AQA GCSE Physics | 8463

SPECIFICATION POINT 4.5.1.1

Scalar and vector quantities

Past-paper questions

Tier	**Foundation**
Question groups	**2**
Available paper years	**2009–2024**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.5.1.1 Scalar and vector quantities

Question 01

November 2009 | PHY1AP | Original Q1 | Legacy

QUESTION ONE

This question is about heat transfer.

Match words, **A**, **B**, **C** and **D**, with the numbers **1–4** in the sentences.

A conductors

B convectors

C radiators

D reflectors

Light, shiny surfaces are good . . . **1** . . . of heat.

Very hot objects are good . . . **2** . . . of heat.

Gases are good . . . **3** . . . of heat.

All metals are good . . . **4** . . . of heat.

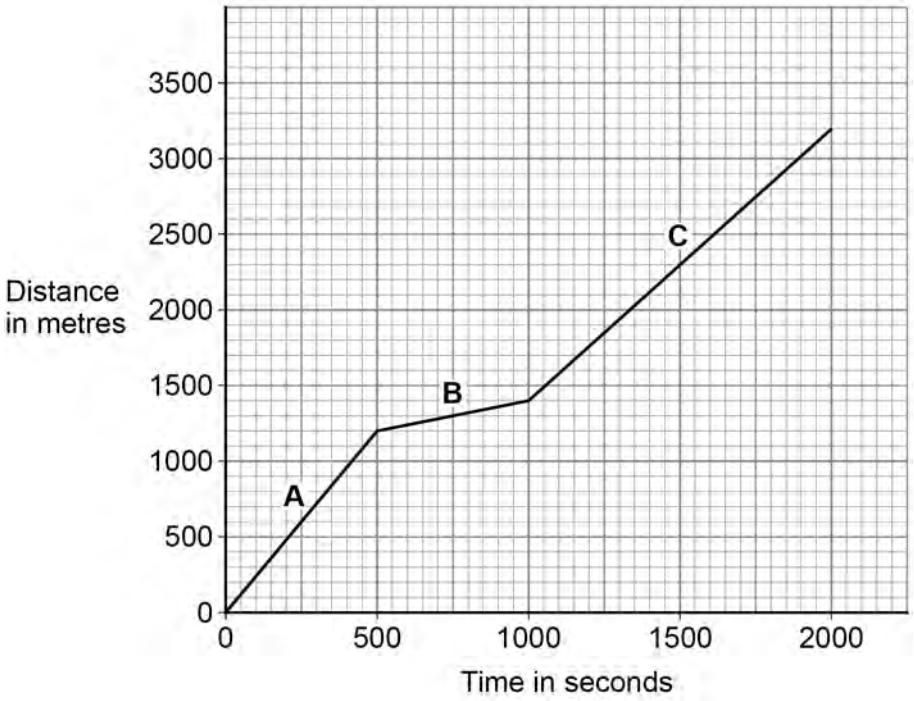
4.5.1.1 Scalar and vector quantities

Question 02

0 5 A person has been for a walk.

Figure 9 shows the distance–time graph for the walk.

Figure 9



0 5 . 1 Some quantities are scalar quantities and others are vector quantities.

Which of the following are scalar quantities?

[2 marks]

Tick (✓) **two** boxes.

- Displacement ☐
- Distance ☐
- Force ☐
- Speed ☐
- Velocity ☐

4.5.1.1 Scalar and vector quantities

Question 02 · continued

0 5 . 2 What was the total distance walked by the person in 2000 seconds?

[1 mark]

Total distance = _____ m

0 5 . 3 Calculate the average speed of the person during the 2000 seconds.

Use your answer to Question **05.2**

Use the equation:

$$\text{average speed} = \frac{\text{total distance}}{\text{total time}}$$

[2 marks]

_____

_____

_____

Average speed = _____ m/s

0 5 . 4 Which section of **Figure 9** shows the person walking the slowest?

Give a reason for your answer.

[2 marks]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐

Reason _____

_____

4.5.1.1 Scalar and vector quantities

Question 02 · continued

0 5 . 5 The person walked slowest when going up some steps.

Complete the sentence.

Choose the answer from the box.

[1 mark]

air resistance	**friction**	**gravity**

When walking up the steps, the person did more work against the force of _____.

0 5 . 6 On another day, the person ran the same route.

What is a typical speed for a person running?

[1 mark]

Tick (✓) **one** box.

0.3 m/s ☐

3.0 m/s ☐

30 m/s ☐

9