GCSE Mathematics Practice Tests: Set 8
Paper 2H (Calculator)

Time: 1 hour 30 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 80
- 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   Work out the difference between the largest share and the smallest share when 3450 yen
     is divided in the ratios 2 : 6 : 7

                                                                    .... yen

                                                                    (Total for Question 1 is 3 marks)

2   Gopal is paid £20 000 each month.
     Jamuna is paid £19 200 each month.

     Gopal and Jamuna are both given an increase in their monthly pay.
     After the increase, they are both paid the same amount each month.

     Gopal was given an increase of 8%

     Work out the percentage increase that Jamuna was given.

                                                                    ....%

                                                                    (Total for Question 2 is 4 marks)

3 There are some people in a cinema.

$\frac{3}{5}$ of the people in the cinema are children.

For the children in the cinema,

number of girls : number of boys = 2 : 7

There are 170 girls in the cinema.

Work out the number of adults in the cinema.

....

(Total for Question 3 is 5 marks)

4   The diagram shows two cylinders, **A** and **B**.

0.56 m

A

1.6 m

B

0.6 m
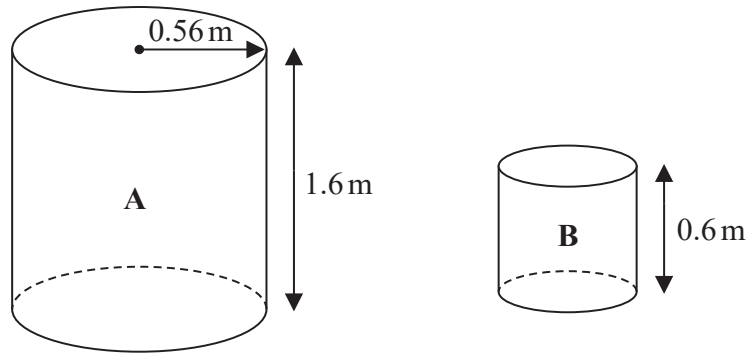
Diagram **NOT** accurately drawn

Cylinder **A** has height 1.6 m and radius 0.56 m.

(*a*) Work out the curved surface area of cylinder **A**.
Give your answer in m² correct to 3 significant figures.

.... m²

(2)

Cylinder **B** is mathematically similar to cylinder **A**.
The height of cylinder **B** is 0.6 m.

(*b*) Work out the radius of cylinder **B**.

.... m

(2)

(Total for Question 4 is 4 marks)

5

Diagram **NOT** accurately drawn
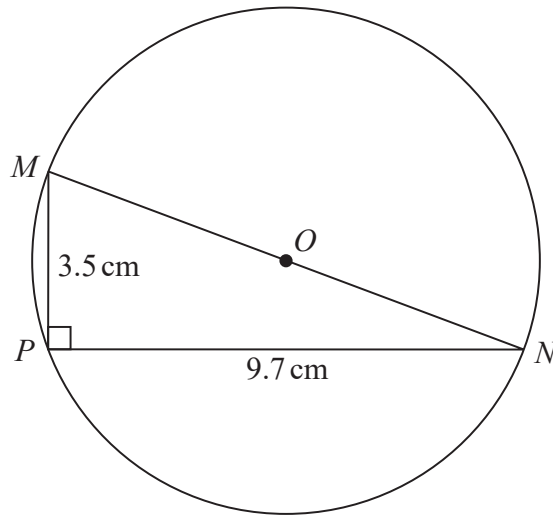
M, *N* and *P* are points on a circle, centre *O*.
MON is a diameter of the circle.

MP = 3.5 cm
PN = 9.7 cm

Angle *MPN* = 90°

Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

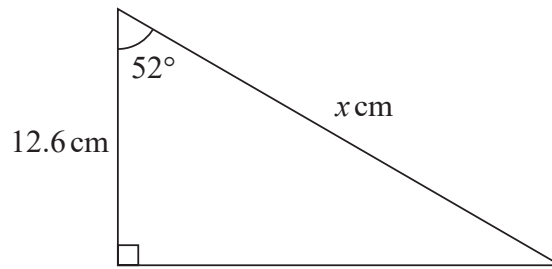... cm

(Total for Question 5 is 4 marks)

6

Diagram **NOT** accurately drawn

Work out the value of x.
Give your answer correct to 3 significant figures.

$x =$...

(**Total for Question 6 is 3 marks**)

7 Solve the simultaneous equations

$$x + y = 15$$
$$7x - 5y = 3$$

Show clear algebraic working.

$x = $ ....

$y = $ ....

(Total for Question 7 is 3 marks)

8   Charlie bought a boat for £160 000.
The value of the boat depreciates by 4% each year.

(*a*) Work out the value of the boat at the end of 3 years.
Give your answer correct to the nearest £.

£..
(3)

Jenny gets a salary increase of 5%
Her salary after the increase is £252 000.

(*b*) Work out Jenny's salary before the increase.

£..
(3)

(Total for Question 8 is 6 marks)

9   The diagram shows a right-angled triangle.
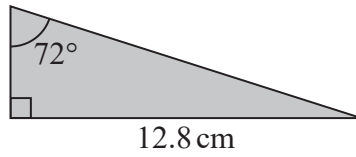

72°

12.8 cm

Diagram **NOT**
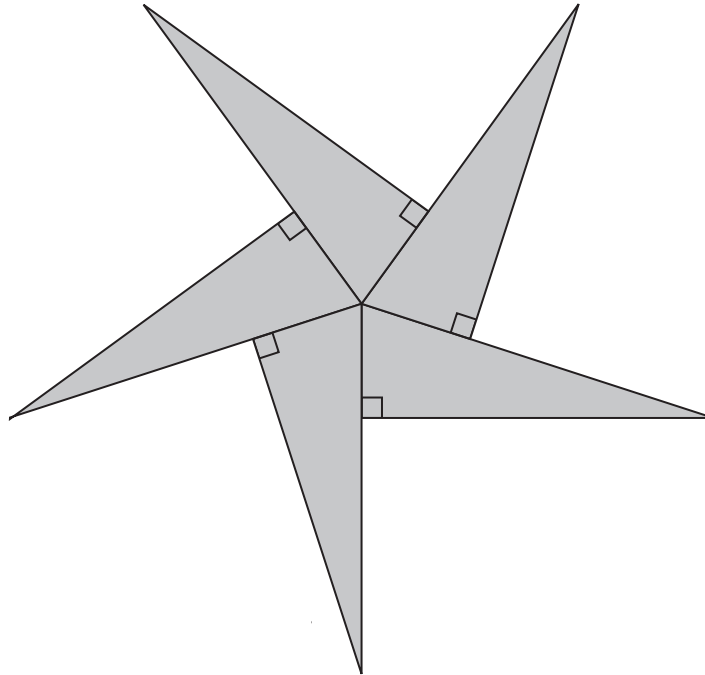accurately drawn

Five of these triangles are put together to make a shape.

Diagram **NOT**
accurately drawn

Calculate the perimeter of the shape.
Give your answer correct to 3 significant figures.

.... cm

(Total for Question 9 is 5 marks)

10 A solid metal sphere has radius 1.5 cm.
The mass of the sphere is 109.6 grams.

Work out the density of the sphere.
Give your answer correct to 3 significant figures.

.... g / cm^3

(**Total for Question 10 is 3 marks**)

11 Expand and simplify $(2x - 1)(x + 3)(x - 5)$

....

(**3**)

(**Total for Question 11 is 3 marks**)

12 The students in Class A and in Class B take the same examination.
There are 28 students in Class A and 32 students in Class B.
The mean score for all the students in both classes is 72.6.
The mean score for the students in Class A is 75.

(*a*) Work out the mean score for the students in Class B.

....
(4)

The lowest score in Class A is 39.
The range of scores for Class A is 57.
The lowest score in Class B is 33.
The range of scores for Class B is 60.

(*b*) Find the range of scores for all the students in both classes.

....
(3)

(Total for Question 12 is 7 marks)

13 $e = 8.31$ correct to 2 decimal places
    $f = 0.65$ correct to 2 decimal places

Work out the lower bound for the value of $e - f$
Show your working clearly.

....

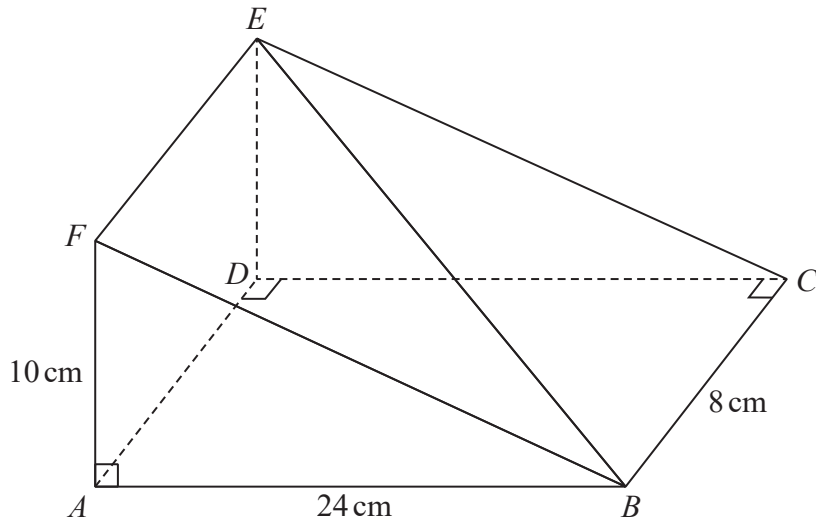**(Total for Question 13 is 2 marks)**

14 The diagram shows a triangular prism.

Diagram **NOT** accurately drawn

$AF = 10$ cm, $AB = 24$ cm and $BC = 8$ cm.
Angle FAB = angle ADC = angle BCD = 90°

Work out the size of the angle between the line BE and the plane $ABCD$.
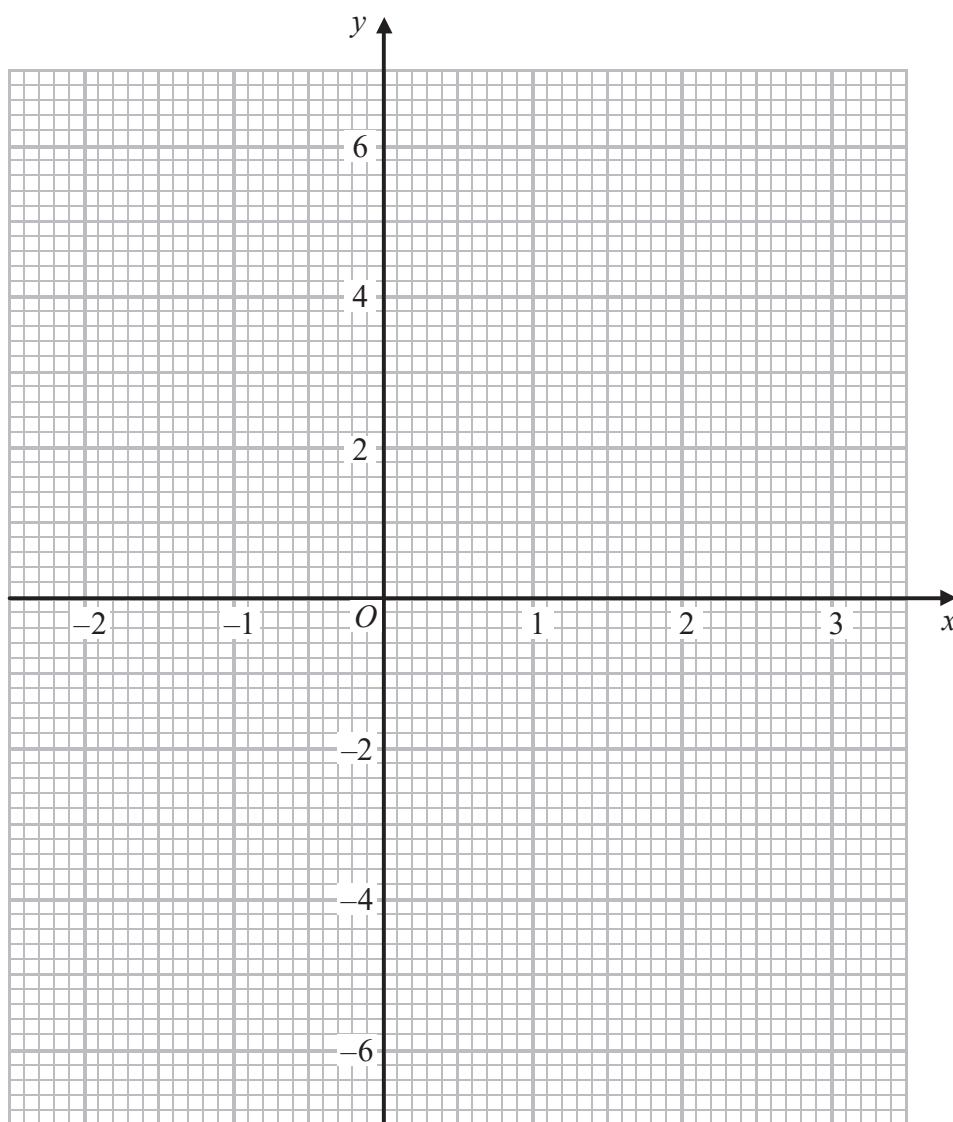Give your answer correct to 1 decimal place.

.... °

(**Total for Question 14 is 3 marks**)

15 (*a*)   Complete the table of values for $y = x^3 - 2x^2 - 3x + 4$

x	-2	-1	-0.5	0	1	1.5	2	3
y			4.875	4		-1.625		

(2)

(*b*) On the grid, draw the graph of $y = x^3 - 2x^2 - 3x + 4$ for values of x from -2 to 3.

(2)

(*c*) By drawing a suitable straight line on the grid, find estimates for the solutions of the equation

$$x^3 - 2x^2 - x + 1 = 0$$

Give your solutions correct to 1 decimal place.

....
(4)

(Total for Question 15 is 8 marks)

16 Simplify fully $\left(\dfrac{256x^{20}}{y^8} \right)^{-\frac{1}{4}}$
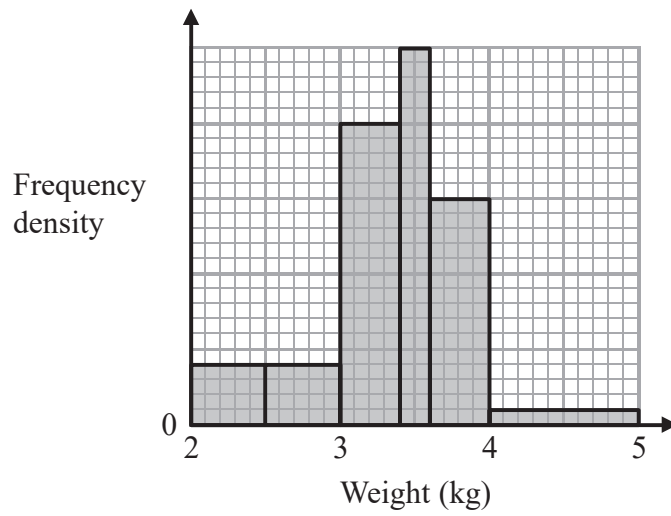
....
(2)

(Total for Question 16 is 2 marks)

17 The histogram shows information about the birth weights of some babies.

Frequency density (y-axis)

Weight (kg) (x-axis)

6 of these babies had a birth weight less than 2.5 kg or greater than 4 kg.

Work out the number of babies who had a birth weight between 2.5 kg and 4 kg.

....
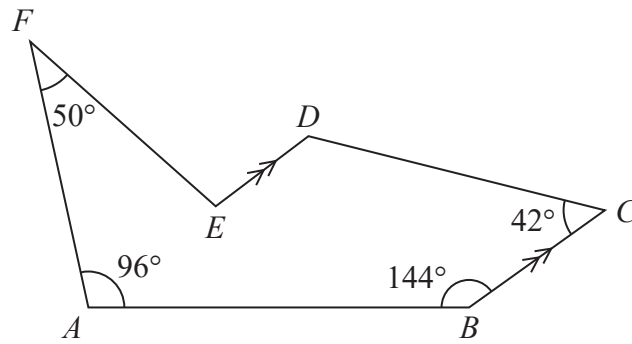
(Total for Question 17 is 3 marks)

18

Diagram **NOT** accurately drawn

The diagram shows a hexagon *ABCDEF*.
BC is parallel to *ED*.

Work out the size of the obtuse angle *DEF*.

.... °

(Total for Question 18 is 5 marks)

19 A triangle has sides of length 8 cm, 10 cm and 14 cm.
Work out the size of the largest angle of the triangle.
Give your answer correct to 1 decimal place.

.... °

(Total for Question 19 is 3 marks)

20 A frustum is made by removing a small cone from a large cone.
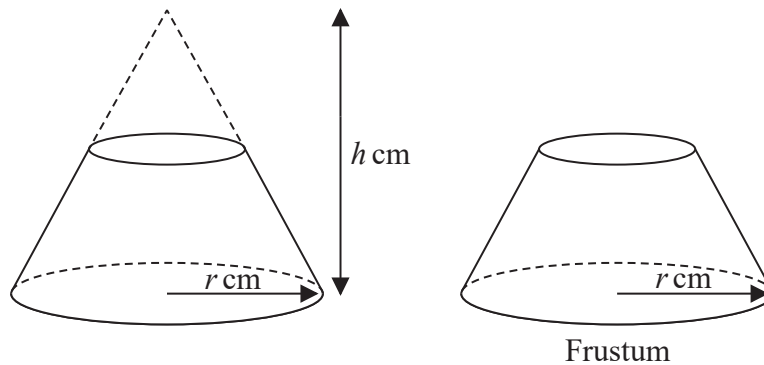The cones are mathematically similar.

Diagram **NOT** accurately drawn

h cm

r cm   *r* cm

Frustum

The large cone has base radius *r* cm and height *h* cm.

Given that

$$\frac{\text{volume of frustum}}{\text{volume of large cone}} = \frac{98}{125}$$

find an expression, in terms of *h*, for the height of the frustum.

.... cm

(**Total for Question 20 is 4 marks**)

TOTAL FOR PAPER IS 80 MARKS