Edexcel GCSE
Mathematics (Linear) – 1MA0

COMPOUND MEASURES

Materials required for examination	**Items included with question papers**
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser. Tracing paper may be used.	Nil

Instructions

Use black ink or ball-point pen.
Fill in the boxes at the top of this page with your name, centre number and candidate number.
Answer all questions.
Answer the questions in the spaces provided – there may be more space than you need.
Calculators may be used.

Information

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.
Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

Advice

Read each question carefully before you start to answer it.
Keep an eye on the time.
Try to answer every question.
Check your answers if you have time at the end.

1. Adam cycled 24 km in 2 hours.

Work out his average speed.

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

$$= \frac{24}{2}$$

...............*12*............... km/h

(Total 2 marks)

2. Stuart drives 180 km in 2 hours 15 minutes.

Work out Stuart's average speed.

2hrs 15 mins = 2.25 hrs

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

$$= \frac{180}{2.25}$$

...............*80*............... km/h

(Total 3 marks)

3. Joe travelled 60 miles in 1 hour 30 minutes.

Work out Joe's average speed.
Give your answer in miles per hour.

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

$$= \frac{60}{1.5}$$

...............*40*............... miles per hour

(Total 2 marks)

4. The distance from Liverpool to Prague is 1200 km.
A flight from Liverpool to Prague lasts 4 hours.

Work out the average speed of the aeroplane.

$$Speed = \frac{distance}{time}$$

$$= \frac{1200}{4}$$

.............**300**............. km/h

(Total 2 marks)

5. Mia drove a distance of 343 km.
She took 3 hours 30 minutes.

Work out her average speed.
Give your answer in km/h.

$$Speed = \frac{distance}{time}$$

$$= \frac{343}{3.5}$$

.............**98**............. km/h

(Total 3 marks)

6. The distance from London to New York is 3456 miles.
A plane takes 8 hours to fly from London to New York.

Work out the average speed of the plane.

$$Speed = \frac{distance}{time}$$

$$= \frac{3456}{8}$$

.............**432**............. miles per hour

(Total 2 marks)

7.   A car travels for 3 hours.
Its average speed is 75 km/h.

Work out the total distance the car travels.

$$speed = \frac{distance}{time}$$

$$distance = speed \times time$$

$$= 75 \times 3$$

$$= 225$$

............**225**............ km

(Total 2 marks)

8.   Daniel leaves his house at 07 00.

He drives 87 miles to work.
He drives at an average speed of 36 miles per hour.

At what time does Daniel arrive at work?

$$Speed = \frac{distance}{time}$$

$$time = \frac{distance}{speed}$$

$$= \frac{87}{36}$$

$$= \frac{29}{12} \text{ hours } (2 \text{ hours } 25 \text{ mins})$$

............**09 25**............

(Total 3 marks)

9. Fred runs 200 metres in 21.2 seconds.

(a) Work out Fred's average speed.
Write down all the figures on your calculator display.

$$speed = \frac{distance}{time}$$

$$= \frac{200}{21.2}$$

.....9.433962264..... metres per second

(2)

(b) Round off your answer to part (a) to an appropriate degree of accuracy.

.........9.43.......(3sf)......... metres per second

(1)
(Total 3 marks)

10. A plane flies 1400 kilometres in 2 hours 20 minutes.

Calculate the average speed, in km/h, of the plane.

$$speed = \frac{distance}{time}$$

$$= \frac{1400}{2\frac{1}{3}}$$

.........600..... km/h

(Total 3 marks)

11. John travelled 30 km in 1.5 hours.
Kamala travelled 42 km in 2 hours.

Who had the greater average speed?
You must show your working.

John: speed $= \dfrac{distance}{time}$

$= \dfrac{30}{1.5}$

$= 20 \, km/h$

Kamala: speed $= \dfrac{distance}{time}$

$= \dfrac{42}{2}$

$= 21 \, km/h$

Kamala ....

(Total 3 marks)

12. The mass of 5 m^3 of copper is 44 800 kg.

(a) Work out the density of copper.

density $= \dfrac{mass}{volume}$

$= \dfrac{44800}{5}$

$= 8960 \, kg/m^3$

...........8960........... kg/m^3

(2)

The density of zinc is 7130 kg/m^3.

(b)   Work out the mass of 5 m^3 of zinc.

$$density = \frac{mass}{volume}$$

$$mass = density \times volume$$

$$= 7130 \times 5$$

.... 35650 kg

(2)
(Total 4 marks)

13.   A silver chain has a volume of 5 cm^3.
The density of silver is 10.5 grams per cm^3.

Work out the mass of the silver chain.

$$density = \frac{mass}{volume}$$

$$mass = density \times volume$$

$$= 10.5 \times 5$$

$$= 52.5 \; g$$

........52.5........grams

(Total 2 marks)

14. The density of concrete is 2.3 grams per cm^3.

(a) Work out the mass of a piece of concrete with a volume of 20 cm^3.

Mass = density × volume

= 2.3 × 20

..............46.............. grams

(2)

480 grams of a cheese has a volume of 400 cm^3.

(b) Work out the density of the cheese.

density = $\frac{mass}{volume}$

= $\frac{480}{400}$

..........1.2.......... grams per cm^3

(2)

(Total 4 marks)

15. The volume of a gold bar is 100 cm^3.
The density of gold is 19.3 grams per cm^3.

Work out the mass of the gold bar.

density = $\frac{mass}{volume}$

mass = density × volume

= 19.3 × 100

..............1930.............. grams

(Total 2 marks)