Year 6

(Entry into Year 7)

4 Hour Revision Course

Physics

NORD
ANGLIA
EDUCATION

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Topic 1: Electricity

Lesson 1 – Circuit symbols (0.5 hours)

1. Read the following definitions.

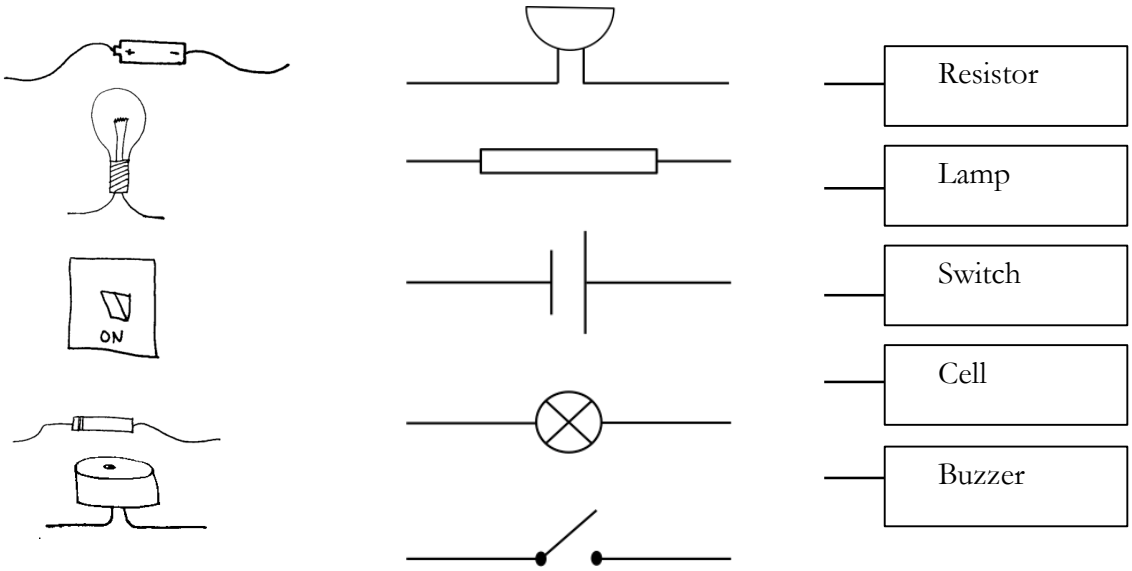
A **lamp** will give out light when electricity is passed through it. The brightness is determined by the power that they use. For example, a 100 watt lamp is much brighter than a 40 watt lamp because it draws more power form the cell. Lamps can be connected together, but this will reduce their brightness as they share the electricity in the circuit.

A **cell** provides electricity to components such as buzzers and lamps. Cells can be connected together to increase the amount of electricity they can provide. They p

A **switch** controls whether a circuit will work or not. No matter how many cells are in the circuit, it will not work unless the switch is closed.

A **resistor** is a passive element of the circuit. Although they do not buzz or give out light, they can be used to protect more delicate circuit components.

2. Match the pictures with the symbols and names. Join them with lines.



3. Complete the sentences using words you have learned from the exercises above.

A _____ gives out light and a _____ gives out sound.

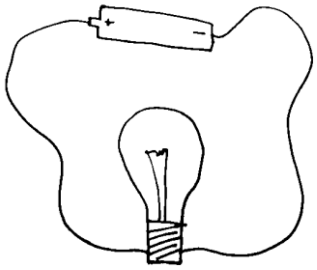
If a _____ is open, no current will flow.

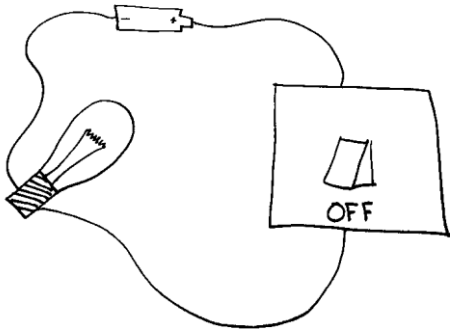
Power is provided by a _____. Multiple _____ connected together form a battery.

An example of a passive circuit element is a _____.

Power is measured using a unit called _____

4. Draw the circuit diagram for each of the circuits shown. Take care to
    a. Use a pencil
    b. Use a ruler
    c. Make sure the circuit is complete by joining all the wires together
    d. Make sure you have included all the components
    e. Make sure the components are the right way around, or in the correct on/off position (for example, cells, and switches)

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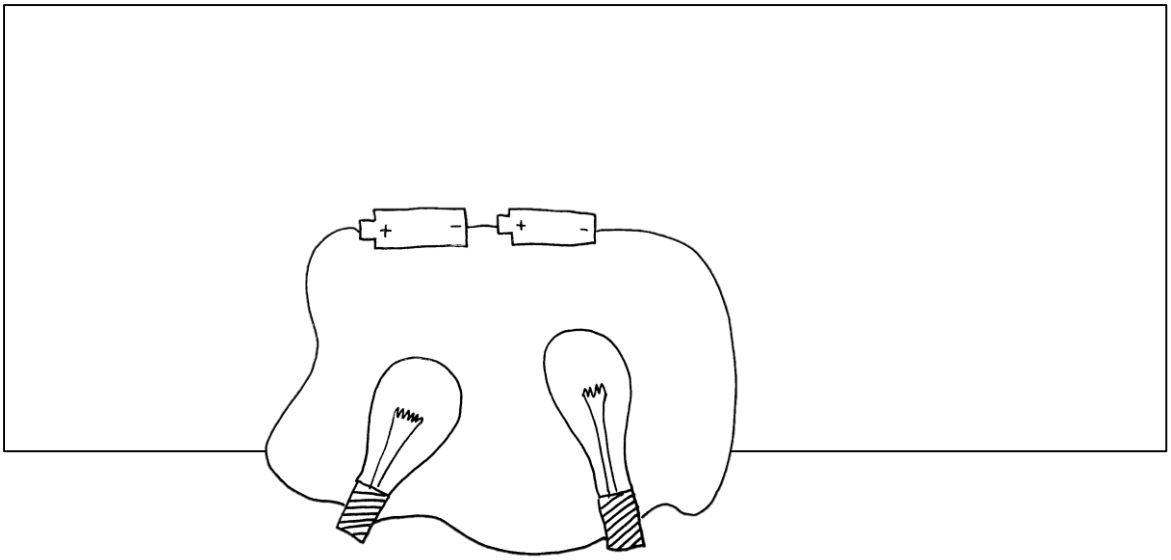
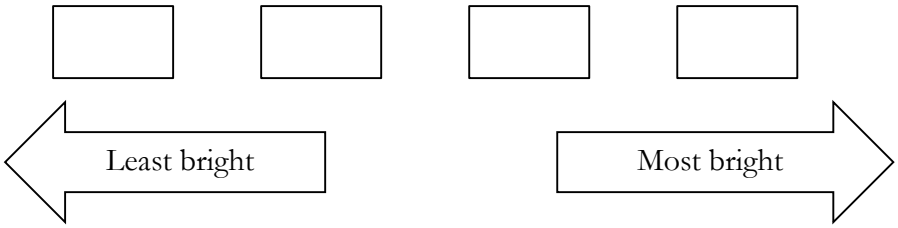


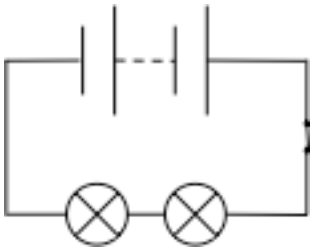
Lesson 2 – Making circuits (0.25 hours)

1. Which of these circuits below will not light up?
2. Place numbers in the boxes to indicate which is the least bright and which is the brightest.



3. Explain the brightness of each circuit, taking care to note the number of switches, cells, and lamps.

1



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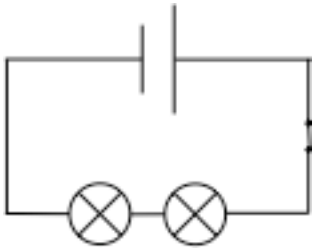

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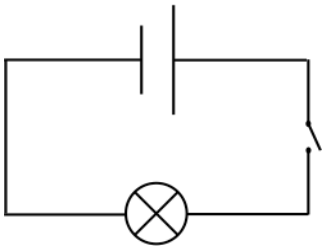

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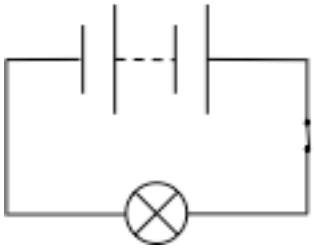


Topic 2: Forces

Lesson – Forces and motion (0.25 hours)

Some forces pull, some push, and some twist.

1. Identify which forces are pulling, which are pushing, which are twisting, and which are a combination. Tick the correct column or columns.

2. Add your own. Try to think of one pushing, one pulling, and one twisting action. Look around the house for ideas. For example, what action would you use to open a door?

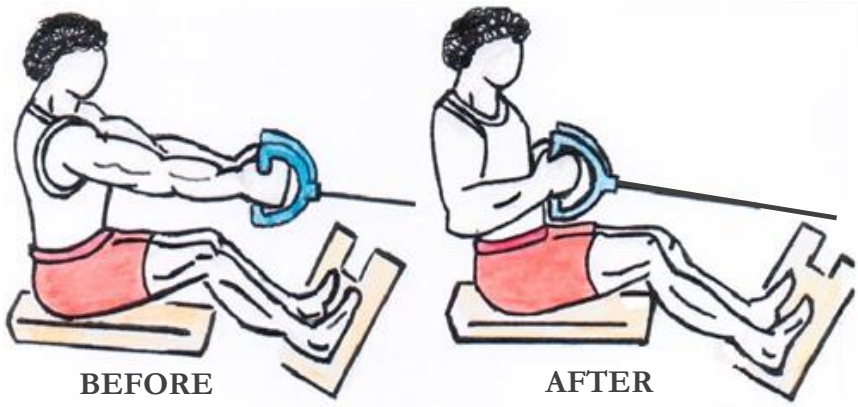
	Pushing	**Pulling**	**Twisting**
Changing the temperature on a tap			
Using a shopping trolley			
Using a screwdriver			
Using an eraser/rubber			
Sharpening a pencil			

3. Identify push, pull, and twisting actions that you do to a bike and the effects they have.

Lesson 3 – Identifying forces (0.5 hours)

1. Which force is acting? Draw an arrow to indicate the direction of motion for each image.

a.



b.

c.

2. Have another look at the images.
    a. In which image is gravity responsible for the movement?

.....

.....

    b. In which image is friction making the movement more difficult?

.....

.....

    c. Is there an image in which friction is helping?

.....

.....

3. From the words below, circle the ones that are forces.

Air resistance	Pushing	Friction
Light	Sound	Pulling

4. Think of some objects where the design deliberately increases friction.

Car tyres,

5. Think of some objects where the design deliberately decreases friction.

Ice skates,

Topic 3 – Space

Lesson 5 – Days and shadows (1 hour)

You are going to investigate the path the sun makes across the sky. To do this you are going to track your shadow through the day.

1. First, write 2 sentences explaining what you think will happen to your shadow through the day.

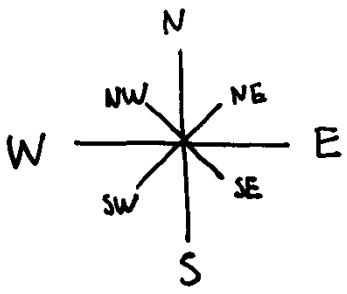
2. Go into the garden with a friend or parent at roughly the times shown in the table below.

    a. Ask them to help you measure the length of your shadow with a measuring tape.

    b. Work out the direction the shadow is pointing, North (N), South (S), East (E), West (W), or somewhere between?

    c. Describe the shape of the shadow. Is it long and thin or short and squat?

    d. If you want to do a more thorough investigation you might wish to measure at other times of day, for example at 6pm. Use the extra row in the table or make your own.



	Length (cm)	Direction	Shape
8am			
10am			
12.30pm			
2.30pm			
4.30pm			

3. Why does your shadow change the throughout the day?

4. Your shadow is always on the other side to where the sunlight is coming from. What can you say about the way light travels?

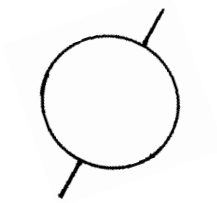
5. Which direction does the sun rise in the morning?

6. Which direction does the sun set in the evening?

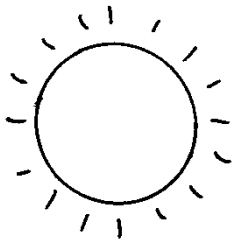
7. Write a list of five things in your living room that give out light.

8. Write a list of 5 things that do not give out light.

9. The earth orbits the sun. Light travels from the sun to the earth. One side of the earth is in sunlight and the other side is in shadow. Shade in the side of the earth which is in shadow. Label the poles North and South. Which pole is in the shadow?



Earth



Sun

Not to scale – this means that the sizing is not drawn accurately.

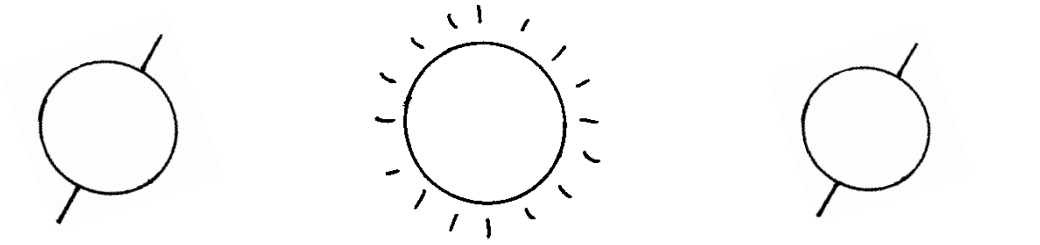
Lesson 8 – Months and seasons (1 hour)

The earth spins on its axis. The axis on which it spins is tilted, giving rise to seasons.

The earth also orbits the sun.

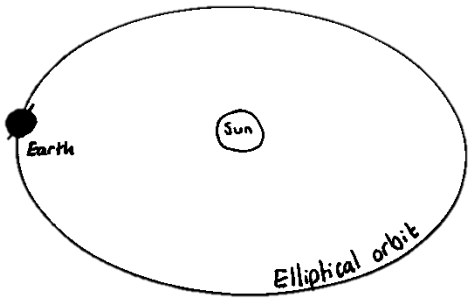
When the northern hemisphere is tilted towards the sun it experiences summer. Six months later the earth has travelled to the other side of the sun and the northern hemisphere is tilted away from the sun.

1. Enter the words "winter" and "summer" into the correct boxes.



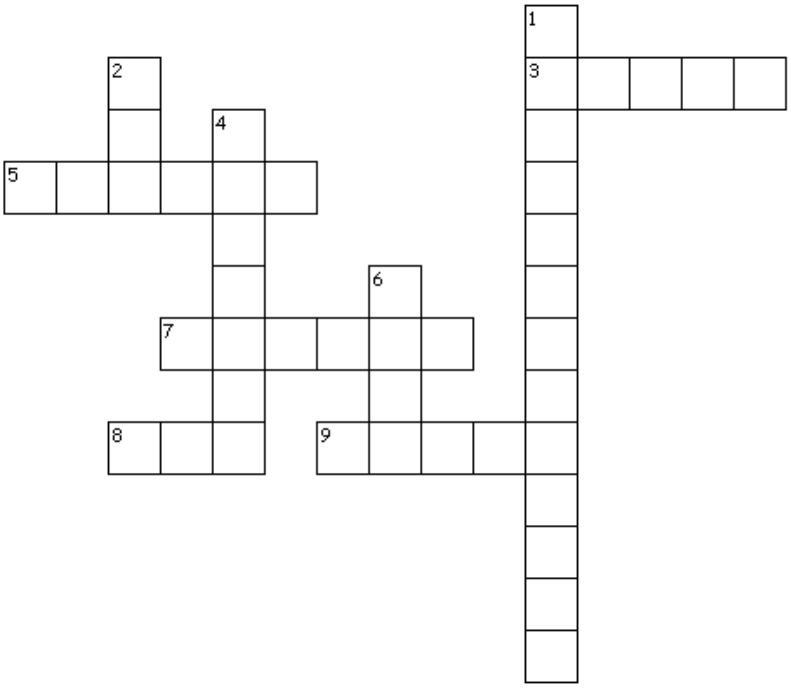
2. How does the length of the day vary throughout the year? Can you think of places where the length of the day changes more dramatically than in Dubai?

3. The earth's orbit is elliptical. This means that sometimes the earth is closer to the sun and sometimes it is further away. Does this have any effect on the seasons? Explain your answer.



4. Why is it generally hotter nearer the equator and cooler towards the poles? Is this related to day length?

5. Complete the crossword puzzle by entering the answers into the boxes. Use capital letters.



Down	Across
1. The first man on the moon 2. The star at the centre of the solar system 4. The planet closest to the sun 6. The time it takes for planet Earth to go around the sun	3. The planet we live on 5. Opposite of summer 7. Opposite of winter 8. The time it takes for the earth to rotate on its axis once 9. The path the planets take around the sun

6. What would happen to the days and nights if the earth did not rotate?

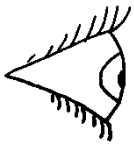
7. What would happen to the seasons if the earth did not rotate?

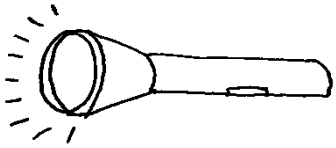
Topic 4: Light

Lesson 7 – Light (0.5 hours)

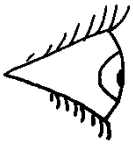
Light travels in straight lines from a source to our eyes. Sometimes, the line bounces off an object and then into our eyes. Either way, the light always travels in straight lines.

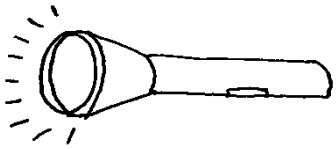
8. Draw lines to show how we see the light source. Draw an arrow on the line to show which direction the light is travelling.

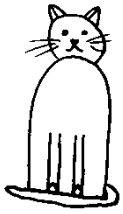




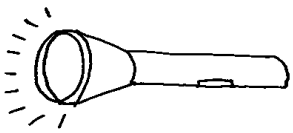
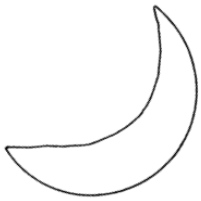
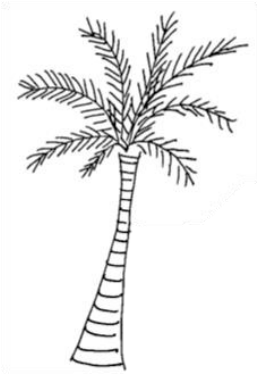
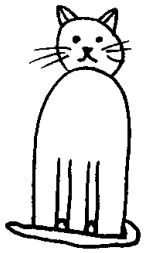
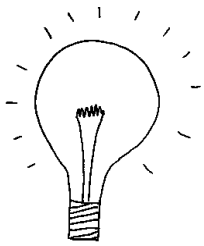
9. The cat does not give out light. Draw lines to show how we can see it.







10. Some objects give out light and some reflect light from other sources. Look at the objects below and try to decide which give out their own light and which reflect light form somewhere else. Draw a ring around the objects which give out light.

11. Look up phosphorescent sea creatures. What is special about them? Have you ever seen one?