

What did you enjoy about playing it?

How was the force of magnetic attraction used in this game?

Make a Magnetic Compass

You will need:

- A bar magnet
- A flat plastic lid
- A plastic bowl
- Water
- Compass template (below)

What to do:

1. Cut out the compass template and stick it inside the plastic lid, so that it faces outwards.
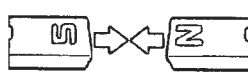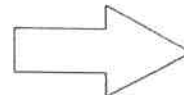2. Place the bar magnet inside the plastic lid on the compass template, making sure it is placed along the north-south line with the north pole of the magnet on the 'north' side of the line.
3. Half fill the plastic bowl with water. Float the plastic lid on the water.
4. The magnet will cause the plastic lid to rotate on the water until the north pole of the magnet points north.
5. Keep your compass away from computers and other devices that contain magnets, as it could disrupt their systems.
6. Test your compass by slowly turning the bowl around. The magnet should continue to point north even if the bowl moves.

Compass Template
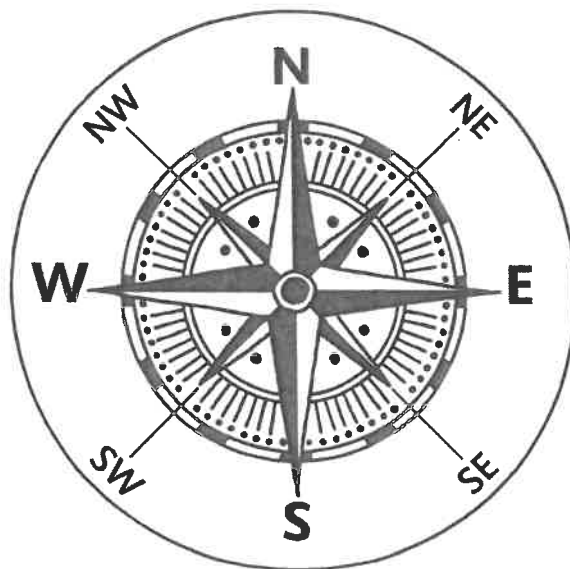
Magnet Strength

Which magnets are you going to test? Draw and name them in the box below.

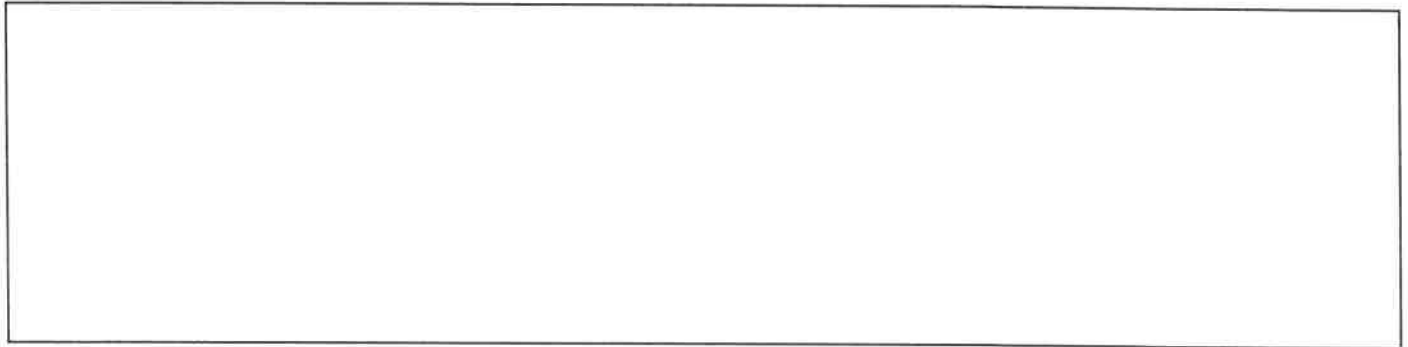Which magnet do you predict will be the strongest?

_____

_____

Why do you predict this?

_____

_____

Complete this table with your results.

Type of magnet	Number of Paper Clips Attracted in a Chain

Magnet Strength

Use these axes to draw a bar chart of your results. Remember to give your bar chart a title and to label the axes.
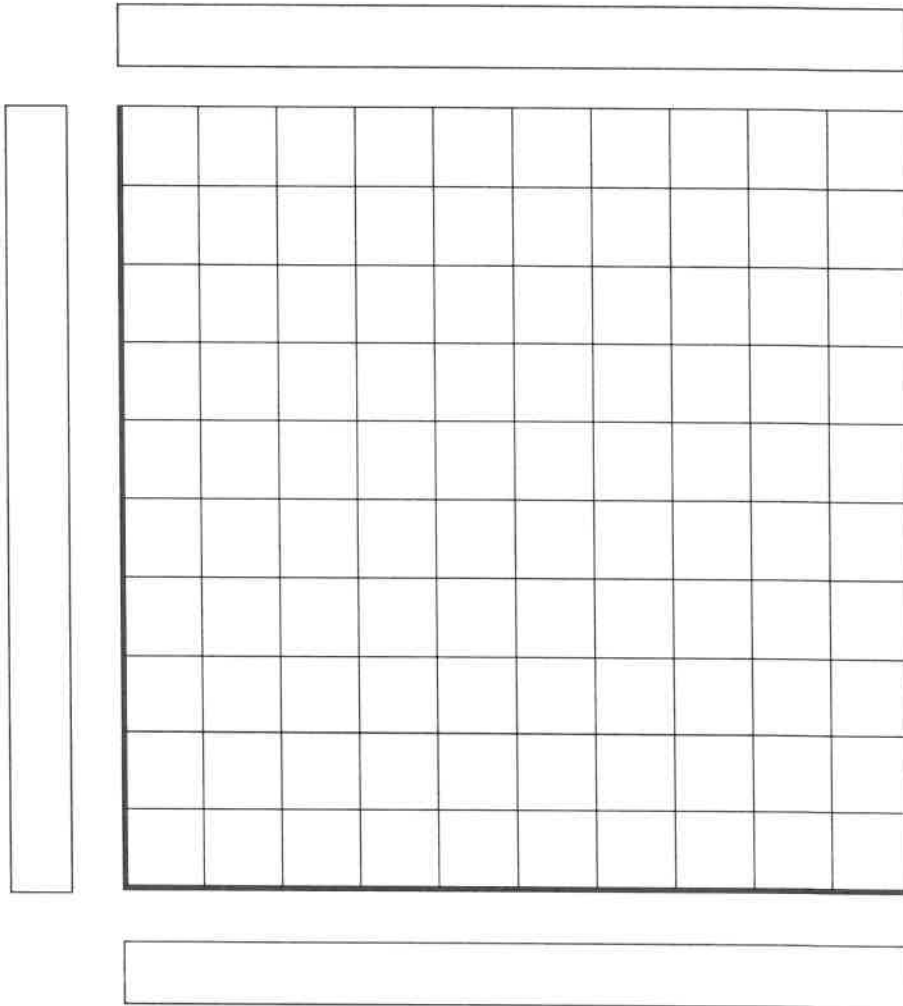
Which magnet was the strongest?

_____

_____

How do you know?

_____

_____

Why do you think it is stronger?

_____

_____

Forces and Magnets Quiz

1. Can you name a metal that is attracted to magnets?

2. Can you name a metal that is not attracted to magnets?

3. Will the north pole of a magnet attract or repel the north pole of another magnet?

4. Will an aluminium drinks can be attracted to a magnet?

5. Will an iron nail be attracted to a magnet?

6. The rougher the surface, the more friction is produced. True or False?

7. The bumpy soles of your shoes create a force called air resistance that stops your feet sliding on slippery surfaces. True or False?

8. Friction can cause heat. True or False?