



## Unit 2      Beginning to be a Physicist Homework

Homework Number/Name	Date	Parent/Guardian Signature
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9		
Extended Homework		

Comment from parent/guardian

## Homework 1 - Beginning to be a Physicist

1. Complete the table below which shows types of energy:

Types of Energy
Chemical
Heat
Light
Potential

(3)

2. Write the energy change for each of the examples below:

a. Switching on a set of hair straighteners

.....

b. Switching on an iron

.....

c. Using a hairdryer

.....

(3)

3. Name an energy changer for each of the energy change equations below:

a. Electrical → Light .....

b. Chemical → Sound .....

c. Potential → Kinetic (movement) .....

d. Electrical → Light + Sound .....

(4)

## Homework 2 – Beginning to be a Physicist

1. Energy cannot be created or destroyed. Circle the correct answer.

**True**

**False**

(1)

2. Where do humans get their energy from?

.....  
 .....

(2)

3. Give 3 examples of the use of energy in the human body.

a. ....

b. ....

c. ....

(3)

4. Below is a table of the number of grams of carbohydrates, proteins and fats present in different food items:

Food Item	Number of grams present in 100g of food		
	<i>Carbohydrates</i>	<i>Proteins</i>	<i>Fats</i>
Chipped Potatoes	38.0	4.0	9.0
Strawberry Jam	69.2	0.5	0
Yogurt	13.0	3.6	1.8

a) Which food contains least protein? .....

(1)

b) Which food contains most protein? .....

(1)

c) How many grams of carbohydrate would there be in a kilogram (Kg) of chipped potatoes?

Space for working:

..... Grams

(2)

### Homework 3 – Beginning to be a Physicist

1) What does the term non-renewable energy mean?

.....  
..... (1)

2) List 3 sources of non-renewable energy:

- a. ....
- b. ....
- c. .... (1½)

3) What does the term renewable energy mean?

.....  
..... (1)

4. List 3 sources of renewable energy

- a. ....
- b. ....
- c. .... (1½)

5. Explain why we need to develop the use of renewable energy sources.

.....  
..... (1)

6. List 4 ways of conserving energy in the home.

- |          |              |
|----------|--------------|
| 1) ..... | 3) .....     |
| 2) ..... | 4) ..... (4) |

## Homework 4 – Beginning to be a Physicist

Our planet is being affected by the greenhouse effect which is causing global warming. This homework requires you to carry out some **research** on this problem and complete the tasks below:

1. Give one example of an activity that is causing greenhouse gases and why that is resulting in global warming.

(3)

2. Explain
  - (i) an example of how global warming is affecting the climate.

(2)

- (ii) an example of how global warming is affecting living things.

(2)

3. Give one industrial example of an activity that is helping to combat the greenhouse effect. Find a location in Scotland where this activity exists.

(3)

## Homework 5 – Beginning to be a Physicist

1. Draw the correct circuit symbols for the following components:

- a. Battery ..... (4)
- b. Switch .....
- c. Wire .....
- d. Bulb ..... (4)

2. What is an electric current?

.....  
..... (2)

3. What is the name and symbol for the apparatus used to measure current?

..... (1)

4. Current is measured in Amps. Circle the correct answer.

**True**                      **False** (1)

5. What is the name and symbol for the apparatus used to measure voltage?

..... (1)

6. Voltage is measured in Joules. Circle the correct answer.

**True**                      **False** (1)

## Homework 6 – Beginning to be a Physicist

1. Katie and John set up a circuit to investigate the relationship between voltage and current. They varied the voltage of the supply and measured the current in the circuit. The results of their experiment are shown in the table below.

Voltage (volts)	Current (amperes)
2	0.4
4	0.8
6	1.2
8	1.6
10	2.0

Draw a line graph of the results on the graph paper on the next page. (4)

2. Complete the information in the table below and decide whether each statement is true or false.

Statement	True	False
All circuit components resist the flow of current.		
The greater the resistance the higher the current.		
A thick wire has less resistance than a thin wire.		
A short wire has more resistance than a long wire.		

(4)

3. If you use nichrome rather than copper wire the current will be much smaller. Explain why this happens.

.....  
.....  
.....

(2)

## Homework 7 – Beginning to be a Physicist

1. What is meant by the term *series circuit*?

.....

..... (1)

2. Draw a series circuit with a battery, 3 bulbs and a switch in the space below:

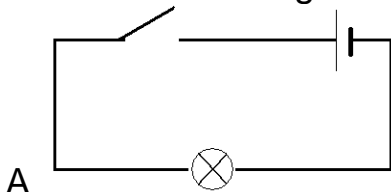
(2)

3. What is meant by the term *parallel circuit*?

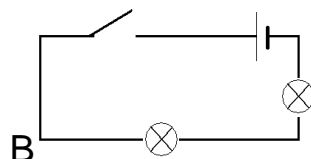
.....

..... (1)

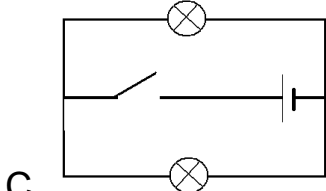
4. Label the following circuits as series or parallel.



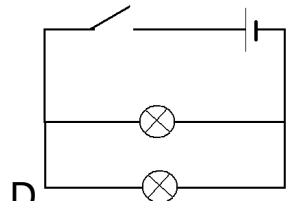
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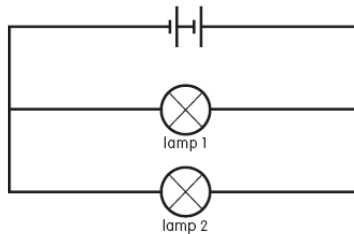


.....



..... (4)

5. David set up the circuit below:

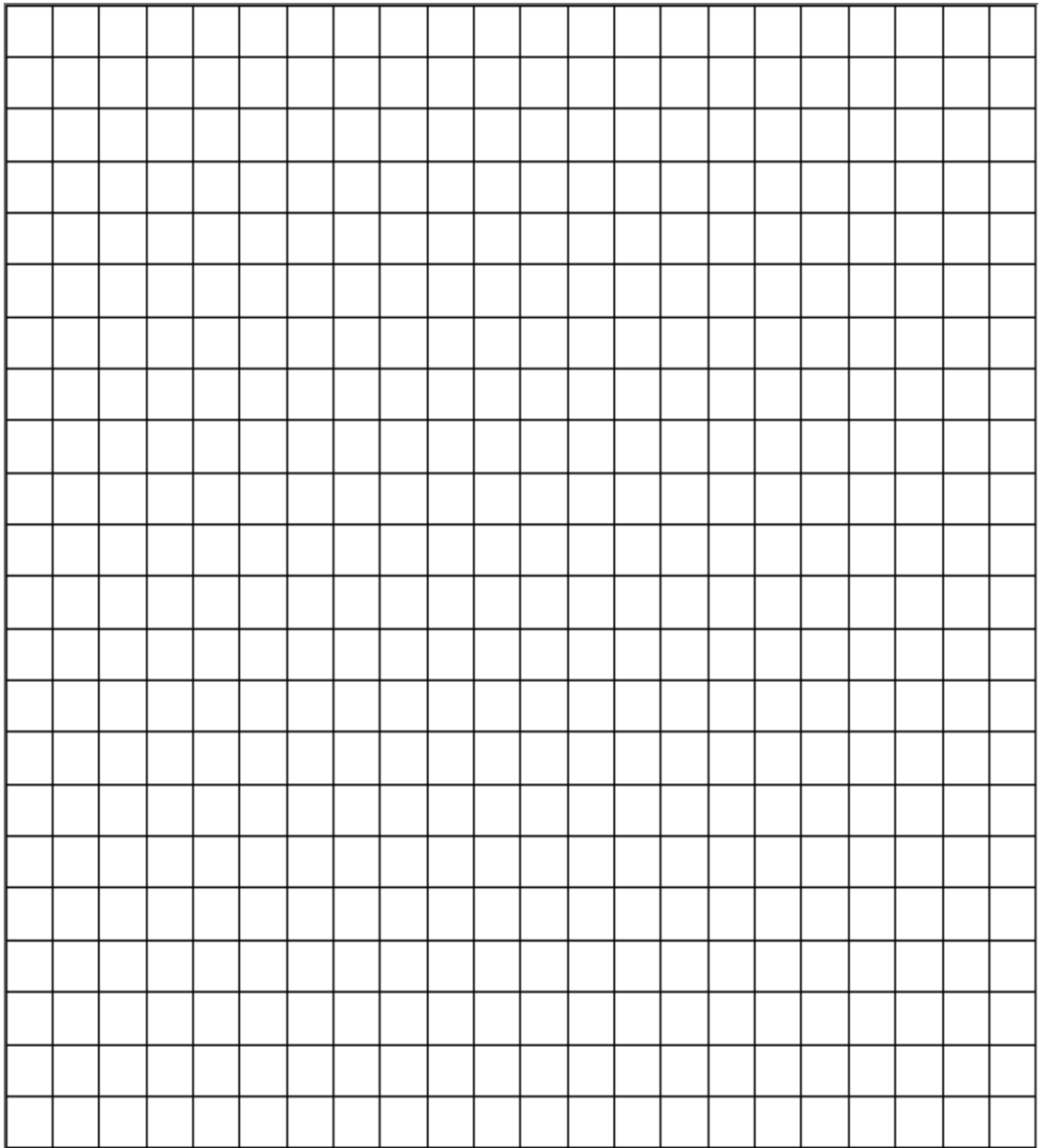


a. What type of circuit has David set up? \_\_\_\_\_ (1)

b. He measured the current in each lamp to be 0.2 amperes. What is the current from the battery?

\_\_\_\_\_ (1)

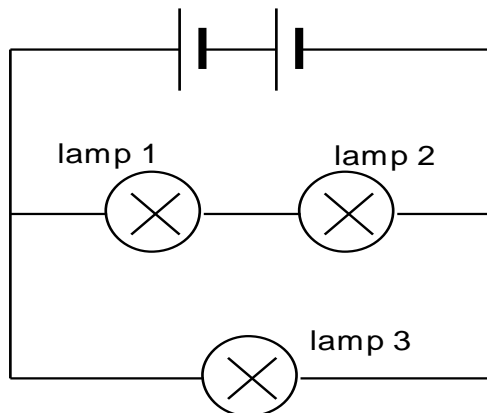




## Homework 8 – Beginning to be a Physicist

1. The diagram below shows a circuit.

Complete the following sentences using the words **ON** and **OFF**



(a) If lamp 1 blows and goes out lamp 2 is \_\_\_\_\_ and lamp 3 is \_\_\_\_\_  
(2)

(b) If lamp 3 blows and goes out lamp 1 is \_\_\_\_\_ and lamp 2 is \_\_\_\_\_.  
(2)

2. Complete the sentences using the list below:

The current in a circuit is measured in \_\_\_\_\_.

The \_\_\_\_\_ of the mains supply is 230V.  
(2)

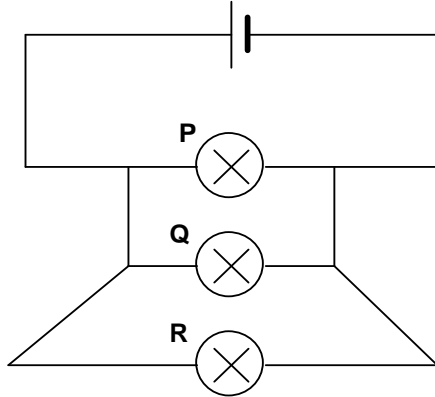
3. What type of meter are the two symbols below used for?

(A) = (1)

(V) = (1)

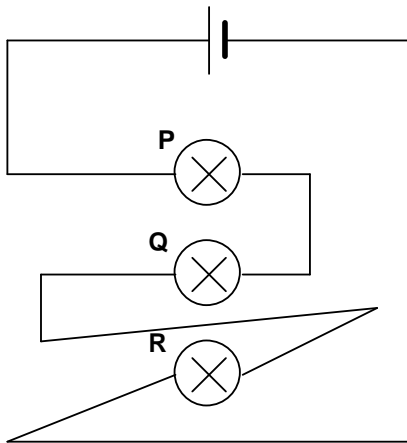
## Homework 9 – Beginning to be a Physicist

1. For each of the diagrams below indicate whether the lamps P, Q and R are wired in parallel. Circle the correct answer.

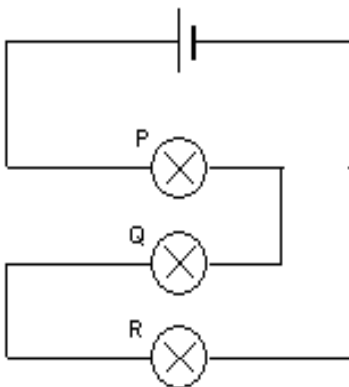


(i)

(ii)



(iii)



(1)

Parallel	
Yes	No

Parallel	
Yes	No

(1)

Parallel	
Yes	No

(1)

## Homework 10 – Beginning to be a Physicist

In the space below draw a diagram showing how friction can be increased or reduced.



(4)

Describe the effect of changing the friction force