Write your name here

Surname	Other names

Pearson Edexcel Certificate
Pearson Edexcel
International GCSE

Centre Number

Candidate Number

Mathematics A
Paper 4H

Higher Tier

Tuesday 20 May 2014 – Afternoon
Time: 2 hours

Paper Reference
4MA0/4H
KMA0/4H

Total Marks

You must have:
Ruler graduated in centimetres and millimetres, protractor, 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.
- 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.
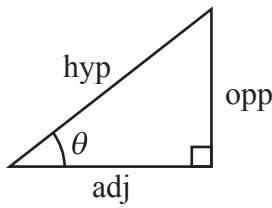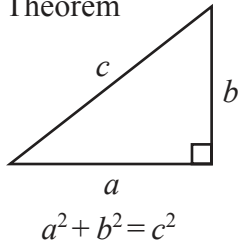
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P43029A

PEARSON

P43029A0120

International GCSE MATHEMATICS
FORMULAE SHEET – HIGHER TIER

Pythagoras'
Theorem

$a^2 + b^2 = c^2$

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

Curved surface area of cone = $\pi r l$

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

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

adj = hyp $\times \cos\theta$
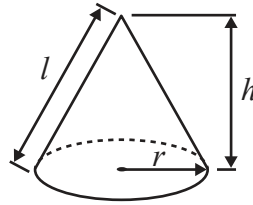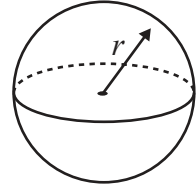opp = hyp $\times \sin\theta$
opp = adj $\times \tan\theta$

or $\sin\theta = \dfrac{\text{opp}}{\text{hyp}}$

$\cos\theta = \dfrac{\text{adj}}{\text{hyp}}$

$\tan\theta = \dfrac{\text{opp}}{\text{adj}}$

In any triangle ABC
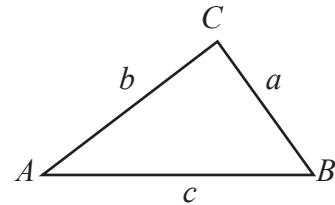
Sine rule: $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

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

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

Volume of prism = area of cross section $\times$ length

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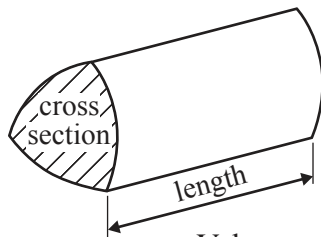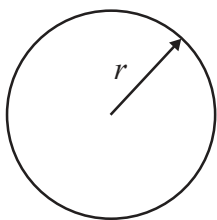
Circumference of circle = $2\pi r$

Area of circle = πr^2
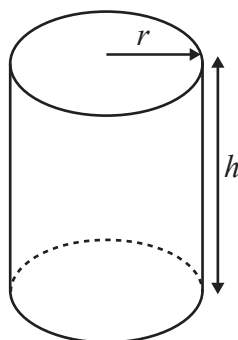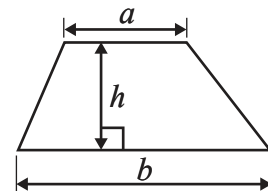
Volume of cylinder = $\pi r^2 h$

Curved surface area
of cylinder = $2\pi rh$

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

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

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Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1   In the 2012 Paralympic Games, the total number of gold and silver medals won by Brazil was 35
    The ratio of the number of gold medals that Brazil won to the number of silver medals that Brazil won was 3 : 2

    How many silver medals were won by Brazil?

    ....

    (Total for Question 1 is 2 marks)

2   Sarah has a biased 4-sided spinner.
    The spinner can land on 1, 2, 3 or 4

    The probability that the spinner will land on 1, 2 or 4 is given in the table.

Number	1	2	3	4
Probability	0.4	0.35		0.1

    (a) Work out the probability that the spinner will land on 3

    ....
    (2)

    Ryan is going to spin the spinner 80 times.

    (b) Work out an estimate for the number of times he should expect the spinner to land on 2

    ....
    (2)

    (Total for Question 2 is 4 marks)

3
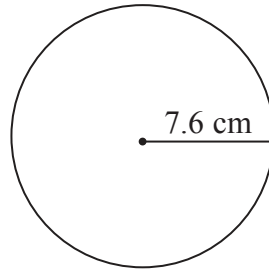
7.6 cm

Diagram **NOT** accurately drawn

(a) A circle has a radius of 7.6 cm.
     Work out the area of the circle.
     Give your answer correct to 3 significant figures.

.... cm²

(2)

The radius, 7.6 cm, is correct to 1 decimal place.

(b) (i) Write down the upper bound of the radius.

.... cm

(ii) Write down the lower bound of the radius.

.... cm

(2)

(Total for Question 3 is 4 marks)

Do NOT write in this space.

P 4 3 0 2 9 A 0 4 2 0

4 In a sale, all normal prices are reduced by 15%.

(a) The normal price of a washing machine is 270 dollars.
Work out the sale price of the washing machine.

.... dollars

(3)

(b) The normal price of a food processor is reduced by 13.50 dollars.
Work out the normal price of the food processor.

.... dollars

(3)

(Total for Question 4 is 6 marks)

5 Work out the size of each exterior angle of a regular polygon with 15 sides.

.....................°

(Total for Question 5 is 2 marks)

Do NOT write in this space.

6 Jalin lives in England.
He does a search on the internet and sees the same type of camera on sale in
France and in America.

In France, the camera costs 126 euros.
In America, the camera costs $165.24

Jalin finds out these exchange rates.

Exchange rates
1 euro = £0.89
£1 = $1.62

How much cheaper is the camera in America than in France?
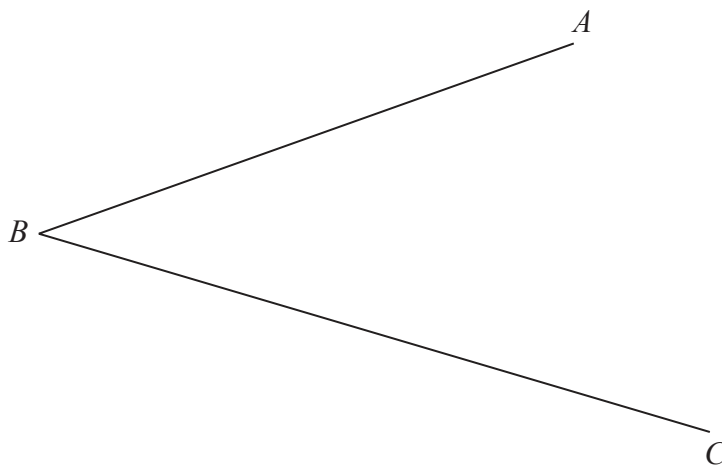Give your answer in pounds (£).

£ ....

(Total for Question 6 is 4 marks)

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7 Use ruler and compasses to construct the bisector of angle *ABC*.
You must show all your construction lines.

(Total for Question 7 is 2 marks)
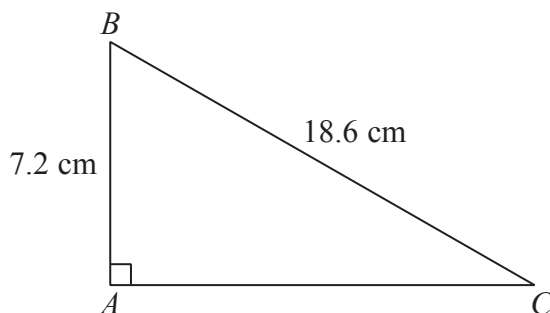
8

Diagram **NOT** accurately drawn

Calculate the length of *AC*.
Give your answer correct to 3 significant figures.

.... cm

(Total for Question 8 is 3 marks)

P 4 3 0 2 9 A 0 7 2 0

9 (a) Solve $7x - 6 = 2x + 17$
Show clear algebraic working.

$x =$ ....

(3)

(b) Expand and simplify fully $(x + 8)(x + 2)$

....

(2)

(Total for Question 9 is 5 marks)

10 The table shows information about the times, in minutes, taken by 50 people to get to work.

Time taken (t minutes)	Frequency
$0 < t \leqslant 10$	6
$10 < t \leqslant 20$	10
$20 < t \leqslant 30$	19
$30 < t \leqslant 40$	15

Work out an estimate for the mean time taken to get to work.

.... minutes

(Total for Question 10 is 4 marks)

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

x	−4	−3	−2	−1	0	1	2
y		0	−3	−4			5

(2)

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

(2)
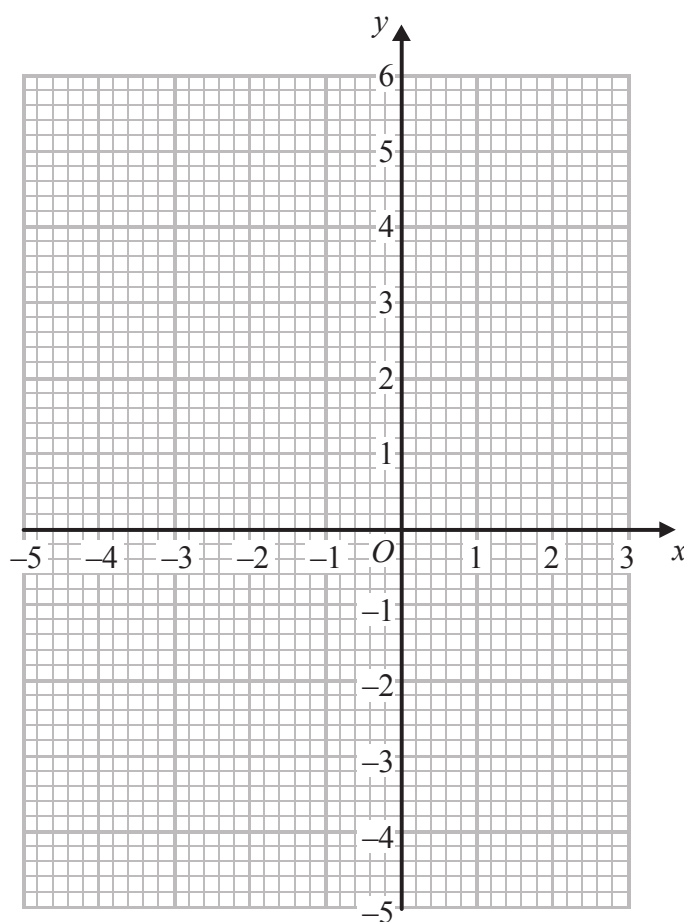
(Total for Question 11 is 4 marks)

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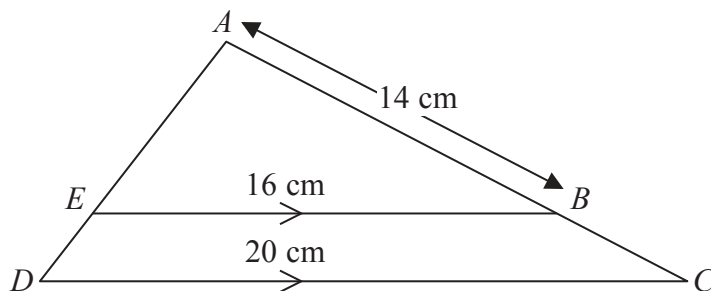**12** The diagram shows triangle *ADC*.

Diagram **NOT** accurately drawn

E is a point on *AD* and *B* is a point on *AC* so that *EB* is parallel to *DC*.
AB = 14 cm.
EB = 16 cm.
DC = 20 cm.

Calculate the length of *BC*.

.... cm

(Total for Question 12 is 3 marks)

Do not write in this space.

P 4 3 0 2 9 A 0 1 0 2 0

13 The line **L** passes through the points $(0, -2)$ and $(6, 1)$

(a) Find an equation of the line **L**.

....
(3)

(b) Find an equation of the line that is parallel to **L** and which passes through the point $(4, -2)$

....
(2)

(Total for Question 13 is 5 marks)

P43029A01120

14 (a) Write 1.2×10^{-5} as an ordinary number.

....

(1)

(b) Work out $\quad 7.9 \times 10^5 + 6 \times 10^4$

Give your answer in standard form.

....

(2)

(Total for Question 14 is 3 marks)

15 Solve the simultaneous equations

$$3x + 2y = 7$$

$$4x - 3y = 15$$

Show clear algebraic working.

$x =$ ....

$y =$ ....
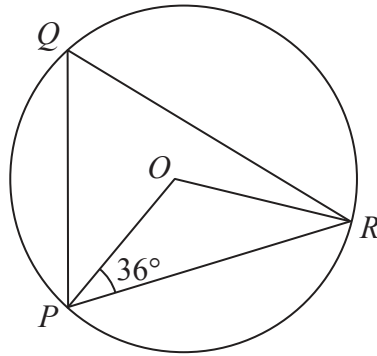
(Total for Question 15 is 4 marks)

16

Diagram **NOT** accurately drawn

(a) *P*, *Q* and *R* are points on a circle, centre *O*.
Angle *OPR* = 36°

Work out the size of angle *PQR*.

.... °

(2)
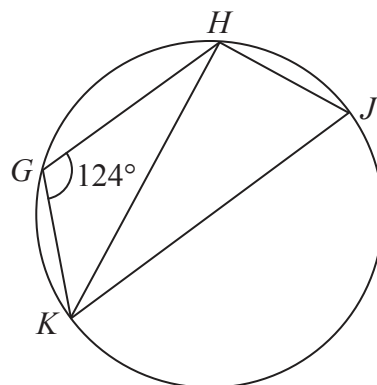

Diagram **NOT** accurately drawn

(b) *G*, *H*, *J* and *K* are points on a circle.
KJ is a diameter of the circle.
Angle *KGH* = 124°

Work out the size of angle *HKJ*.

.... °

(3)

(Total for Question 16 is 5 marks)

17 F is inversely proportional to the square of x.
$F = 0.8$ when $x = 5$

(a) Find a formula for F in terms of x.

....

(3)

(b) Work out the positive value of x when $F = 320$

$x = $ ....

(2)

(Total for Question 17 is 5 marks)

Do NOT write in this space.

P 4 3 0 2 9 A 0 1 4 2 0

18 (a) Solve $5x^2 - 6x - 2 = 0$
Give your solutions correct to 3 significant figures.
Show your working clearly.

....
(3)

(b) Solve the inequality $\dfrac{m^2 + 3}{4} > 21$

Show clear algebraic working.

....
(4)

(Total for Question 18 is 7 marks)

P 4 3 0 2 9 A 0 1 5 2 0

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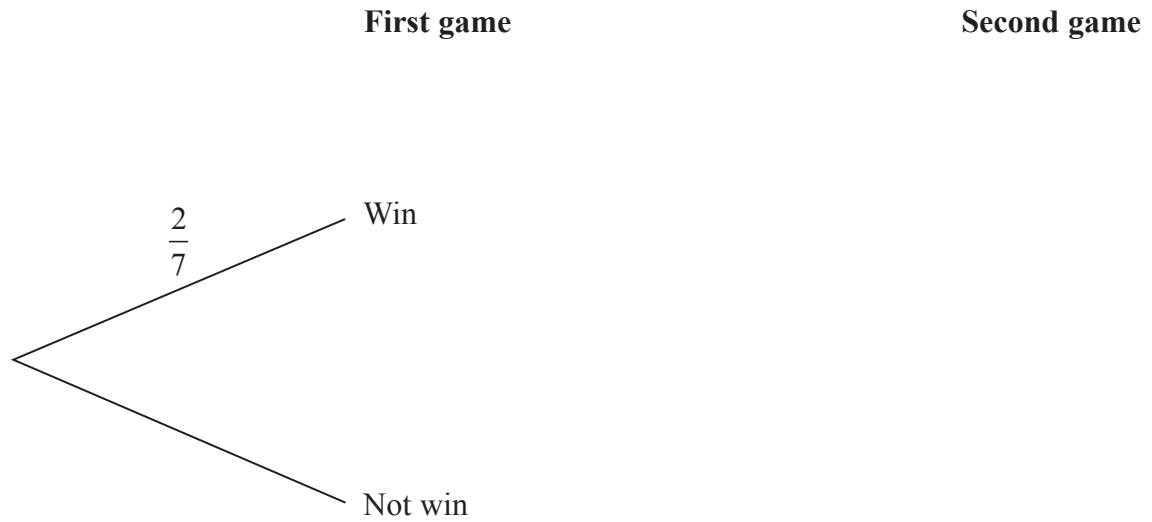**19** Amberish plays two games of tennis.

Each time he plays a game of tennis, the probability that he will win is $\frac{2}{7}$

(a) Complete the probability tree diagram.

<center>First game   Second game</center>

$\frac{2}{7}$ Win

Not win

(3)

(b) Calculate the probability that Amberish wins at least one of the two games of tennis.

....

(3)

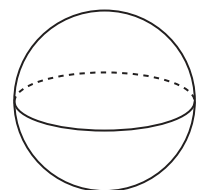**(Total for Question 19 is 6 marks)**

20 Use algebra to show that the recurring decimal $0.3\dot{8} = \dfrac{7}{18}$

(Total for Question 20 is 2 marks)

21 A sphere has a surface area of 81π cm².

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

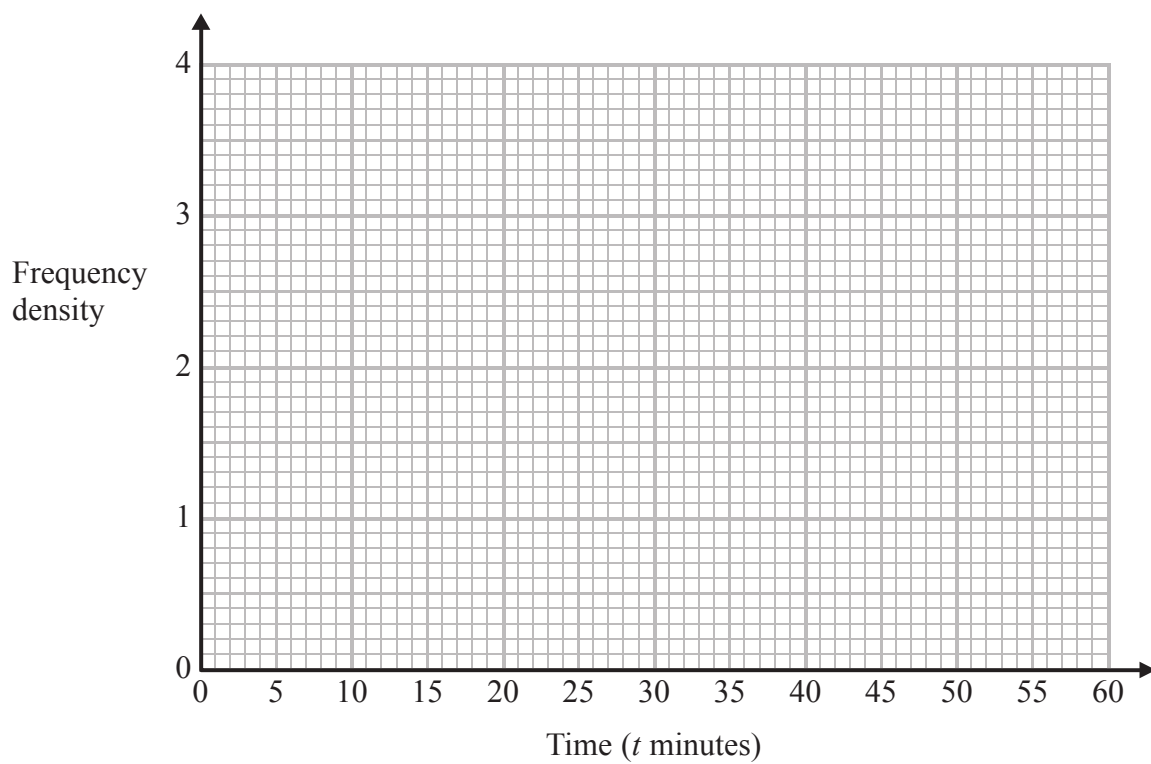.......................... cm³

(Total for Question 21 is 4 marks)

22 The table shows information about the times, in minutes, that 100 shoppers spent in a supermarket.

Time (t minutes)	Frequency
$10 \leqslant t < 15$	6
$15 \leqslant t < 20$	10
$20 \leqslant t < 30$	20
$30 \leqslant t < 40$	36
$40 \leqslant t < 60$	28

Draw a histogram to show this information.

(Total for Question 22 is 3 marks)

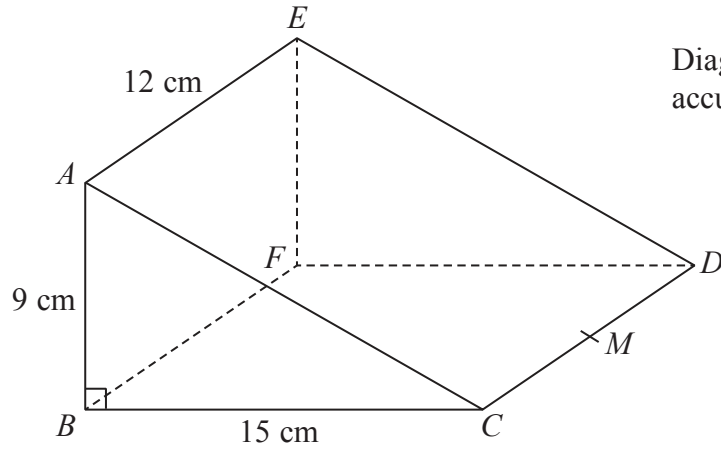**Do NOT write in this space.**

P 4 3 0 2 9 A 0 1 8 2 0

23

Diagram **NOT** accurately drawn

ABCDEF is a triangular prism.
AB = 9 cm, *BC* = 15 cm and *AE* = 12 cm.
Angle *ABC* = 90°
M is the midpoint of *CD*.

Calculate the size of the angle between *AM* and the plane *BCDF*.
Give your answer correct to 1 decimal place.

.........................°

(Total for Question 23 is 5 marks)

24 Given that $\left(2^{\frac{1}{2}}\right)^n = \dfrac{2^x}{8^y}$

express n in terms of x and y.

....

(Total for Question 24 is 3 marks)

25 Simplify fully $\dfrac{5}{2x-6} - \dfrac{x+2}{x^2-4x+3}$

....

(Total for Question 25 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

P 4 3 0 2 9 A 0 2 0 2 0