

GCSE Mathematics

Practice Tests: Set 7B

Paper 3H (Calculator)

Time: 45 minutes

You should have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

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.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**



Information

- The total mark for this paper is 40
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

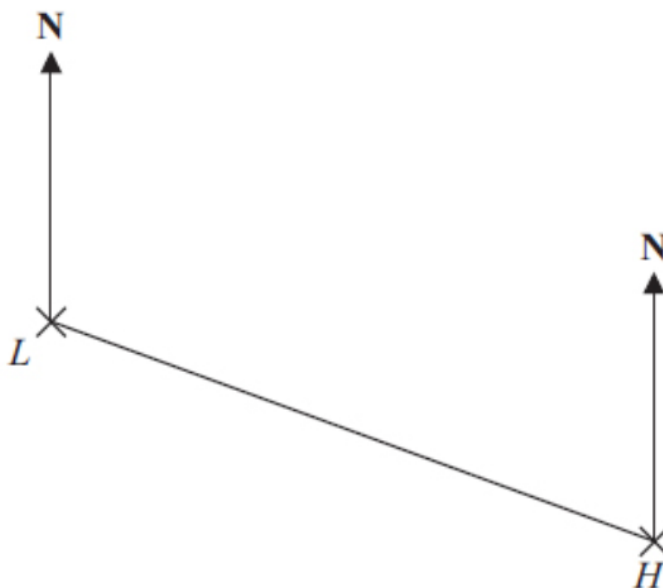
- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. The diagram shows the position of a lighthouse L and a harbour H .



The scale of the diagram is 1 cm represents 5 km.

- (a) Work out the real distance between L and H .

..... km
(1)

- (b) Measure the bearing of H from L .

.....^o
(1)

A boat B is 20 km from H on a bearing of 040° .

- (c) On the diagram, mark the position of boat B with a cross (\times).
Label it B .

(2)

(Total for Question 1 is 4 marks)

2. $A = 2^2 \times 3 \times 5^2$
 $B = 2^3 \times 5$

(a) Find the Highest Common Factor (HCF) of A and B .

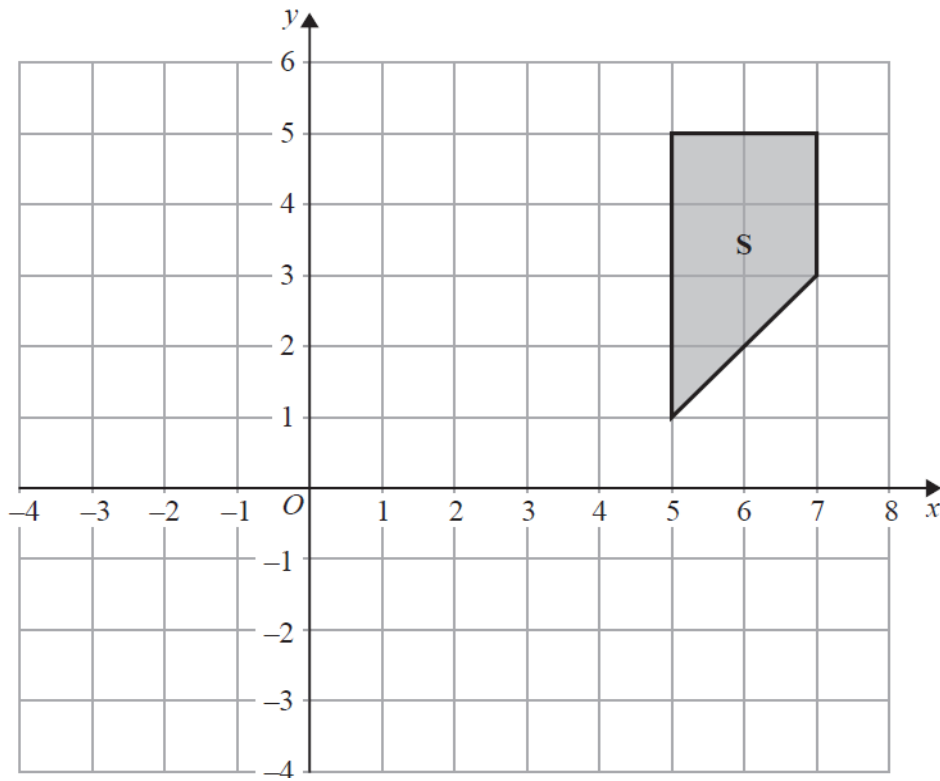
.....
(1)

(b) Find the Lowest Common Multiple (LCM) of A and B .

.....
(2)

(Total for Question 2 is 3 marks)

3.



Enlarge shape S with scale factor $\frac{1}{2}$ and centre (1, 3).

(Total for Question 3 is 2 marks)

4. Given that, for all values of x ,

$$6x^3 + 7x^2 - 56x + 48 = (2x^2 + kx - 12)(3x - 4), \text{ where } k \text{ is a constant,}$$

find the value of k .

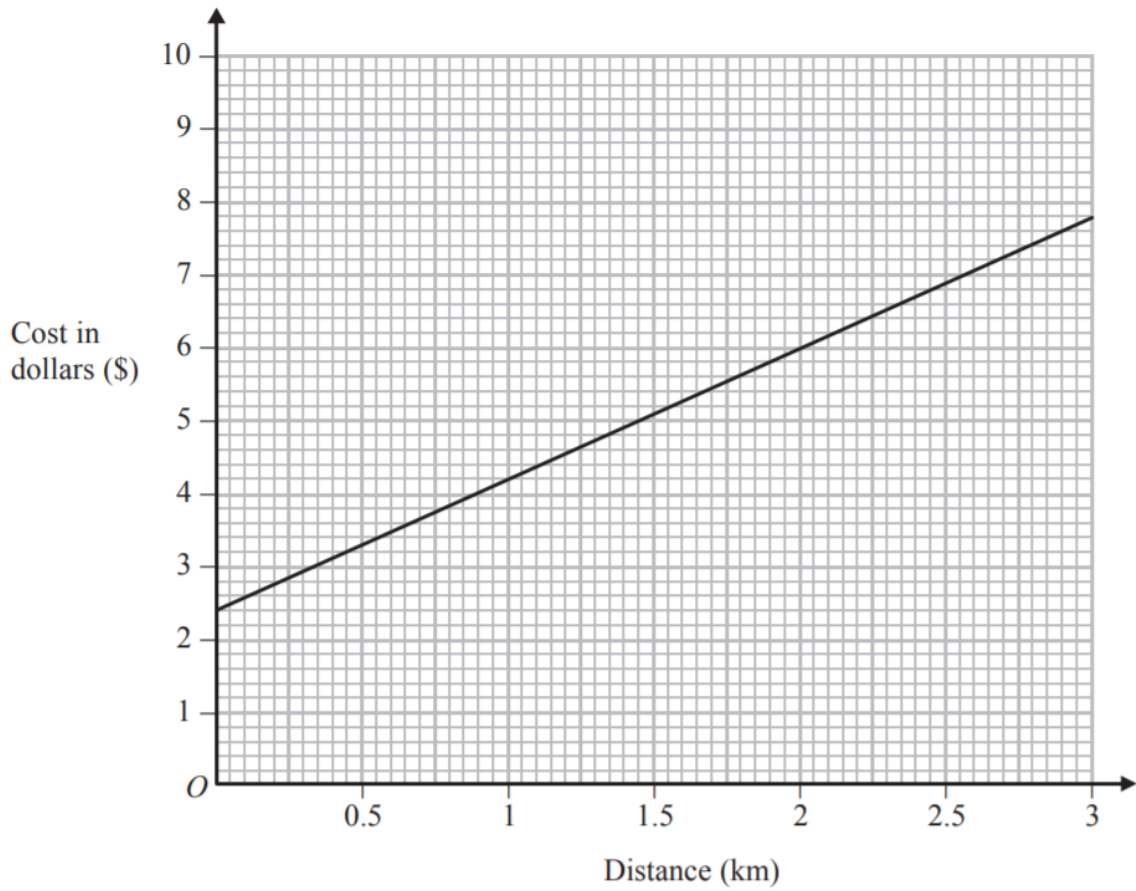
$k = \dots\dots\dots$

(Total for Question 4 is 2 marks)

5. Make e the subject of $k = \sqrt{\frac{5m+2e}{3e}}$

.....
(Total for Question 5 is 4 marks)

6.



The graph gives information about the costs of taxi journeys of different distances. The cost of a taxi journey consists of a fixed initial charge and a charge per km.

(a) Give an interpretation of the intercept of the graph on the y-axis.

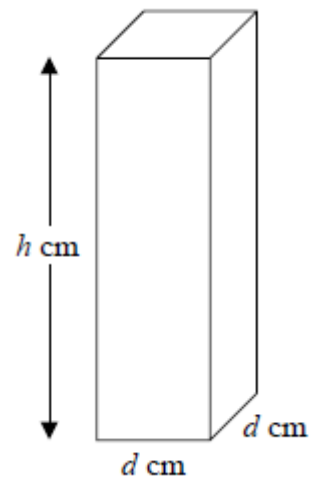
.....
(1)

(b) Give an interpretation of the gradient of the graph.

.....
(1)

(Total for Question 6 is 2 marks)

7. Here is a solid bar made of metal.
The bar is in the shape of a cuboid.
The height of the bar is h cm.
The base of the bar is a square of side d cm.



The mass of the bar is M kg.

- $d = 8.3$ correct to 1 decimal place.
 $M = 13.91$ correct to 2 decimal places.
 $h = 84$ correct to the nearest whole number.

Find the value of the density of the metal to an appropriate degree of accuracy.
Give your answer in g/cm^3 .

You must explain why your answer is to an appropriate degree of accuracy.

(Total for Question 7 is 5 marks)

8. 60 apples are shared between Abbie, Betty and Carol in the ratios $1 : 3 : x$, where $x > 3$.

The number of apples in Carol's share is 18 more than the number of apples in Betty's share.

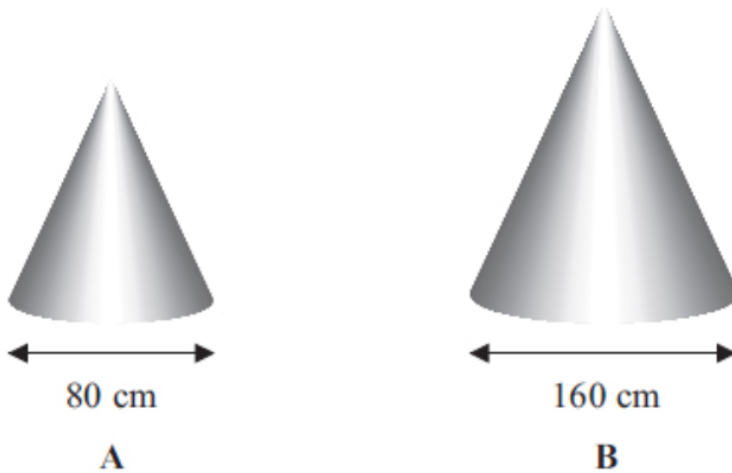
Find the value of x .

$x = \dots\dots\dots$

(Total for Question 8 is 4 marks)

9. Ali has two solid cones made from the same type of metal.

Diagram NOT accurately drawn



The two solid cones are mathematically similar.
 The base of cone **A** is a circle with diameter 80 cm.
 The base of cone **B** is a circle with diameter 160 cm.
 Ali uses 80 ml of paint to paint cone **A**.
 Ali is going to paint cone **B**.

(a) Work out how much paint, in ml, he will need.

..... ml
(2)

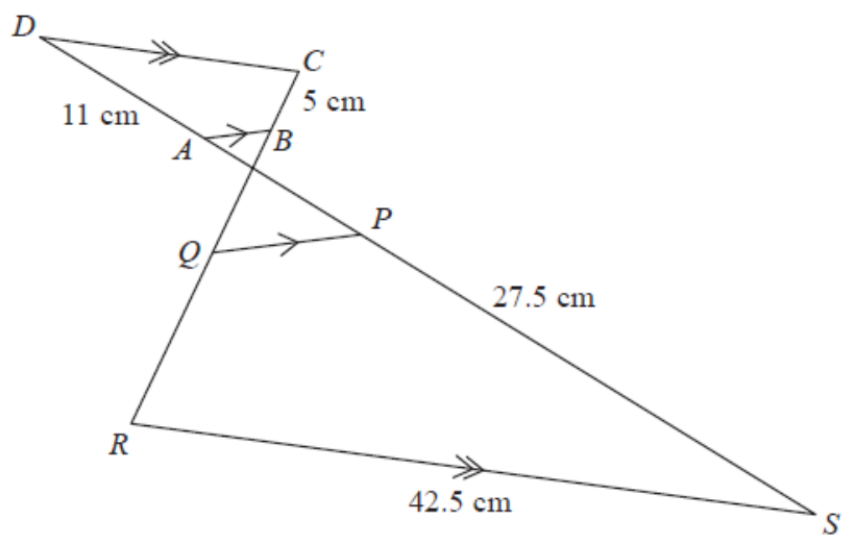
The volume of cone **A** is 171 700 cm³.

(b) Work out the volume of cone **B**.

..... cm³
(3)

(Total for Question 9 is 5 marks)

10. In the diagram, $DAPS$ and $CBQR$ are straight lines.
 AB is parallel to QP and DC is parallel to RS .
 $AD = 11$ cm, $BC = 5$ cm, $PS = 27.5$ cm and $RS = 42.5$ cm.



Quadrilateral $ABCD$ is similar to quadrilateral $PQRS$.

- (a) Work out the length of RQ .

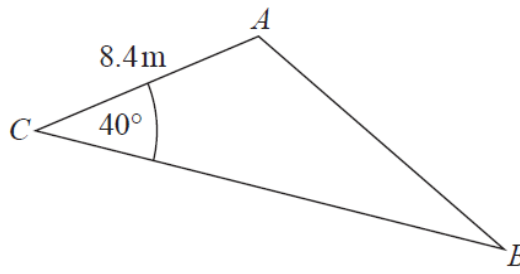
..... cm
(2)

- (b) Work out the length of CD .

..... cm
(2)

(Total for Question 10 is 4 marks)

11. ABC is a triangle.



$AC = 8.4 \text{ m}$
Angle $ACB = 40^\circ$

The area of the triangle = 100 m^2 .

Work out the length of AB .
Give your answer correct to 3 significant figures.
You must show all your working.

..... m

(Total for Question 11 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS

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