Additional Assessment Materials
Summer 2021

Pearson Edexcel

GCSE (9-1) in Mathematics 1MA1
Higher (Calculator)

Topic 1: Number and Ratio (Test 3)

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Additional Assessment Materials, Summer 2021

General guidance to Additional Assessment Materials for use in 2021

Context

- Additional Assessment Materials are being produced for GCSE, AS and A levels (with the exception of Art and Design).
- The Additional Assessment Materials presented in this booklet are an optional part of the range of evidence teachers may use when deciding on a candidate's grade.
- 2021 Additional Assessment Materials have been drawn from previous examination materials, namely past papers.
- Additional Assessment Materials have come from past papers both published (those materials available publicly) and unpublished (those currently under padlock to our centres) presented in a different format to allow teachers to adapt them for use with candidate.

Purpose

- The purpose of this resource to provide qualification-specific sets/groups of questions covering the knowledge, skills and understanding relevant to this Pearson qualification.
- This document should be used in conjunction with the mapping guidance which will map content and/or skills covered within each set of questions.
- These materials are only intended to support the summer 2021 series.

1 (*a*) Use your calculator to work out $\dfrac{29^2 - 4.6}{\sqrt{35 - 1.9^3}}$

Write down all the figures on your calculator display.

.....

(2)

(*b*) Write your answer to part (*a*) correct to 4 significant figures.

.....

(1)

(Total for Question 1 is 3 marks)

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2 Write 37 cm^3 in mm^3

.....mm^3

(Total for Question 2 is 1 mark)

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3 Carlo puts tins into small boxes and into large boxes.

He puts 6 tins into each small box.
He puts 20 tins into each large box.

Carlo puts a total of 3000 tins into the boxes so that

number of tins in small boxes : number of tins in large boxes = 2 : 3

Carlo says that less than 30% of the boxes filled with tins are large boxes.

Is Carlo correct?
You must show all your working.

(Total for Question 3 is 5 marks)

4 Raya buys a van for £8500 plus VAT at 20%

Raya pays a deposit for the van.
She then pays the rest of the cost in 12 equal payments of £531.25 each month.

Find the ratio of the deposit Raya pays to the total of the 12 equal payments.
Give your answer in its simplest form.

.....

(Total for Question 4 is 5 marks)

5 The density of ethanol is 1.09 g/cm^3

The density of propylene is 0.97 g/cm^3

60 litres of ethanol are mixed with 128 litres of propylene to make 188 litres of antifreeze.

Work out the density of the antifreeze.
Give your answer correct to 2 decimal places.

..... g/cm^3

(Total for Question 5 is 4 marks

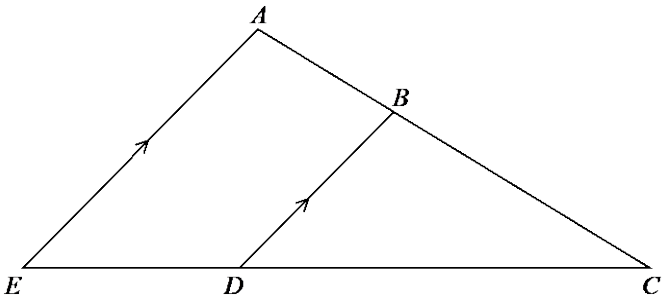
6 Katy invests £200 000 in a savings account for 4 years.
The account pays compound interest at a rate of 1.5 % per annum.

Calculate the total amount of interest Katy will get at the end of 4 years.

£.....

(Total for Question 6 is 3 marks)

7



ABC and *EDC* are straight lines.
EA is parallel to *DB*.

EC = 8.1 cm. *DC* = 5.4 cm. *DB* = 2.6 cm.

(*a*) Work out the length of *AE*.

..... cm

(2)

AC = 6.15 cm.

(*b*) Work out the length of *AB*.

..... cm

(2)

(Total for Question 7 is 4 marks

8 The points A, B, C and D lie in order on a straight line.

$$AB : BD = 1:5$$
$$AC : CD = 7:11$$

Work out $AB : BC : CD$

..... : ..... : .....

(Total for Question 8 is 3 marks)

9 There are 16 hockey teams in a league.

Each team played two matches against each of the other teams.

Work out the total number of matches played.

.....

(Total for Question 9 is 2 marks)

10 There are some small cubes and some large cubes in a bag.
The cubes are red or the cubes are yellow.

The ratio of the number of small cubes to the number of large cubes is 4 : 7

The ratio of the number of red cubes to the number of yellow cubes is 3 : 5

(*a*) Explain why the least possible number of cubes in the bag is 88

.....

.....

.....

(1)

All the small cubes are yellow.

(*b*) Work out the least possible number of large yellow cubes in the bag.

.....

(3)

(Total for Question 10 is 4 marks)

11 Three solid shapes **A**, **B** and **C** are similar.

The surface area of shape **A** is 4 cm^2
The surface area of shape **B** is 25 cm^2

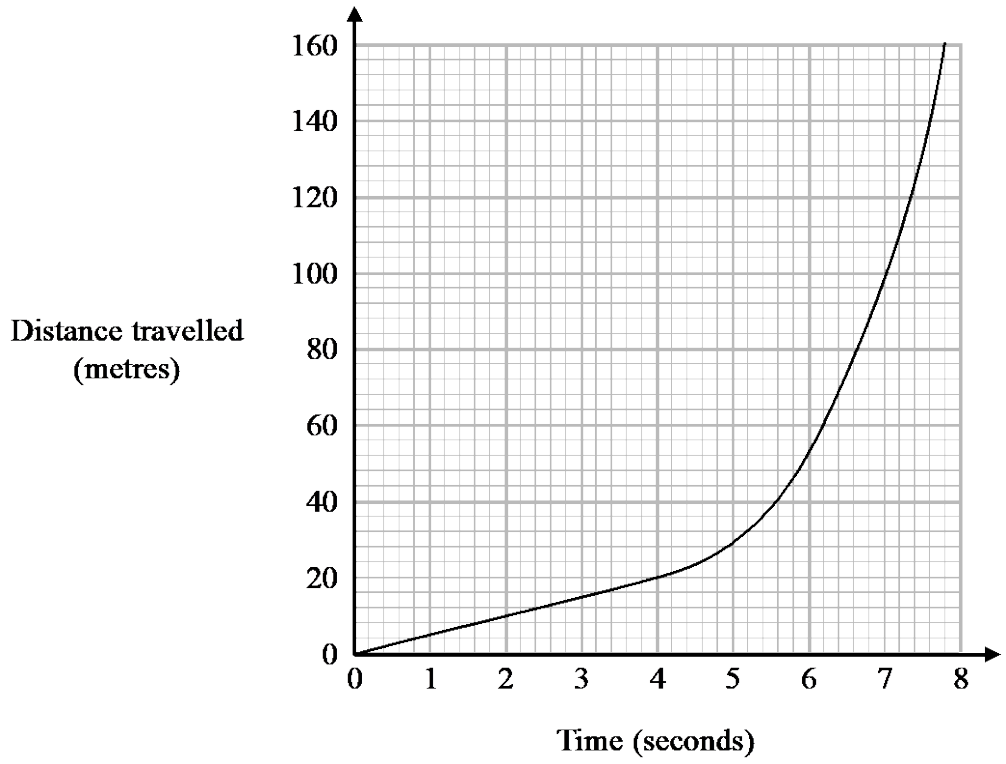
The ratio of the volume of shape **B** to the volume of shape **C** is 27 : 64

Work out the ratio of the height of shape **A** to the height of shape **C**.
Give your answer in its simplest form.

.....

(Total for Question 11 is 4 marks)

12 The distance-time graph shows information about part of a car journey.



Use the graph to estimate the speed of the car at time 5 seconds.

..... m/s

(Total for Question 12 is 3 marks)

13 The number of rabbits on a farm at the end of month n is P_n
The number of rabbits at the end of the next month is given by $P_{n+1} = 1.2P_n - 50$

At the end of March there are 200 rabbits on the farm.

(*a*) Work out how many rabbits there will be on the farm at the end of June.

.....

(3)

(*b*) Considering your results in part (*a*), suggest what will happen to the number of rabbits on the farm after a long time.

.....

.....

(1)

(Total for Question 13 is 4 marks)

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14 $d = \frac{1}{8}c^3$

$c = 10.9$ correct to 3 significant figures.

By considering bounds, work out the value of d to a suitable degree of accuracy.
Give a reason for your answer.

(Total for Question 14 is 4 marks)

TOTAL FOR PAPER IS 49 MARKS