

# Changes in Energy

## Question Paper

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Physics
Exam Board	AQA
Topic	6.1 Energy
Sub-Topic	Changes in Energy
Difficulty Level	Bronze Level
Booklet	Question Paper

**Time Allowed:** 14 minutes

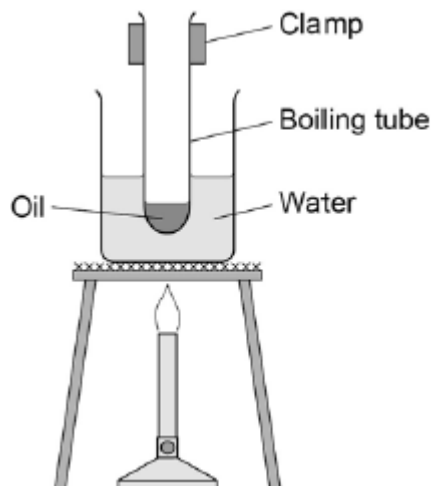
**Score:** /13

**Percentage:** /100

**Grade Boundaries:**

**Q1.** A student investigated the change in temperature when oils of different specific heat capacities were heated.

She set up the apparatus shown in the figure below.



This is the method used.

1. Put 25 g of oil into a boiling tube.
2. Pour 100 ml of water into a beaker and heat it with a Bunsen burner.
3. When the water is boiling, put the boiling tube into the beaker.
4. When the temperature of the oil reaches 30 °C, heat for a further 30 seconds and record the rise in temperature.
5. Repeat with different oils.
6. Repeat the whole investigation.

(a) Name **two** pieces of apparatus the student used that are **not** shown in the figure above.

1 .....

2 .....

(2)

(b) What are the independent and dependent variables in the student's investigation?

Independent .....

.....

Dependent .....

.....

(2)

- (c) Give **two** safety precautions the student should have taken.

1 .....

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2 .....

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(2)

- (d) Suggest **one** improvement to the student's method.

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(2)

- (e) The table below shows the student's results.

	Temperature rise in °C			
Type of oil	1	2	3	Mean
Castor oil	20	19	21	20
Linseed oil	19	18	19	19
Mineral oil	21	21	21	21
Olive oil	17	17	18	
Sesame oil	23	23	20	22

Calculate the mean temperature rise for olive oil.

Give your answer to two significant figures.

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.....

Mean temperature rise = ..... °C

(2)

- (f) The mean change in temperature of the castor oil is 20 °C

The specific heat capacity of castor oil is 1 800 J / kg °C

The mass of oil used is 0.025 kg

Calculate the change in thermal energy of the castor oil the student used.

Use the correct equation from the Physics Equations Sheet.

Select the correct unit from the box.

joule	newton	volt
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Change in thermal energy = ..... °C

Unit = ..... °C

(3)

(Total 13 marks)