Strengthening the Foundations Workbook

KS4 at Diss High School
Physics
Summer ‘catch up’

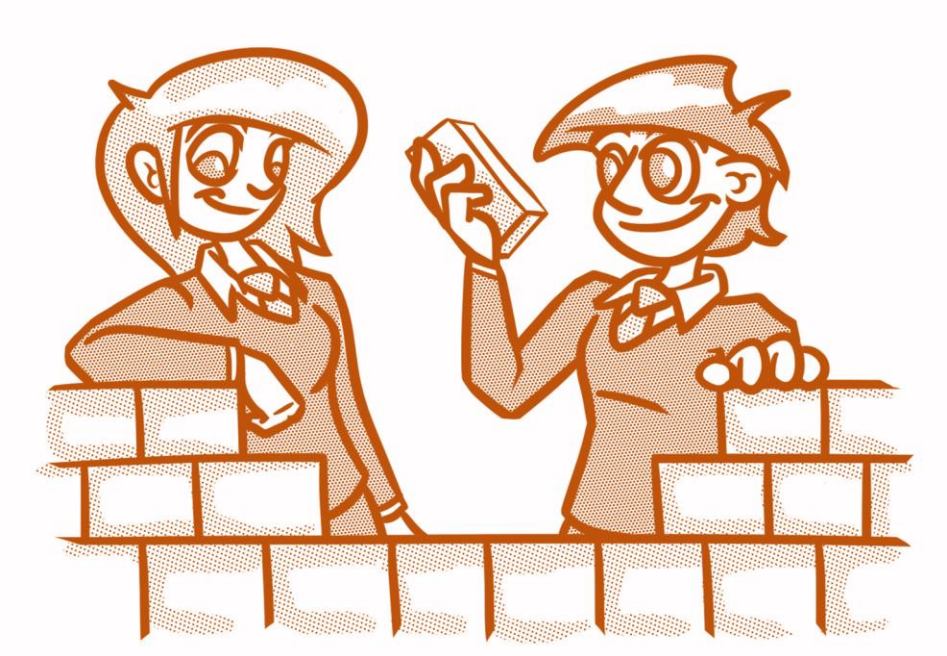
ANSWERS

Hello!

The answer for each question can be found in the appropriate bricks.

If the answer is too long for the brick then it will appear after the brick walls. There will be a letter or number in the brick to help you find the answer.

Good luck!



1.2×10^9 Hz

A

mean = (total of items of data) ÷ (number of items of data)
mode: most frequent value
median: the middle one when all the data is in numerical order

C

Largest: 7.8×10^2
6.5×10^{-7}
6.54×10^{-8}
Smallest 7.7×10^{-9}

1.61667×10^{10}
3.5×10^{14}

8.7 (2 s.f.)

1 d.p. = 5.7
2 d.p. = 5.75
3 d.p. = 5.746
4 d.p. = 5.7464

2 400 000 g = 2.4×10^6 g
0.03 g = 3.0×10^{-2} g

1.2×10^9 Hz.

(7.3 + 6.9 + 7.4 + 7.1 + 7.7)/ 5 = 7.3

9 s.f.

5.68054×10^5
$0.002.01090 \times 10^{-3}$
5.678×10^3

6×10^6
2×10^5
1.163×10^3

1 s.f. = 50 000
2 s.f. = 50 000
3 s.f. = 50 000
4 s.f. = 50 030

360
87000
0.000019

(Learn the first 15 physics equations)

B

Gradient = acceleration
Area under the line = distance

$$v = \sqrt{\frac{KE}{0.5\ x\ m}}$$

25 kHz x 1000 = 25 000 Hz

25 000 Hz x 0.0139 m = 348 m/s (3 s.f.)

F

G

$$a = \frac{F}{m}$$

(Learn the first 10 physics equations)

Power = watt (W)
Resistance = ohm ()
Energy = joule (J)
Work done = joule (J)
Force = newton (N)and
Potential difference = volt (V)

Refraction = wave changes speed and sometimes direction when entering a medium
Reflection = Light hits and is reflected by a surface

E

(Learn the first 5 physics equations)

Length = metre (m)
Mass = kilogram (kg)
Time = second (s)
Electric current = ampere (A)

1 km = 1 x10^{3} m
1 mm = 1 x10^{-3} m
1Mm = 1 x10^{6} m
1nm = 1 x10^{-9} m

D

A

Look at the diameter of the planets in the table below.

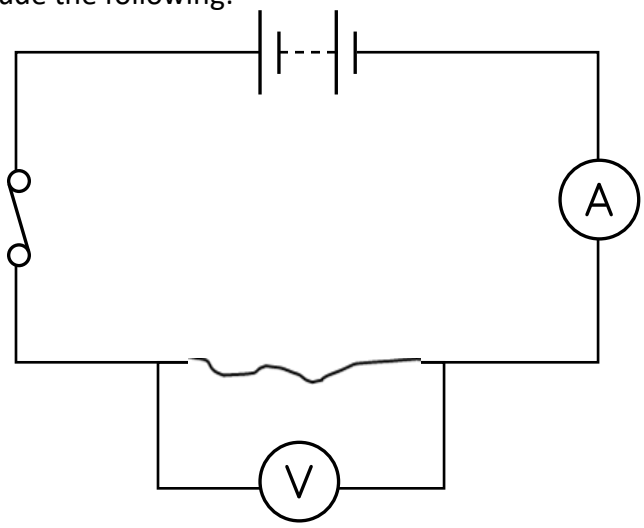
Planet	Diameter/km
Mercury	4 878
Venus	12 100
Earth	12 756
Mars	6 752

- Mercury = 4.9×10^3; Venus = 1.2×10^4; Earth = 1.3×10^4; Mars = 6.8×10^3
- 12756 km – 6752 km = 6.0×10^3 km
- $3.5 \times 10^3 : 1.3 \times 10^4 = 1 : 3.7$

B

Describe an experiment to determine how the length of a wire affects resistance. You should include a circuit diagram, method and the equation linking resistance, potential difference and current.

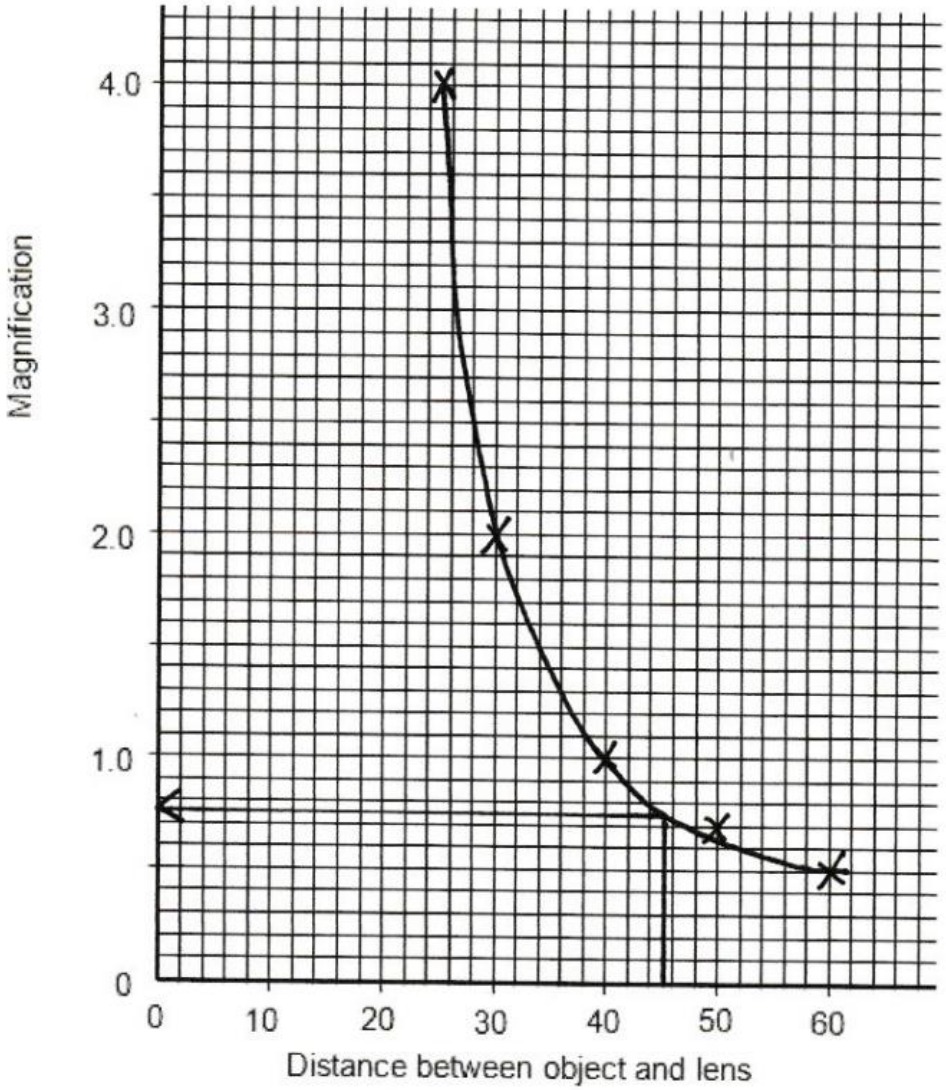
Method should include the following:



- Ammeter in series and voltmeter in parallel
- Measure the length of the wire
- Measure the potential difference and the current
- Switch power off between readings to allow the wire to cool
- Change the length of the wire using crocodile clips
- Repeat readings
- Calculate the resistance for each length
- Resistance = potential difference / current or R = V/I

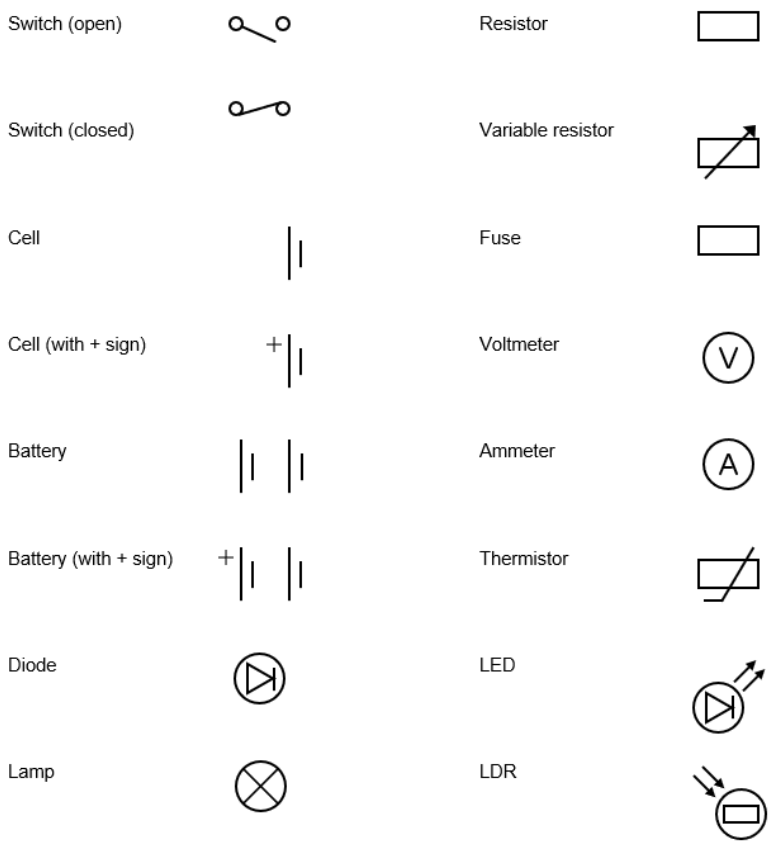
C

- Correctly plotted points (within ½ square)
- Appropriate line of best fit
- Between a magnification of 0.6 and 0.8



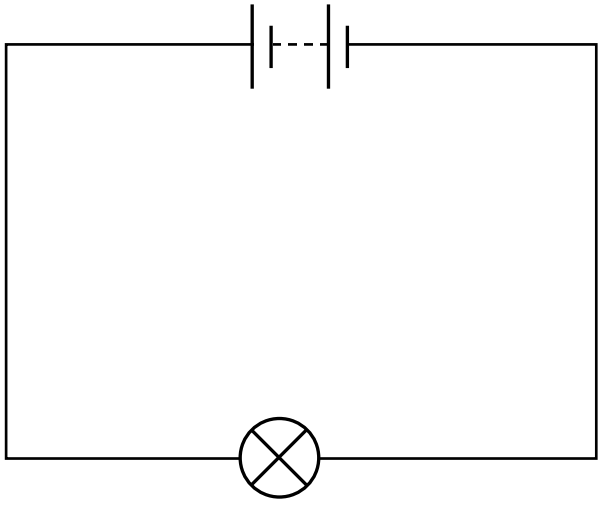
D

This will vary slightly between examination boards.



E

- All components must be on the same circuit; so, a voltmeter cannot be used as this should be in parallel.
- Diagram must include the 2 components below and 3 others.



F

- Mass is a measure of how much matter is in an object; measured in kg using a balance
- Weight is a force acting on that matter; measured in newtons using a newton meter

G

Frequency is the number of waves passing a specific point in a second.