Name _____ **Date** _____

Worksheet 5.2

Light travels in straight lines

Sergio and Carlos are camping in the mountains with their father.
It is evening and they have lit a fire to cook their supper.

1 Carlos has gone to collect wood for the fire. Identify the light source.

_____

2 On the picture draw rays to show how Carlos sees the wood.
Show the direction of the rays with arrows. Label the arriving ray and the reflected ray.

3 Sergio and his father are sitting facing each other.
Identify the light source that allows the father to see Sergio.

_____

4 On the picture draw rays to show how the father sees Sergio.
Show the direction of the rays with arrows. Label the arriving ray and the reflected ray.

Help sheet

Points to remember when you draw a ray diagram:

- Identify the light source.
- Identify the object.
- Identify the person who sees the object.
- Draw the arriving ray from the light source to the object.
  The arrow must point to the object.
- Draw the reflected ray from the object to the person's eyes.
  The arrow must point to the person's eyes.

For question 2: On the picture draw rays to show how Carlos sees the wood.
Show the direction of the rays with arrows. Label the arriving ray and the reflected ray.

- The Moon is providing light because it is reflecting light from the Sun.
- The object is the wood.
- The person is Carlos.
- Draw the arriving ray from the Moon to the wood on the ground near Carlos.
  Make the arrow point towards the wood.
- Draw the reflected ray from the wood to the Carlos's eyes.
  Make the arrow point towards Carlos's eyes.

Now answer question 4 in the same way.

Stretch sheet

It is a sunny day at the market. Madame Poirot is selling cooked chickens.
Ben has bought a chicken.

5 In the picture the Sun is shining from the top left corner.
Draw rays to show how Ben sees Madame Poirot's head.
Label the arriving ray and the reflected ray.

6 On the picture, draw rays to show how Madame Poirot sees Ben's camera.
Label the arriving ray and the reflected ray.

Name _____ **Date** _____

Worksheet 5.4A

Case study: Jupiter

Read the case study about Jupiter.

Jupiter is the largest planet in the solar system.
Jupiter orbits the Sun once every 12 Earth years.

Jupiter has four large moons, and at least 24 small moons which orbit it.
The largest moon is called Ganymede.
This is the largest moon in the whole solar system.

Jupiter consists mainly of two gases: hydrogen and helium, with smaller amounts of other gases in the surface layers.

Space projects have sent robotic probes to Jupiter.
A robotic probe is an unmanned spacecraft that lands on a body in space and collects data and takes photographs.
Probes have sent photographs of Jupiter back to scientists on Earth.
The photographs show colourful bands of clouds surrounding Jupiter.
No water has been found on Jupiter.

The Juno probe was launched from the USA in 2011.
It arrived in orbit around Jupiter in 2016.
Scientists hope it will stay in orbit around Jupiter until 2021.
It is powered by solar panels.
Already it has sent back amazing photographs of Jupiter.

Answer these questions.

1 What is a planet?

_____

2 Which is the largest planet in the solar system?

_____

3 What is a moon?

_____

4 How many moons does Jupiter have?

_____

5 What material does Jupiter consist of?

_____

6 What is Juno?

_____

Name _____ **Date** _____

Worksheet 5.4B

Case study: Jupiter

Read the case study about Jupiter.

Jupiter is the largest planet in the solar system.
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Jupiter has four large moons, and at least 24 small moons which orbit it.
The largest moon is called Ganymede.
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It is powered by solar panels.
Already it has sent back amazing photographs of Jupiter.

1 Complete the table below to compare the planets Earth and Jupiter.

	Earth	Jupiter
Position in solar system	3rd from Sun	
Time to complete one orbit around the Sun	1 year	
Number of moons	1	
Composition	Rocks	
Is there any water on the surface?	Yes	

2 How do we get more information about Jupiter?

_____

3 Describe what the Juno probe is doing.

_____

_____

_____

Name _____ **Date** _____

Worksheet 5.4C

Case study: Jupiter

Read the case study about Jupiter.

Jupiter is the largest planet in the solar system.
Jupiter orbits the Sun once every 12 Earth years.

Jupiter has four large moons, and at least 24 small moons which orbit it.
The largest moon is called Ganymede.
This is the largest moon in the whole solar system.

Jupiter consists mainly of two gases: hydrogen and helium, with smaller amounts of other gases in the surface layers.

Space projects have sent robotic probes to Jupiter.
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No water has been found on Jupiter.

The Juno probe was launched from the USA in 2011.
It arrived in orbit around Jupiter in 2016.
Scientists hope it will stay in orbit around Jupiter until 2021.
It is powered by solar panels.
Already it has sent back amazing photographs of Jupiter.

1 a Which star does Jupiter revolve around?

_____

b How long does Jupiter take to orbit once round this star?

_____

2 Draw a diagram in the space below to represent the orbit of Jupiter.
Show the movement with arrows. Label the bodies and the orbit.

3 Compare the surfaces of Earth and Jupiter.

_____

4 How do we continue to find out more about Jupiter and its moons?

_____

5 Do you think it would be possible for a spacecraft to land on Jupiter?
Explain why or why not.

_____

_____

Name _____ **Date** _____

Worksheet 5.6

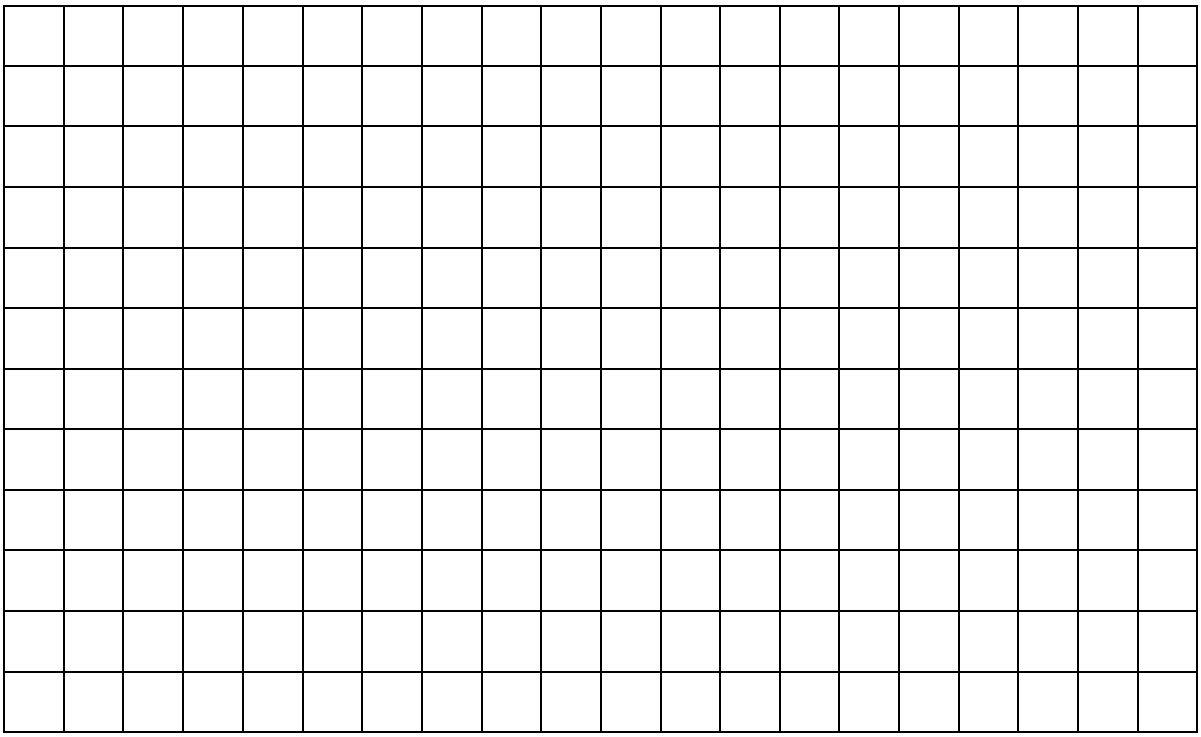
Investigating shadow lengths

Viola, Sophie and Shruti like to sit on a bench under a palm tree during school breaks.

The girls measured the length of the shadow cast by the palm tree at different times of the day. Here are their results:

Time of day	10:00	12:00	14:00	16:00
Length of shadow in cm	100	20	110	210

1 Record the results as a dot-to-dot graph.



2 Complete these sentences to describe the pattern in the results.

In the morning the shadow became _____. After midday the shadow became _____.

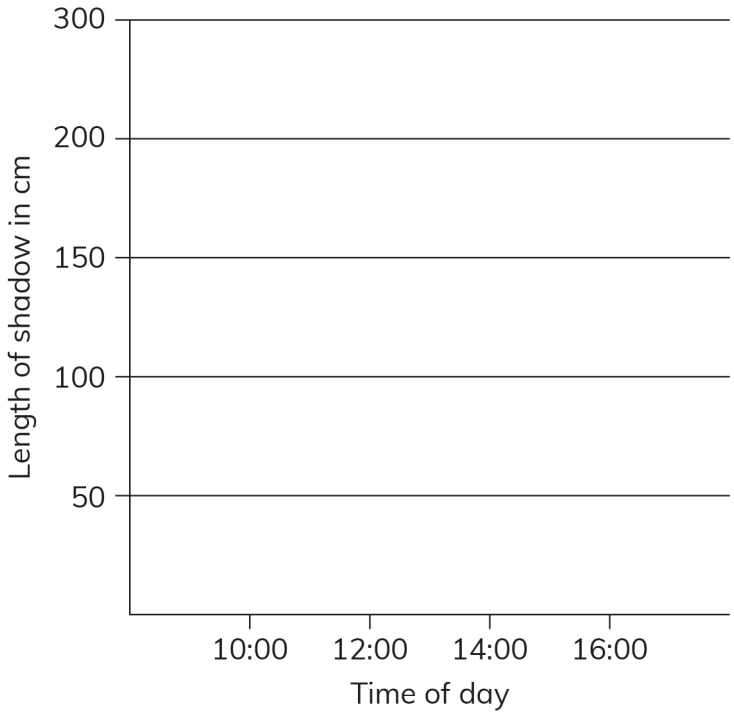
3 Rate your skills at drawing a dot-to-dot graph.

How well can I:	Very well ***	Most of the time **	Not confident yet *
decide what to put on each axis?			
label the axes correctly?			
decide on suitable scales on the axes?			
draw the dots accurately?			
join the dots neatly?			
give the graph a suitable title?			

Help sheet

Use the axes below to help you draw the graph.

Give the graph a suitable title.



Stretch sheet

4 Suggest a length of shadow for:

a 08:00 _____

b 18:00 _____

5 The girls made their measurements in summer.
In what way do you think their measurements will be different during the winter?

_____

_____

Name _____ **Date** _____

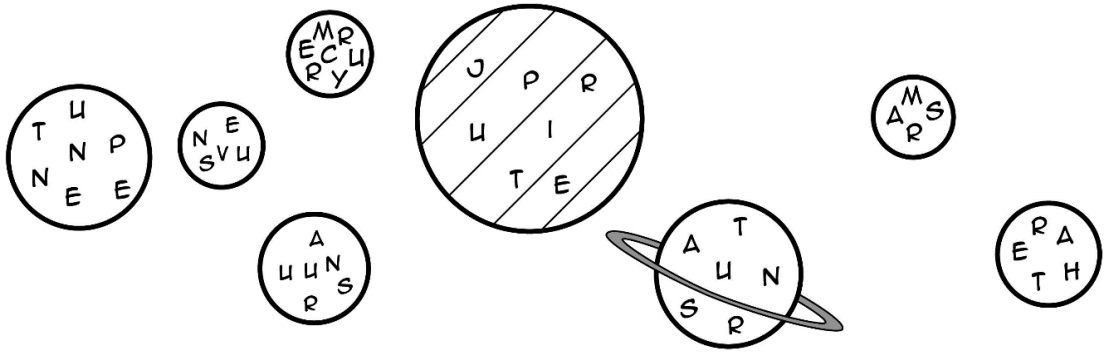
End of unit test

1 Draw lines to link each word with its meaning.

The first one has been done as an example.

Word	Meaning
Proof	A line that light travels in.
Asteroid	Movement of a body in space around a larger body.
Reflect	A rocky mass that orbits the sun.
Absorb	Scientific evidence that something is true.
Ray	The action of light bouncing off a surface.
Orbit	To take in a substance.

2 Here is a picture of the eight planets in the solar system.



Unscramble the names of the planets. Write them in order from the planet closest to the Sun to the planet furthest from the Sun.

_____

_____

_____

1 use 'better than' or 'worse than'

a A mirror reflects light _____ any other surface.

b A sheet of brown paper reflects light _____ a sheet of aluminium foil.

2 Complete the following sentences. Choose from the following words:

lengthen	disappear	appears	towards	shorten	spins	away from	likes

a The Sun _____ to move across the sky every day.

b Shadows _____ from early morning to midday.

c Shadows _____ towards evening.

d The Earth _____ on its axis.

e The side of the Earth facing _____ the Sun has day.

f The side of the Earth facing _____ the Sun has night.

3 Describe where most of the asteroids are in the solar system.

_____

_____

4 Describe a comet.

_____

_____

_____

Name _____ **Date** _____

Language worksheet 1

Vocabulary building

1 Draw lines linking the words on the left with their meanings on the right.

Word	Meaning
Plug	A circuit where electricity flows all the way round.
Electric shock	The connection between the plug and the electricity supply.
Wall socket	110V or 220V electricity.
Mains electricity	A device to connect electric wires or cables to an electricity supply.
Complete circuit	The effect of high voltage electricity passing through your body.

2 There are FIVE electrical conductors and FIVE electrical insulators hidden in the grid.

Some words are across the grid and some words are downwards on the grid.
You will have to use some letters more than once.

One answer has been circled for you as an example. Find the rest and circle them.

P	L	A	S	T	I	C	E
M	I	E	L	O	S	E	S
G	S	I	L	V	E	R	P
L	O	R	C	T	A	A	G
A	W	O	O	D	W	M	O
S	I	N	P	O	A	I	L
S	E	N	P	R	T	C	D
I	T	O	E	S	E	N	T
E	C	O	R	K	R	O	L

Language worksheet 2

Skills development

1 What is the difference between:

a an electrical conductor and an electrical insulator?

_____

_____

_____

b distilled water and tap water?

_____

_____

c a closed circuit and an open circuit?

_____

_____

_____

2 Bow and Noon are making a circuit to test four different materials to see whether the materials conduct electricity or not.

The steps they took in their investigation are written as sentences A–G.
The steps are in the wrong order.

List A–G in the correct order.

A To test their circuit they allowed the bare wires to touch to see whether the lamp came on.

B They removed 1 cm of the plastic insulation at the ends of the wires.

C They recorded their results.

D They tested each material in turn by touching each end of the material with the bare wires.

E They made a circuit with a battery, lamp in a lamp holder and connecting wire.

F They took care to hold the wires where they had plastic insulation.

G They observed to see whether the lamp came on. If the lamp came on, the material was an electrical conductor.

_____

_____

_____

_____

_____

_____

_____

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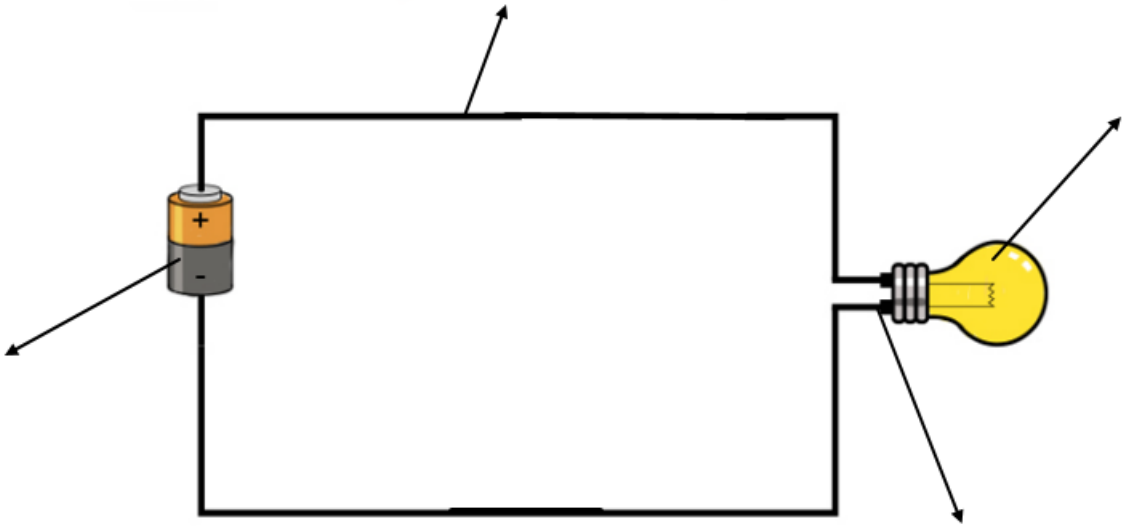
Name _____ **Date** _____

Unit 6 test:

1 Circle THREE of the following materials that are electrical insulators.

copper	**glass**	**cork**	**steel**	**aluminium**	**plastic**

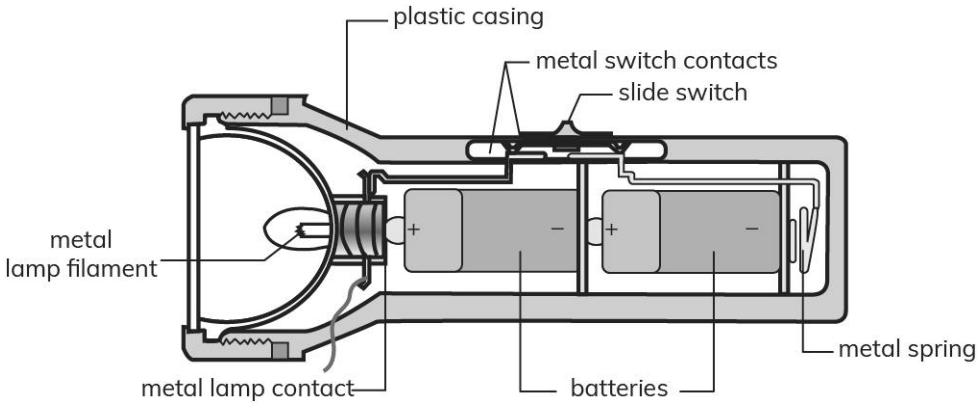


2 Name FOUR components of this circuit.

_____

_____

3 Here is a picture of the inside of a flashlight.



a List THREE parts of the flashlight that are made of materials that conduct electricity.

_____

_____

_____

a Name one part of the flashlight that is made of a material that is an electrical insulator.

_____

b Why does the part you have just named have to be an electrical insulator?

_____

c Why does seawater conduct electricity?

_____

d What type of water does not conduct electricity?

_____

e What is distilled water? How can we get distilled water?

_____

_____

Name _____ **Date** _____

Worksheet 6.1

Metals conduct electricity

All metals conduct electricity. But not all metals conduct electricity equally well.
Copper is rated as 100.
Metals that conduct electricity better than copper have a rating over 100.
Metals that do not conduct electricity as well as copper have a rating below 100.
Here are the ratings for five metals:

Metal	Rating: How well does the metal conduct electricity?
Copper	100
Silver	105
Gold	70
Aluminium	60
Steel	10

1 Which metals are the best and worst conductors of electricity?

_____

2 Which metal is used for electrical wiring?

_____

3 a Which metal conducts electricity better than the metal you answered in question 2?

_____

b Why isn't this metal used for electrical wiring?

_____

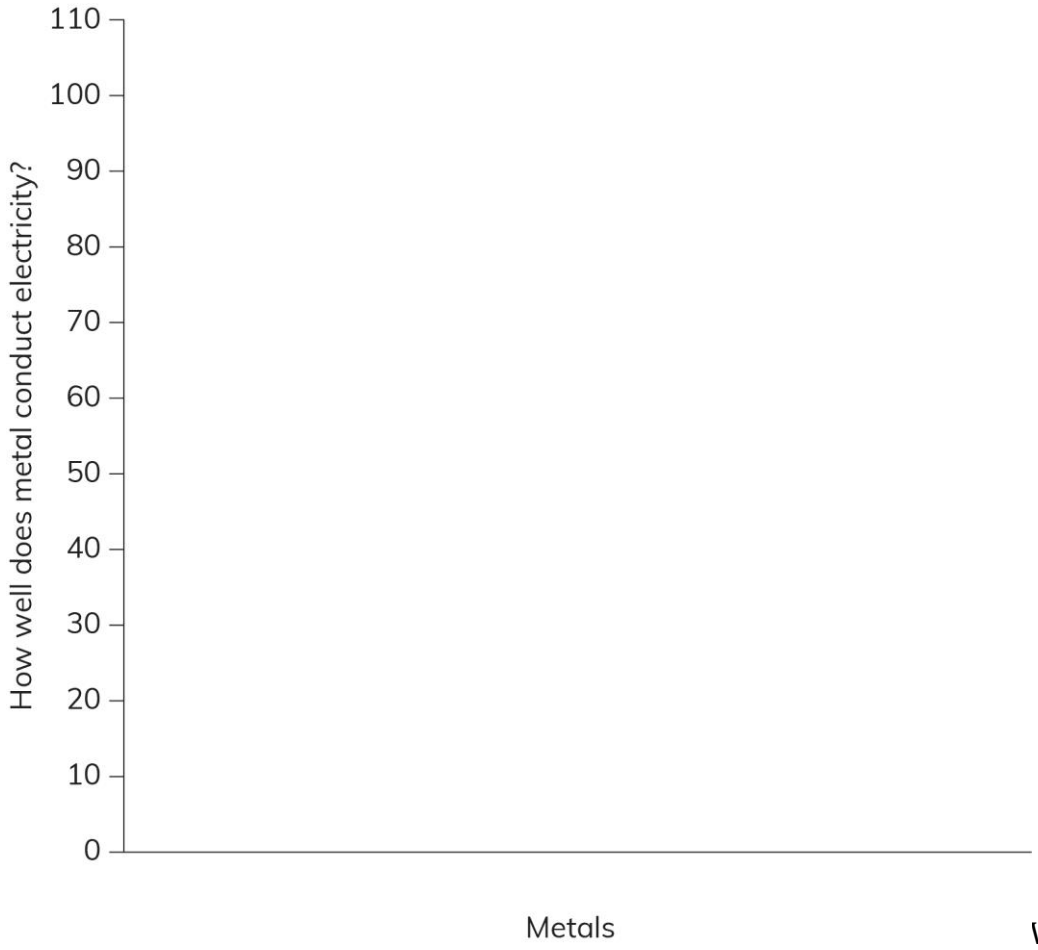
4 Use the data in the table to draw a bar graph.

5 Use this grid to assess your bar graph.

How well can I…	Very well ***	Most of the time **	Not confident yet *
decide what to put on each axis?			
label the axes correctly?			
decide on suitable scales on the axes?			
draw the bars accurately?			
label the bars neatly?			
give the bar graph a suitable title?			

Help sheet

Use the framework below to help you draw the bar graph:



Worksheet 6.3A

Identify conductors and insulators in a plug

1 Write the labels 'conductor' and 'insulator' in the correct spaces on the diagrams below.