Write your name here

Surname	Other names

Edexcel Certificate
Edexcel International GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics A

Paper 2F

Foundation Tier

Wednesday 16 May 2012 – Morning
Time: 2 hours

Paper Reference
4MA0/2F
KMA0/2F

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 ▶

P40659A

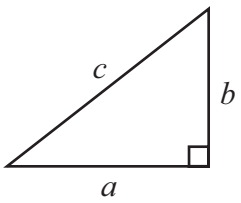
6/6/6/6/6/3

P 4 0 6 5 9 A 0 1 2 0

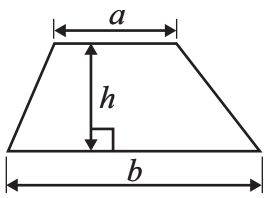
PEARSON

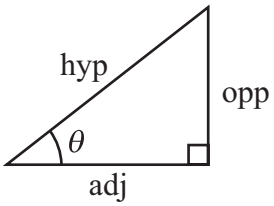
FORMULAE SHEET – FOUNDATION TIER

Pythagoras' Theorem
$a^2 + b^2 = c^2$



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





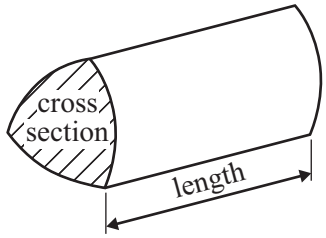
adj = hyp × cos θ
opp = hyp × sin θ
opp = adj × tan θ

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

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

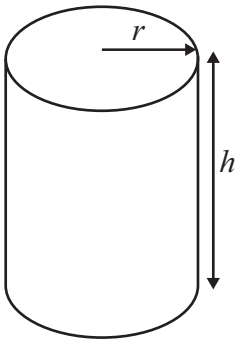
$\tan\theta = \frac{\text{opp}}{\text{adj}}$

Volume of prism = area of cross section × length



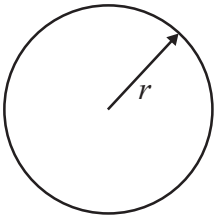
Circumference of circle = $2\pi r$

Area of circle = πr^2



Volume of cylinder = $\pi r^2 h$

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

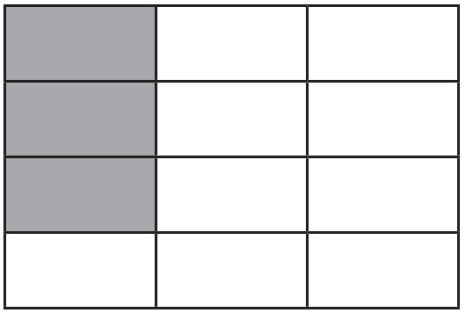


Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a)



(i) What fraction of this shape is shaded?
Give your fraction in its simplest form.

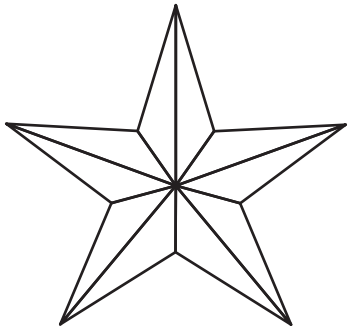
.....

(ii) Write your answer to part (i) as a decimal.

.....

(3)

(b)



(i) Shade 20% of this shape.

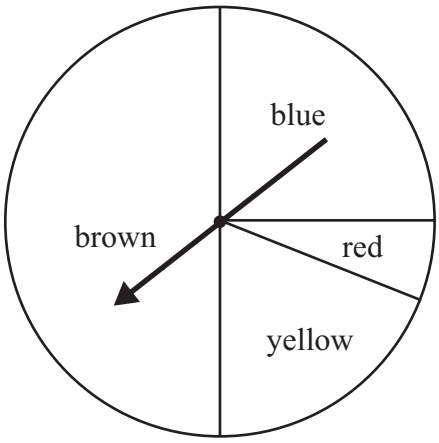
(ii) What percentage of the shape is unshaded?

..... %

(2)

(Total for Question 1 is 5 marks)

2 The diagram shows a pointer which spins about the centre of a circle.



When the pointer is spun, it stops on one of the colours.
The colours are brown, yellow, red and blue.
Michael spins the pointer once.

(a)

Certain	Likely	Unlikely	Impossible

Write down a word from the box that best describes each outcome.

(i) The pointer stops on green.

.....

(ii) The pointer stops on red.

.....

(iii) The pointer stops on a colour beginning with the letter b.

.....

(3)

(b) On the probability scale, mark with a cross (×), the probability that

(i) the pointer stops on brown.
Label this cross B.

(ii) the pointer stops on yellow.
Label this cross Y.

(2)

(Total for Question 2 is 5 marks)

3

2	6	9	16	17	18	20

From the numbers in the box, write down

(a) both the odd numbers,

.....

(2)

(b) both the square numbers,

.....

(2)

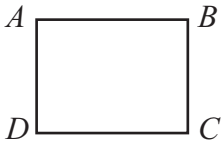
(c) both the prime numbers.

.....

(2)

(Total for Question 3 is 6 marks)

4 Complete the following sentences by writing a sensible metric unit in the space provided.



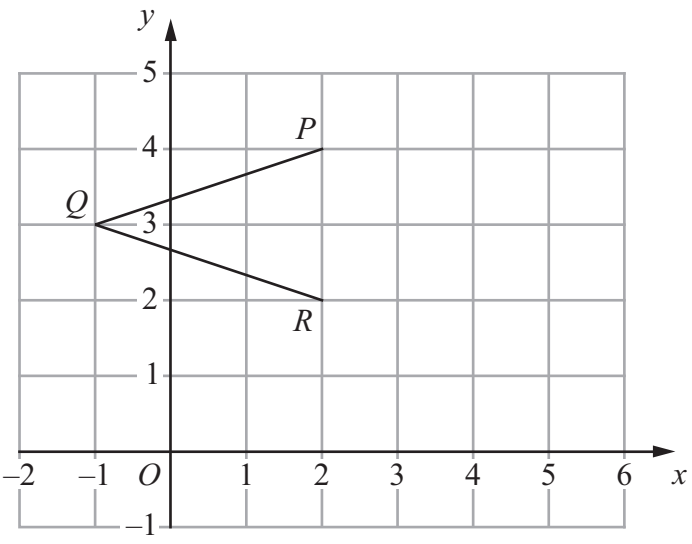
(i) The area of rectangle *ABCD* is 3 .....

(ii) The weight of a newborn baby is 3.4 .....

(iii) The height of the London Eye is 135 .....

(Total for Question 4 is 3 marks)

5 The diagram shows three points P, Q and R on a 1 cm grid.



(a) Write down the coordinates of P.

(..... , ...)

(1)

(b) Write down the coordinates of Q.

(..... , ...)

(1)

(c) On the grid, mark the point S so that $PQRS$ is a rhombus.

(1)

(d) Work out the area of the rhombus $PQRS$.

..... cm^2

(2)

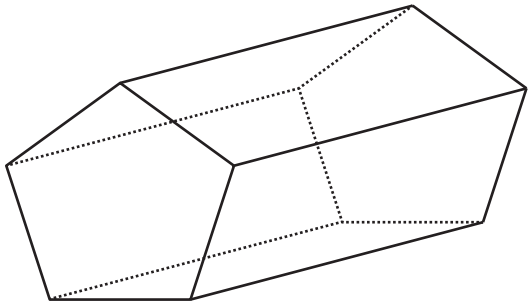
(e) Write down the equation of the line PR.

.....

(1)

(Total for Question 5 is 6 marks)

6 (a) The diagram shows a solid.



(i) What is the mathematical name for this solid?

.....

(ii) How many faces does this solid have?

.....

(iii) How many edges does this solid have?

.....

(3)

(b) The solid has a volume of 2000 cm^3

Convert 2000 cm^3 to litres.

..... litres

(1)

(Total for Question 6 is 4 marks)

7 Write down all the factors of 20

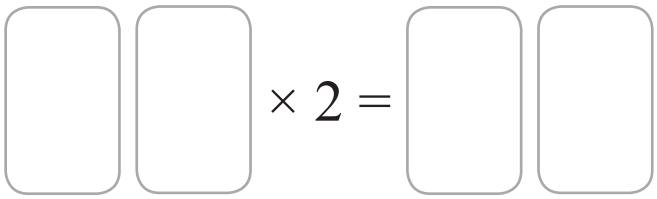
.....

(Total for Question 7 is 2 marks)

8 (a) Here is a list of four numbers.

1 3 4 7

Choosing numbers from the list, write a different number in each box to make the calculation correct.



(1)

(b) Explain why the calculation can never be correct if the list is

1 3 5 7

.....

.....

(1)

(Total for Question 8 is 2 marks)

9 A cinema ticket costs $7.50
A bag of popcorn costs $1.35
A can of lemonade costs $1.20

Nisha buys three cinema tickets, two bags of popcorn and one can of lemonade.

Work out how much change she should receive from $30

$ .....

(Total for Question 9 is 3 marks)

10 *AC*, *BD* and *EDC* are straight lines.

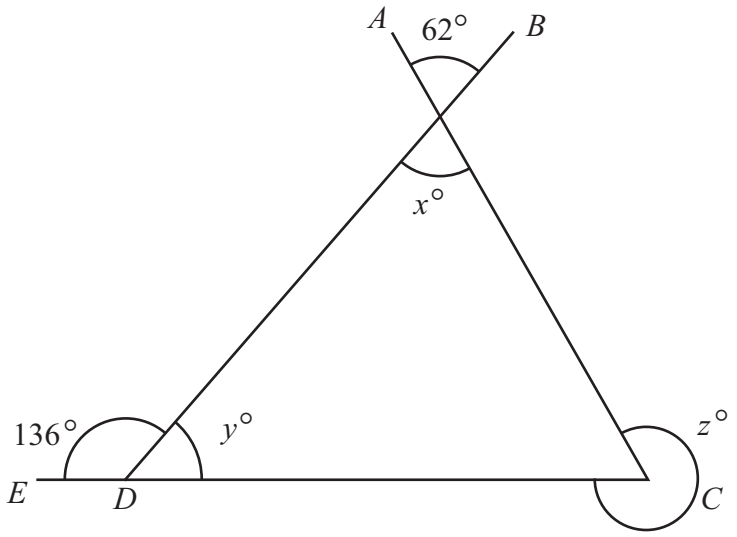


Diagram **NOT** accurately drawn

(a) (i) Find the value of x.

$x =$ .....

(ii) Give a reason for your answer.

.....

.....

(2)

(b) Find the value of y.

$y =$ .....

(1)

(c) Find the value of z.

$z =$ .....

(2)

(Total for Question 10 is 5 marks)

11 (a) (i) Work out 2.91^2
Write down all the figures on your calculator display.

.....

(ii) Write your answer to part (a)(i) correct to 2 decimal places.

.....

(2)

(b) (i) Find the cube root of 30
Write down all the figures on your calculator display.

.....

(ii) Write your answer to part (b)(i) correct to 2 significant figures.

.....

(2)

(Total for Question 11 is 4 marks)

12 *ABC* is a triangle.
AC = 4 cm and *BC* = 10 cm.

Use a ruler and compasses to **construct** the triangle *ABC* with *AB* as its base.
You must show all construction lines.

A ——————————————— *B*

(Total for Question 12 is 2 marks)

13 (a) Solve $3y = 24$

$y =$ .....

(1)

(b) Simplify

(i) $r \times 6 \times t$

.....

(ii) $3m + 7m - 2m$

.....

(iii) $a^3 + a^3$

.....

(3)

(c) $W = 4x + 5y$

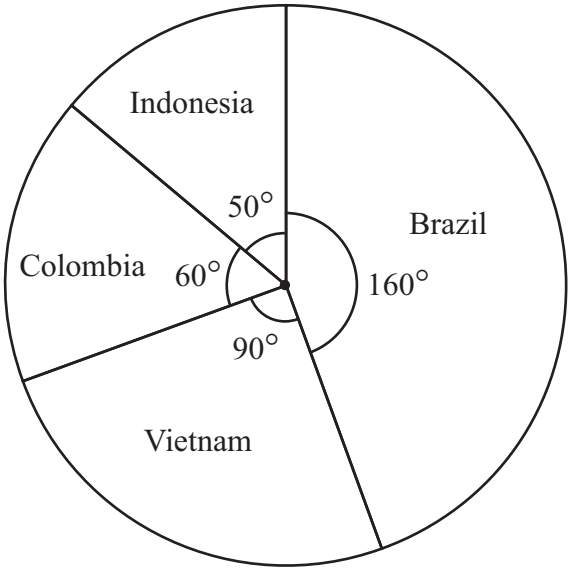
Work out the value of W when $x = -2$ and $y = 3$

$W =$ .....

(2)

(Total for Question 13 is 6 marks)

14 The pie chart shows information about the amount of coffee produced in four countries, in one year.



(a) (i) Write down the ratio of the amount of coffee produced in Colombia to the amount of coffee produced in Vietnam.
Give your answer in its simplest form.

.....

(ii) In this year, Indonesia produced 0.7 million tonnes of coffee.
Work out how much coffee Brazil produced.

..... million tonnes

(5)

(b) A second pie chart is to be drawn for tea production.
4 million tonnes of tea was produced in one year.
China produced 1.2 million tonnes of tea in this year.

Calculate the size of the angle for China in this second pie chart.

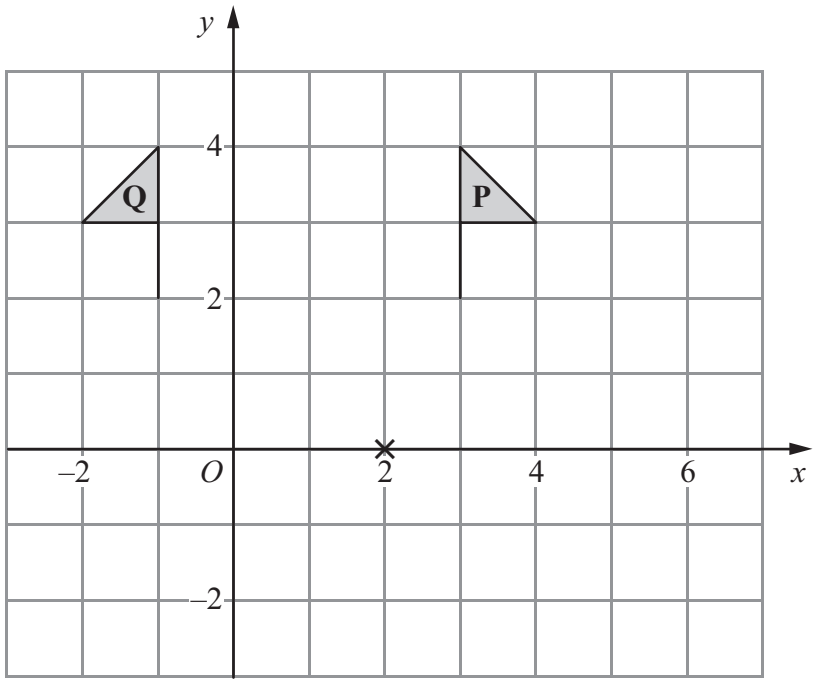
°

.....

(2)

(Total for Question 14 is 7 marks)

15



(a) Describe fully the single transformation that maps shape **P** onto shape **Q**.

.....

(2)

(b) On the grid, rotate shape **P** 90° clockwise about the point (2, 0).
Label the new shape **R**.

(2)

(Total for Question 15 is 4 marks)

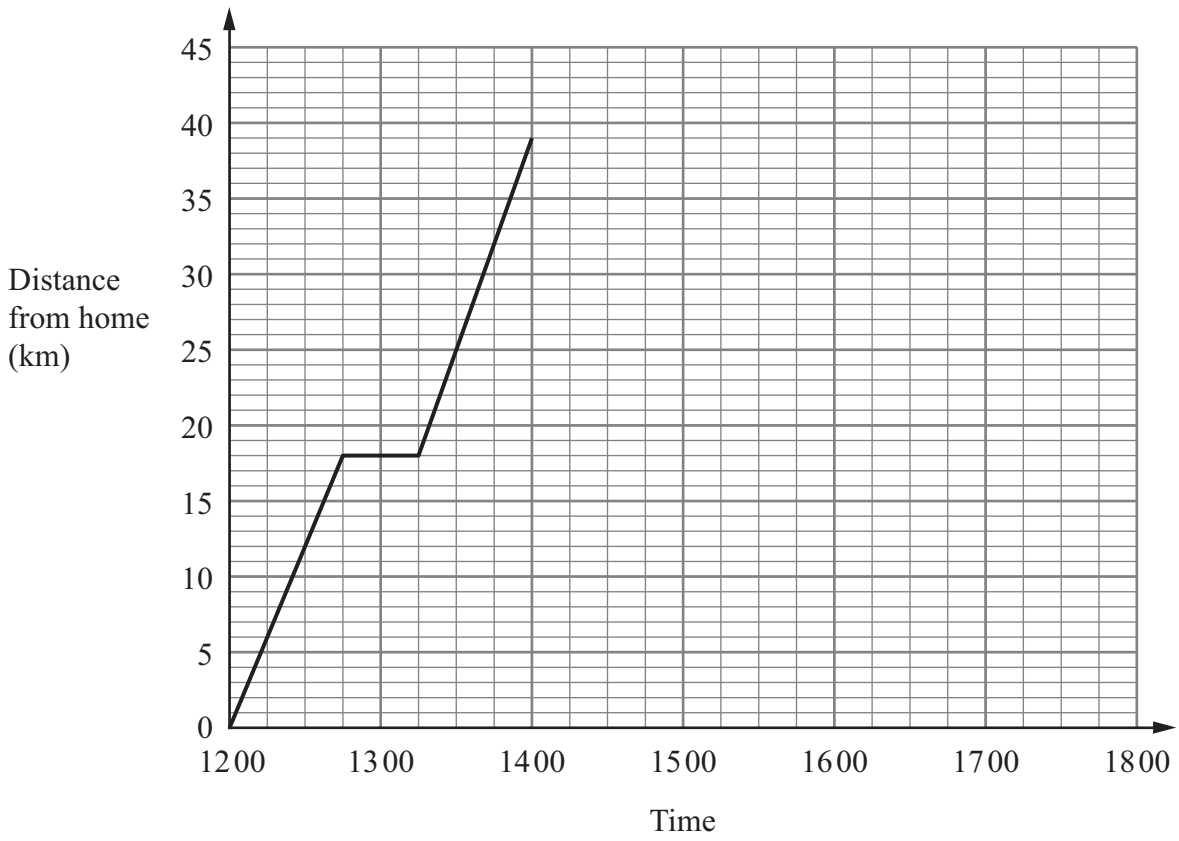
16 A group of students take a test.
The group consists of 12 boys and 8 girls.
The mean mark for the boys is 18
The mean mark for the girls is 16.5

Calculate the mean mark for the whole group.

.....

(Total for Question 16 is 4 marks)

17 Bhavik left his home at 12 00 to cycle to Sam's house.
On the way Bhavik stopped for a rest, and then continued his journey.
The distance-time graph shows his journey.



(a) (i) For how many minutes did Bhavik stop for a rest?

..... minutes

(ii) After his rest, how many more kilometres did Bhavik cycle to Sam's house?

..... km

(2)

(b) Bhavik stayed at Sam's house for 2 hours.
He then cycled back to his home.
He arrived home at 17 15.

Show all this information on the graph.

(2)

(c) Write down the times at which Bhavik was 24 kilometres from his home.

.....

.....

(2)

(d) Work out the average speed, in kilometres per hour, of Bhavik's journey from Sam's house back to his home.

Give your answer correct to 1 decimal place.

..... km/h

(3)

(Total for Question 17 is 9 marks)

18 Work out the value of $\dfrac{6.6 \times 1.2}{4.4 - 2.75}$

.....

(Total for Question 18 is 2 marks)

19 Expand and simplify

(i) $5(2x + 1) - 3(3x - 1)$

.....

(ii) $(y + 5)(y - 7)$

.....

(Total for Question 19 is 4 marks)

20 (a) Show that $\frac{4}{5} \div \frac{7}{15} = 1\frac{5}{7}$

(2)

(b) Show that $5\frac{1}{4} - 1\frac{2}{3} = 3\frac{7}{12}$

(3)

(Total for Question 20 is 5 marks)

21

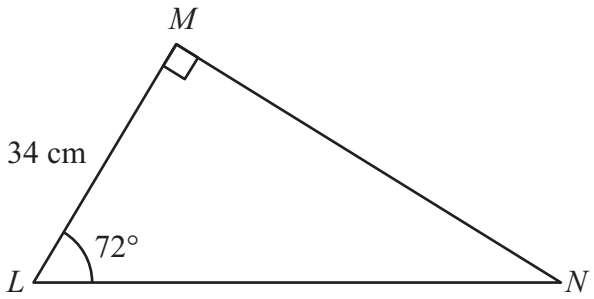


Diagram **NOT** accurately drawn

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

..... cm

(Total for Question 21 is 3 marks)

22 Showing clear algebraic working, solve the simultaneous equations

$$3a + 2b = 1$$
$$a + 2b = 5$$

a = ...

b = ...

(Total for Question 22 is 3 marks)

23 Express 300 as a product of its prime factors.

.....

(Total for Question 23 is 3 marks)

24 The table shows information about the snowfall in Ottawa in January one year.

Snowfall (s cm)	Number of days
$0 \leqslant s < 2$	19
$2 \leqslant s < 4$	8
$4 \leqslant s < 6$	3
$6 \leqslant s < 8$	0
$8 \leqslant s < 10$	1

Work out an estimate for the total snowfall in January.

..... cm

(Total for Question 24 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

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