Write your name here

Surname	Other names

Pearson Edexcel
International GCSE

Centre Number | Candidate Number

Mathematics A

Level 1/2
Paper 1H

Higher Tier

Specimen Paper
Time: 2 hours

Paper Reference
4MA1/1H

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

Total Marks

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.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
  Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this paper is 100.
- 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.
- Check your answers if you have time at the end.

Turn over ▶

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1/1/1/1/

S 5 6 2 8 3 A 0 1 2 4

Pearson

International GCSE Mathematics

Formulae sheet – Higher Tier

Arithmetic series

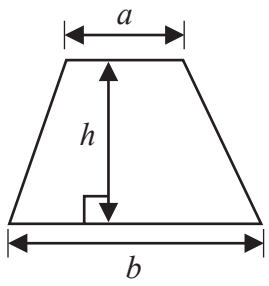
Sum to n terms, $S_n = \frac{n}{2}[2a + (n-1)d]$

The quadratic equation

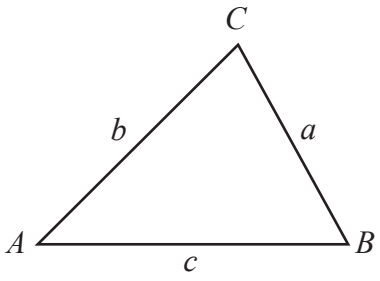
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Area of trapezium $= \frac{1}{2}(a+b)h$



Trigonometry



In any triangle ***ABC***

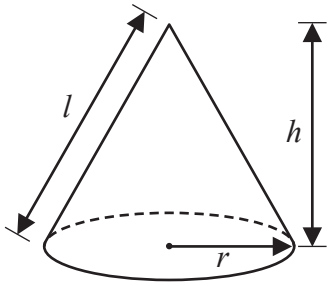
Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc\cos A$

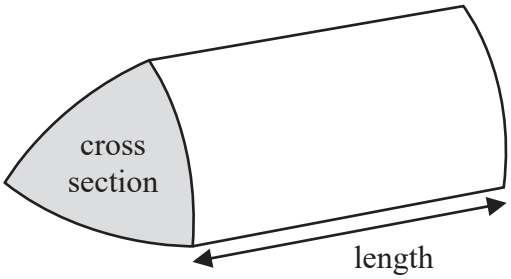
Area of triangle $= \frac{1}{2}ab\sin C$

Volume of cone $= \frac{1}{3}\pi r^2 h$

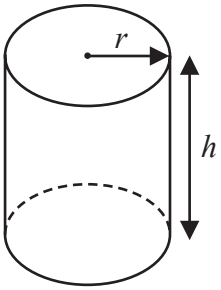
Curved surface area of cone $= \pi rl$



Volume of prism
= area of cross section × length

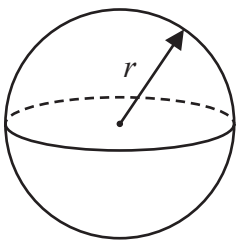


Volume of cylinder $= \pi r^2 h$
Curved surface area of cylinder $= 2\pi rh$



Volume of sphere $= \frac{4}{3}\pi r^3$

Surface area of sphere $= 4\pi r^2$



Answer ALL TWENTY THREE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Aiko, Max and Pau share 5400 yen in the ratios 5 : 3 : 4

How much money does each of them get?

Aiko ..... yen

Max ..... yen

Pau ..... yen

(Total for Question 1 is 3 marks)

2 $\text{pressure} = \dfrac{\text{force}}{\text{area}}$

Find the pressure exerted by a force of 810 newtons on an area of 120 cm^2
Give your answer in newtons/m^2

..... newtons/m^2

(Total for Question 2 is 3 marks)

3 (a) Find the Highest Common Factor (HCF) of 140 and 245

.....

(2)

A machine has a buzzer that sounds every 50 minutes.
The machine also has a bell that sounds every 80 minutes.

The buzzer and the bell sound together at 10 am.

(b) Find the time at which they next sound together.

.....

(3)

(Total for Question 3 is 5 marks)

4 (a) Factorise fully $6y^2 + 15y$

.....

(2)

(b) Expand and simplify $(m + 9)(m - 5)$

.....

(2)

(c) Make t the subject of $s = \frac{1}{2}at^2$

.....

(2)

(d) Solve $\frac{6x - 5}{2} = x + 1$

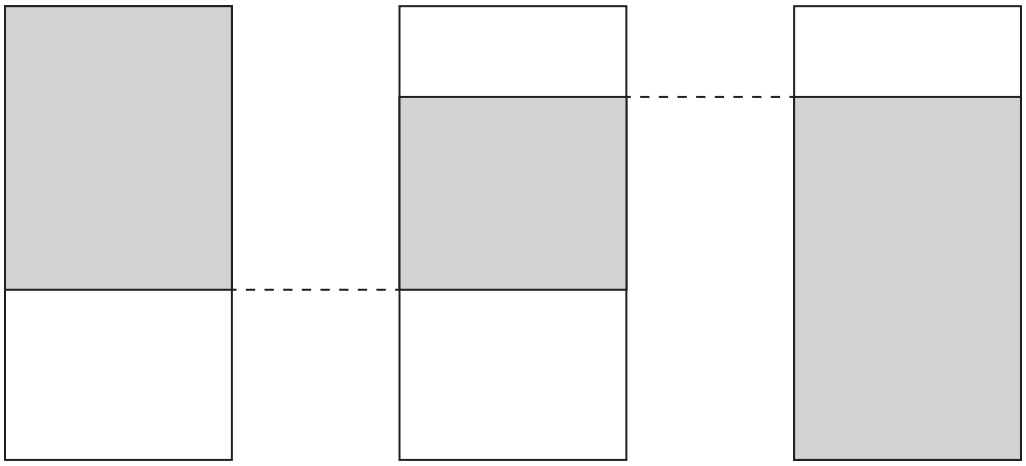
Show clear algebraic working.

$x =$ .....

(3)

(Total for Question 4 is 9 marks)

5 The diagram shows three identical rectangles.



Rectangle **A** Rectangle **B** Rectangle **C**

$\frac{5}{8}$ of rectangle **A** is shaded.

80% of rectangle **C** is shaded.

What fraction of rectangle **B** is shaded?

.....

(Total for Question 5 is 3 marks)

6 Lijuan's salary is 180 000 Hong Kong Dollars (HK$).
She gets a salary increase of 3%

(a) Work out Lijuan's salary after this increase.

HK$.....

(3)

In a sale, all normal prices are reduced by 15%
The sale price of a camera is HK$6630

(b) Work out the normal price of the camera.

HK$.....

(3)

(Total for Question 6 is 6 marks)

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7 Ian plays 7 games of cricket.
His mean score per game for these 7 games is 42 runs.

Ian is going to play one more game of cricket.
He wants his mean score per game for the 8 games to be exactly 50 runs.

How many runs must he score in his 8th game?

.....

(Total for Question 7 is 3 marks)

8 The table shows the population, correct to two significant figures, of each of six countries in April 2016.

Country	Population (April 2016)
Hungary	9.8×10^6
Mexico	1.3×10^8
Thailand	6.8×10^7
Nigeria	1.9×10^8
Singapore	5.7×10^6
Egypt	9.3×10^7

(a) Write 9.3×10^7 as an ordinary number.

.....

(1)

(b) Which of these countries had the least population?

.....

(1)

The population of China was 1.382×10^9 in April 2016.
The population of India was 1.327×10^9 in April 2016.

(c) Work out the difference between the population of China and the population of India in April 2016.
Give your answer in standard form.

.....

(2)

(Total for Question 8 is 4 marks)

9 The diagram shows an isosceles triangle.

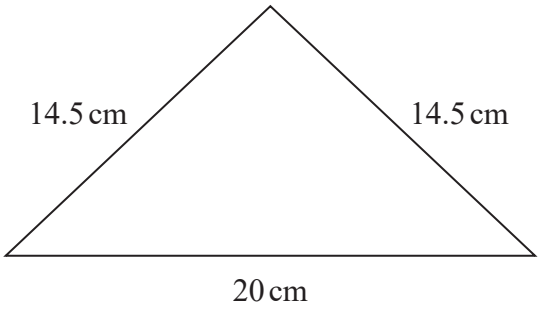

Diagram **NOT** accurately drawn

Work out the area of the triangle.

..... cm^2

(Total for Question 9 is 4 marks)

10 Solve the simultaneous equations

$$7x + 3y = 20$$
$$3x + 5y = 3$$

Show clear algebraic working.

$x =$ .....

$y =$ .....

(Total for Question 10 is 4 marks)

11 15 students took an English test.
The same 15 students took a Maths test.
Both tests were marked out of 30

For the English test results
the median was 21
the interquartile range was 14

The Maths test results are shown below.

18 18 19 20 24 25 25 26 28 28 29 29 29 30 30

Use the information above to compare the English test results with the Maths test results.
Write down **two** comparisons.

1 .....

.....

2 .....

.....

(Total for Question 11 is 4 marks)

12 *ABCDE* and *AFGHJ* are regular pentagons.

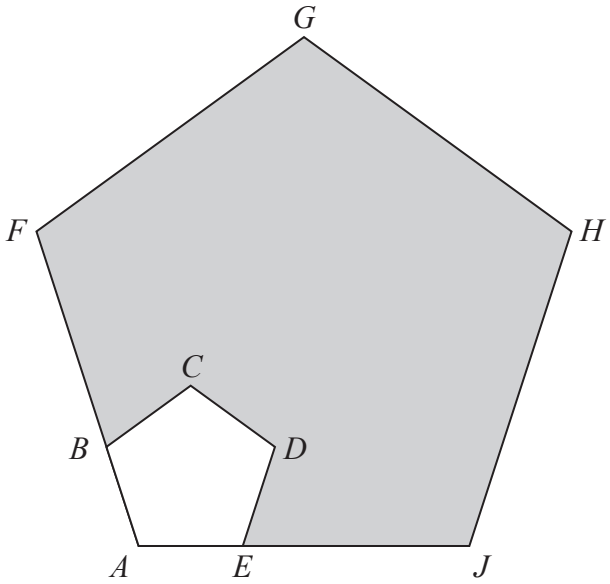

Diagram **NOT** accurately drawn

AEJ and *ABF* are straight lines.

$EJ = 4AE$
The area of *ABCDE* is $8\,cm^2$

Calculate the area of the shaded region.

..... cm^2

(Total for Question 12 is 3 marks)

13 The points (1, –1) and (4, 7) lie on the straight line **L**.

Find an equation for **L**.
Give your equation in the form $ax + by = c$ where a, b and c are integers.

.....

(Total for Question 13 is 4 marks)

14

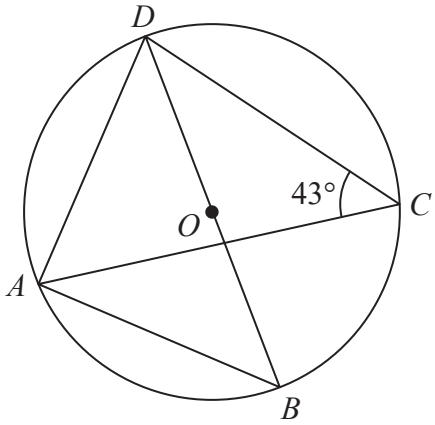

Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle, centre *O*.
DOB is a diameter of the circle.
Angle *ACD* = 43°

Work out the size of angle *ADB*.
Give a reason for each stage in your working.

.....°

(Total for Question 14 is 5 marks)

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15 P is inversely proportional to $\sqrt{q}$

$P = 10$ when $q = 0.0064$

(a) Find a formula for P in terms of q

.....

(3)

(b) Find the value of q when $P = 20$

.....

(2)

(Total for Question 15 is 5 marks)

16

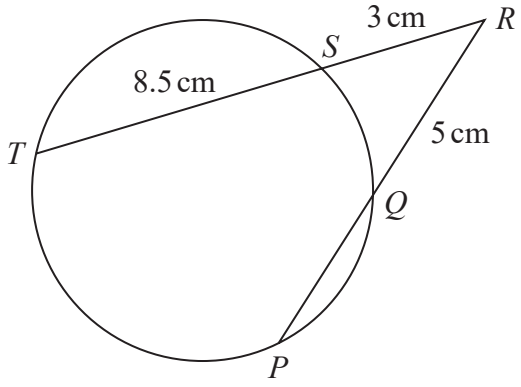


Diagram **NOT** accurately drawn

P, *Q*, *S* and *T* are points on a circle.
TSR and *PQR* are straight lines.

Work out the length of *PQ*.

..... cm

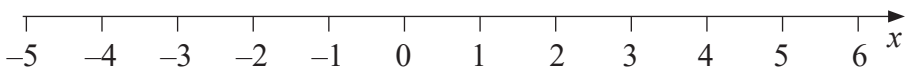
(Total for Question 16 is 3 marks)

17 (a) Solve $x^2 + 2x > 6x + 5$

.....

(3)

(b) Represent your solution set to part (a) on the number line below.



(1)

(Total for Question 17 is 4 marks)

18 A container is made from a hemisphere on top of a cylinder, as shown in the diagram.

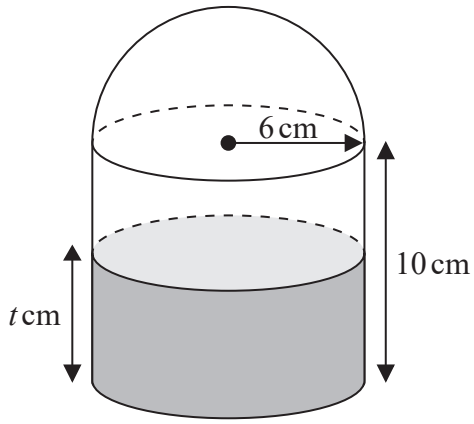


Diagram **NOT** accurately drawn

The hemisphere and the cylinder both have radius 6 cm.
The height of the cylinder is 10 cm.

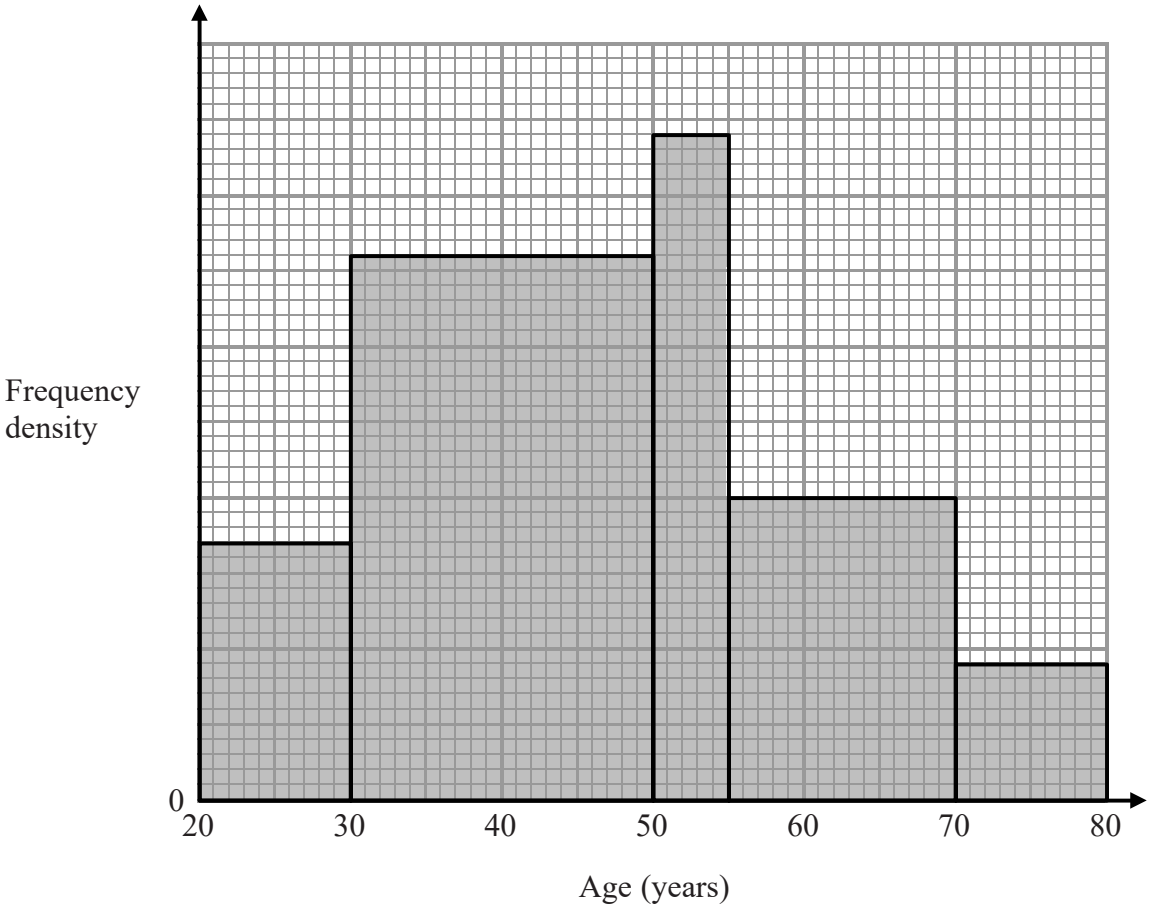
There is water to a depth of t cm in the cylinder.
The volume of water in the container is half the total volume of the container.

Work out the value of t.

.....

(Total for Question 18 is 4 marks)

19 150 people took part in a survey.
The histogram shows information about the ages of these people.



Work out how many of these 150 people are aged between 50 years and 55 years.

.....

(Total for Question 19 is 4 marks)

20 Prove algebraically that the difference between the squares of any two consecutive odd numbers is always a multiple of 8

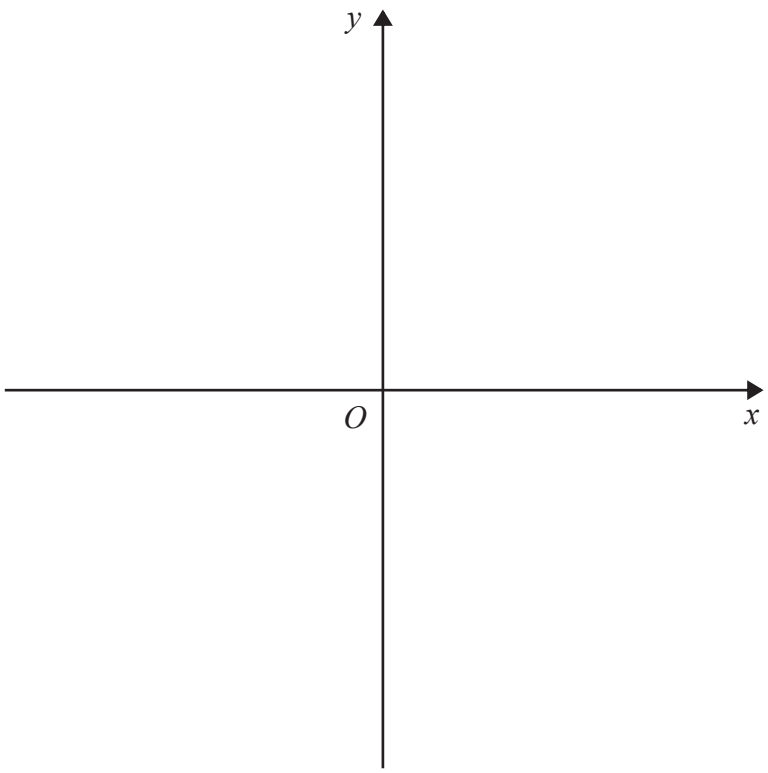
(Total for Question 20 is 4 marks)

21 The curve C has equation $y = x^2 - 6x + 4$

Using the axes below, sketch the curve C.
On your sketch show clearly

(i) the exact coordinates of any points of intersection of C with the coordinate axes,

(ii) the coordinates of the turning point.



(Total for Question 21 is 6 marks)

22 There are 7 red counters in a bag.
The rest of the counters in the bag are blue.

There are more blue counters than red counters in the bag.

Two counters are to be taken at random from the bag.
The probability that there will be one counter of each colour is $\frac{7}{15}$

Work out the total number of counters in the bag before any counters are taken from the bag.

.....

(Total for Question 22 is 5 marks)

23 A, B and C are three towns.

The bearing of B from A is 105°
The bearing of C from B is 230°

The distance of C from A is 180 km.
The distance of C from B is 95 km.

Calculate the distance of B from A.
Give your answer correct to 3 significant figures.

..... km

(Total for Question 23 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

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