Write your name here

Surname	Other names

Pearson Edexcel International GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics A

Paper 2F

Foundation Tier

Thursday 7 June 2018 – Morning
Time: 2 hours

Paper Reference
4MA0/2F

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 ▶

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1/1/

P 5 3 3 4 6 A 0 1 2 8

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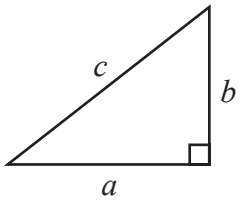
International GCSE MATHEMATICS

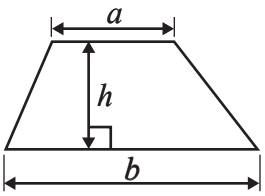
FORMULAE SHEET – FOUNDATION TIER

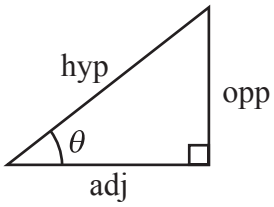
Pythagoras' Theorem

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



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





adj = hyp × cos θ

opp = hyp × sin θ

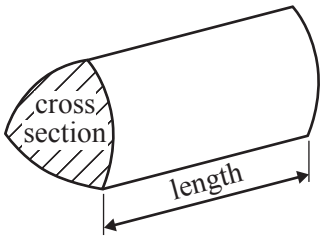
opp = adj × tan θ

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

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

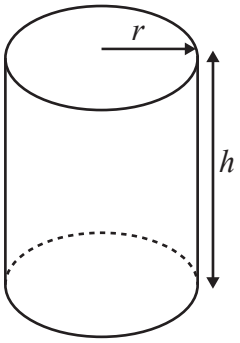
$\tan\theta = \frac{\text{opp}}{\text{adj}}$

Volume of prism = area of cross section × length



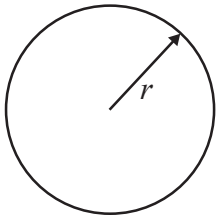
Circumference of circle = $2\pi r$

Area of circle = πr^2



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

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



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Answer ALL TWENTY THREE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Here is some information about some of the longest road tunnels in the world.

Country	Name of tunnel	Length (metres)
Austria	Arlberg	15516
Norway	Laerdal	24510
Turkey	Mount Ovit	14700
India	Rohtang	8820
China	Yunshan	11377

(a) Write down the name of the tunnel with the greatest length.

.....

(1)

(b) Write down the value of the 3 in the number 11377

.....

(1)

The Arlberg Tunnel is longer than the Rohtang Tunnel.

(c) How much longer?

..... metres

(2)

(d) Change 14700 metres to kilometres.

..... kilometres

(1)

(Total for Question 1 is 5 marks)

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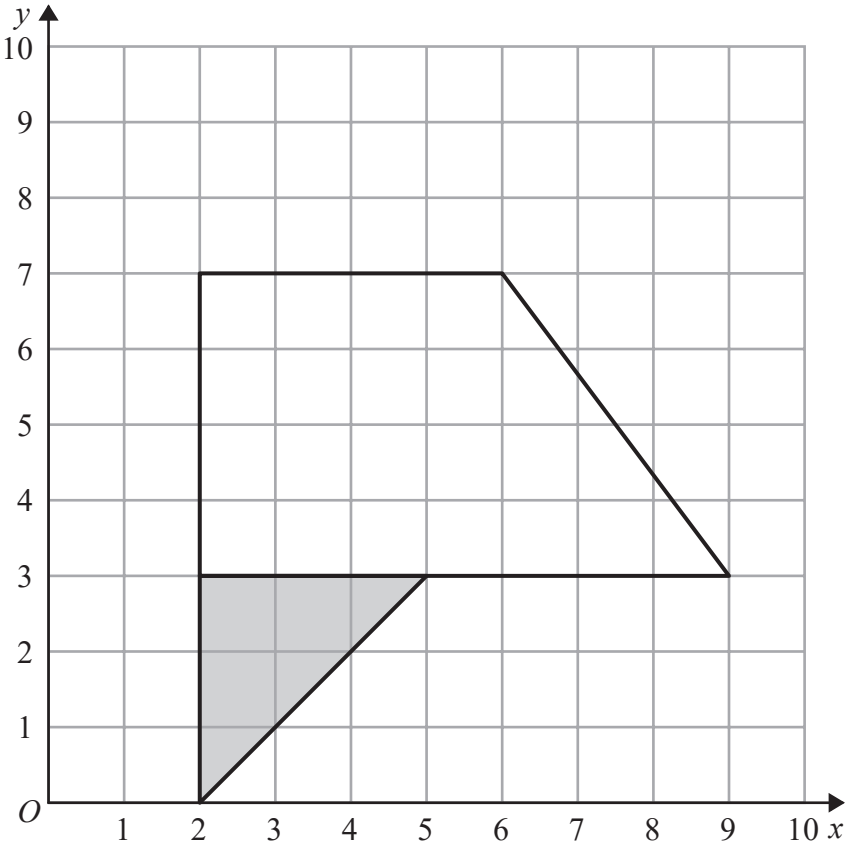
2 Here are a quadrilateral and a triangle drawn on a grid of centimetre squares.



(a) On the quadrilateral, mark with arrows (>>) a pair of parallel lines.

(1)

(b) On the quadrilateral, mark an obtuse angle.
Label the obtuse angle *A*.

(1)

(c) Find the area of the shaded triangle.

..... cm^2

(1)

The coordinates of the point *H* are (5, 9)

(d) On the grid, mark with a cross (×) the position of *H*.
Label this point *H*.

(1)

(Total for Question 2 is 4 marks)

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3 The pictogram gives information about the number of oranges Anika sold from her stall on each of four days last week.

Monday	⊕ ⊕ ⊕
Tuesday	⊕ ⊕ ◔
Wednesday	◔
Thursday	⊕ ⊕ ◔
Friday	

⊕ represents 8 oranges

(a) Write down the number of oranges Anika sold on Monday.

.....

(1)

Anika sold 16 oranges on Friday last week.

(b) Show this on the pictogram.

(1)

(c) Work out the total number of oranges Anika sold on the five days.

.....

(2)

(Total for Question 3 is 4 marks)

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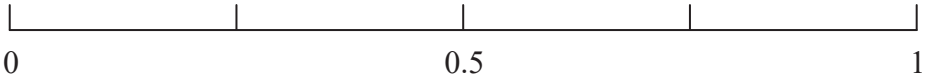
4 There are exactly 2 counters in a bag.
One counter is white and one counter is red.

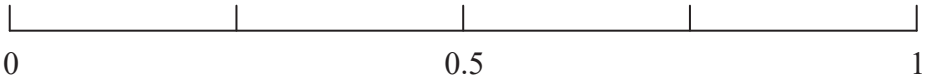
Jim takes at random a counter from the bag.

(a) On the probability scale, mark with a cross (×) the probability that the counter will be white.



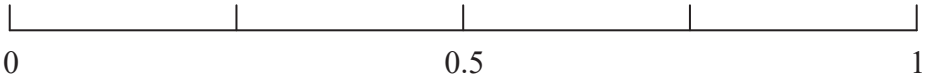
(1)

(b) On the probability scale, mark with a cross (×) the probability that the counter will be yellow.



(1)

(c) On the probability scale, mark with a cross (×) the probability that the counter will be either white or red.



(1)

(Total for Question 4 is 3 marks)

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5 (a) Write 3 20 pm using the 24-hour clock.

.....

(1)

A television programme starts at 09 30
The programme lasts 40 minutes.

(b) At what time does the programme end?

.....

(1)

Ali arrived at an airport at 06 35
His plane took off at 09 15

(c) How long after Ali arrived at the airport did his plane take off?
Give your answer in hours and minutes.

..... hours ..... minutes

(2)

(Total for Question 5 is 4 marks)

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6 Here is a solid prism made from centimetre cubes.

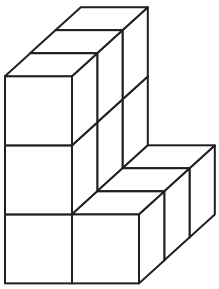


Diagram **NOT** accurately drawn

(a) Find the volume of the prism.

..... cm^3

(1)

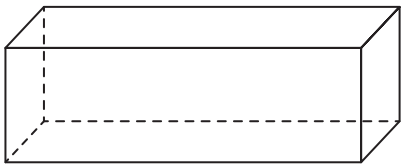
Eyo adds some centimetre cubes to the solid prism to make a solid cube.

(b) Work out the smallest number of centimetre cubes he adds.

.....

(2)

Here is a different solid prism.



(c) Write down the mathematical name of this prism.

.....

(1)

(Total for Question 6 is 4 marks)

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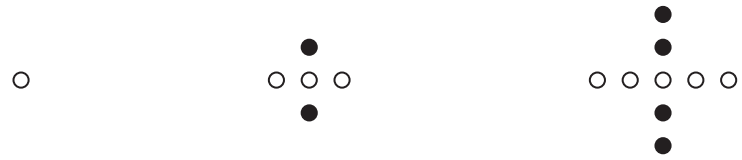
7 Here is a sequence of patterns.



Pattern number 1 | Pattern number 2 | Pattern number 3

Pattern number 1 is made from 1 white dot.
All other patterns are made from black dots and white dots.

(a) In the space below, draw Pattern number 4

(1)

(b) Complete the table for the sequence of patterns.

Pattern number	1	2	3	4	5
Total number of dots	1	5	9		

(1)

One pattern in the sequence is made with exactly 20 black dots.

(c) Work out the **total** number of dots in this pattern.

.....

(1)

(Total for Question 7 is 3 marks)

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8

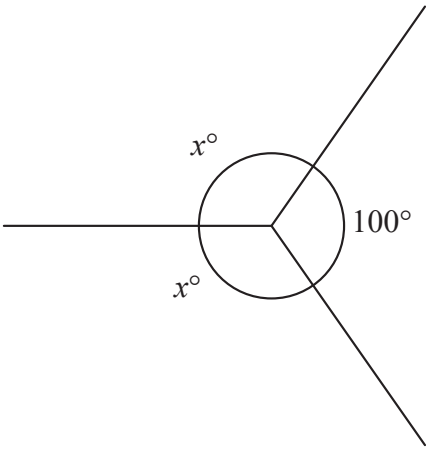

Diagram **NOT** accurately drawn

(a) Work out the value of x.

.....

(2)

Here is a sketch of triangle ABC.

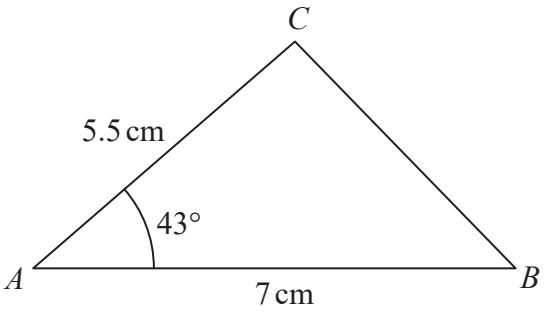

Diagram **NOT** accurately drawn

(b) On the page opposite, make an accurate drawing of triangle ABC.
The line AB has already been drawn for you.

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(2)

(c) Measure the length of side *BC*.

..... cm

(1)

(Total for Question 8 is 5 marks)

9 (a) Work out 3^4

.....

(1)

(b) Work out $\sqrt{4 \times 64}$

.....

(1)

(c) Work out $\frac{1}{4}$ of 0.38

.....

(2)

(Total for Question 9 is 4 marks)

10 (a) Simplify $2x + x$

.....

(1)

(b) Simplify $4k \times 2y$

.....

(1)

$p = 4f - 3g$

$p = 22, \ g = 2$

(c) Work out the value of f.

$f =$ .....

(3)

(Total for Question 10 is 5 marks)

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11

12	15	16	17	18	20	21	25

(a) From the numbers in the box, write down

(i) the prime number

.....

(ii) the number that is both a square number and a factor of 100

.....

(iii) the number that is a multiple of both 5 and 2

.....

(3)

One number in the box is $1\frac{1}{2}$ times another number in the box.

(b) Write down the two numbers.

..... and .....

(1)

(Total for Question 11 is 4 marks)

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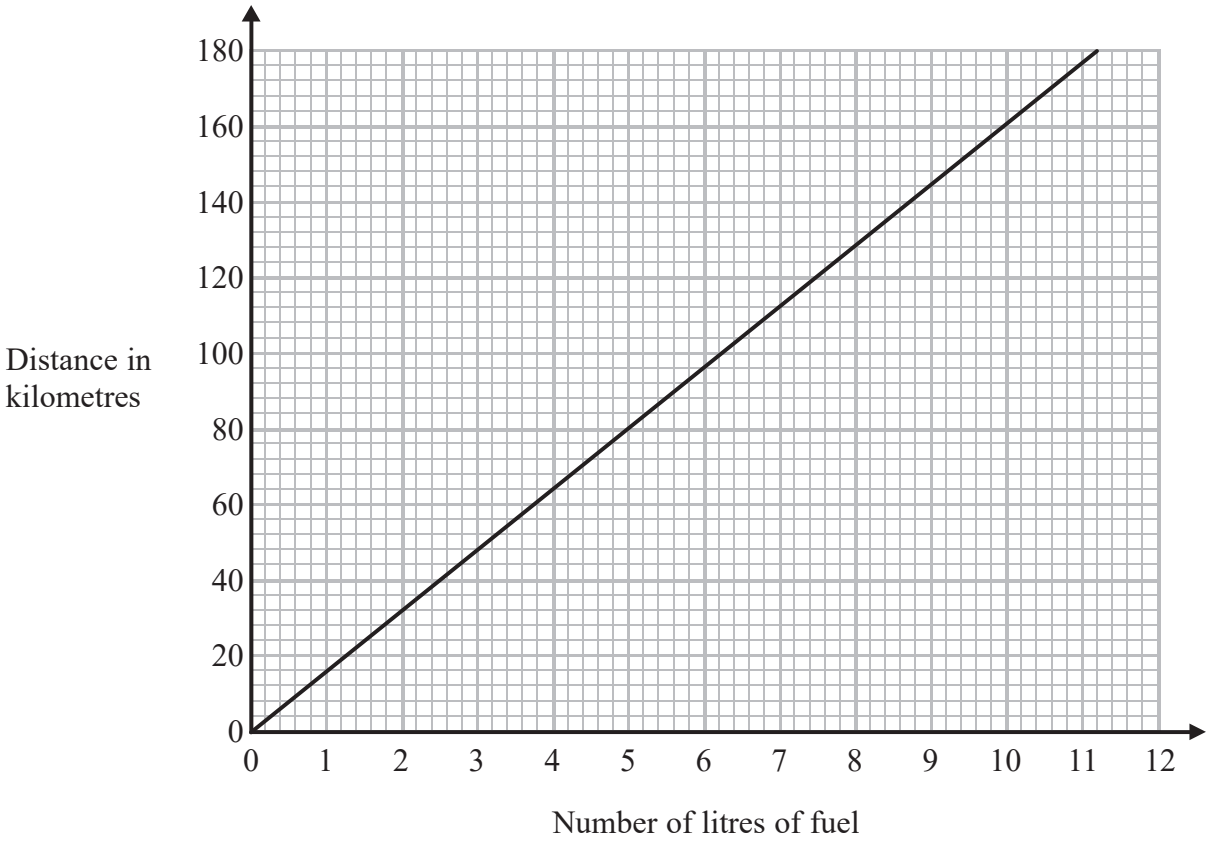
12 The graph gives the number of litres of fuel a car uses and the distance, in kilometres, the car travels using that amount of fuel.



The car uses 10 litres of fuel.

(a) Find the distance the car travels.

..... km

(1)

The car travels a distance of 110 km.

(b) Find the number of litres of fuel the car uses.

..... litres

(1)

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Agnetha drives the car.
The car uses 25 litres of fuel.

(c) Work out the distance she drives.

..... km

(2)

(Total for Question 12 is 4 marks)

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13 Mr and Mrs Chen and their 2 children go on a train journey in Malaysia.

Mr Chen buys 2 adult tickets and 2 child tickets.
The total cost of the tickets is 216 ringgits.

The cost of a child ticket is half the cost of an adult ticket.

Work out the cost of an adult ticket.

..... ringgits

(Total for Question 13 is 3 marks)

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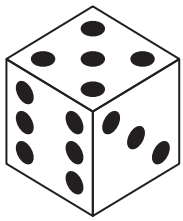
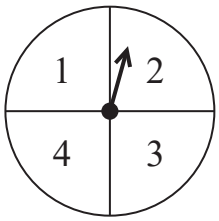
14 Fred has a fair six-sided dice and a fair spinner.





Fred throws the dice once.
He spins the spinner once.

The total score is the sum of the number the dice lands on and the number the spinner lands on.

		Number the dice lands on					
		1	**2**	**3**	**4**	**5**	**6**
Number the spinner lands on	**1**	2	3				
	2						
	3				7		
	4					9	

(a) Complete the table for the total scores.
Four total scores have already been entered.

(2)

(b) Find the probability that the total score is 2

.....

(1)

(c) Find the probability that the total score is 9 or 10

.....

(1)

(d) Find the probability that the dice and the spinner both land on an even number.

.....

(1)

(Total for Question 14 is 5 marks)

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15

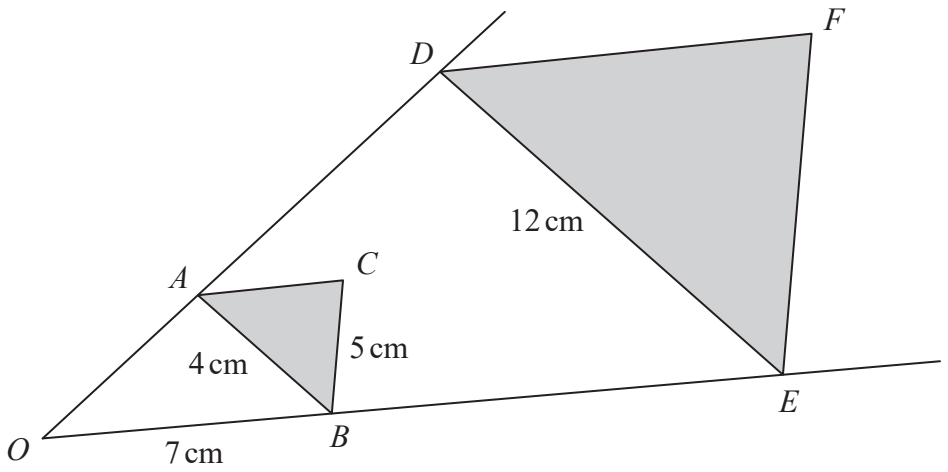

Diagram **NOT** accurately drawn

Triangle *DEF* is an enlargement, centre *O*, of triangle *ABC*.

AB = 4 cm
DE = 12 cm
BC = 5 cm
OB = 7 cm

(a) Write down the scale factor of the enlargement.

.....

(1)

(b) Work out the length of *EF*.

..... cm

(1)

(c) Work out the length of *BE*.

..... cm

(1)

(Total for Question 15 is 3 marks)

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16 Herminia has a swimming pool in her garden.
The pool is empty.
The pool is in the shape of a cuboid that is 12 m long by 8 m wide.
She wants to fill the pool with water to a depth of 1.8 m.

Each hour, 3000 litres of water flows into the pool.
$1\,m^3 = 1000$ litres

How long will it take to fill the pool to a depth of 1.8 m?
Give your answer correct to the nearest hour.

..... hours

(Total for Question 16 is 4 marks)

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17 The area of land on a farm is 120 hectares.

The farmer grows crops on $\frac{7}{8}$ of the land.

On $\frac{2}{3}$ of the land used to grow crops, the farmer grows wheat.

(a) Work out the area of the land on the farm used to grow wheat.

..... hectares

(3)

Last year, the farmer made 31 500 euros from selling his wheat.
His total income was 42 000 euros.

(b) Write 31 500 as a percentage of 42 000

..... %

(2)

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Here is a diagram of one field on the farm.

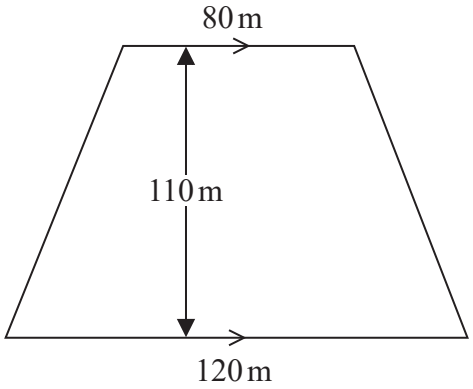

Diagram **NOT** accurately drawn

The field is in the shape of a trapezium.
The lengths of the parallel sides are 80 m and 120 m.
The distance between the parallel sides is 110 m.

(c) Work out the area of this field.
Give your answer in m^2

..... m^2

(2)

(Total for Question 17 is 7 marks)

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18 A teacher asked a group of students how many flights they had each taken in the last year. The table gives information about their answers.

Number of flights	Number of students
0	12
1	3
2	9
3	4
4	14
5	2
6	6

(a) Calculate the mean number of flights.

.....

(3)

The teacher chooses at random a student from the group.

(b) Find the probability that this student had taken exactly 2 flights.

.....

(1)

(Total for Question 18 is 4 marks)

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19

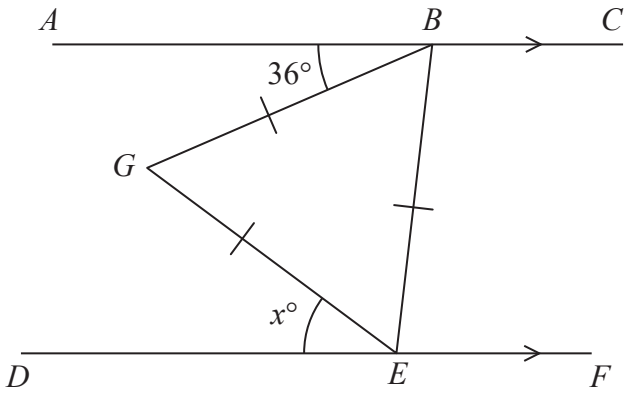

Diagram **NOT** accurately drawn

ABC and *DEF* are parallel lines.
BGE is an equilateral triangle.

Angle *ABG* = 36°
Angle *DEG* = *x*°

Work out the value of *x*.
Give reasons for your answer.

(Total for Question 19 is 4 marks)

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20 Jess makes salad dressing by mixing lemon juice and olive oil in the ratio 2 : 5 by volume.
She uses 0.5 litres of lemon juice.

(a) Work out how much olive oil she uses to make the salad dressing.

.....litres
(2)

Tiesto wants to make 630 millilitres of the salad dressing.
He mixes lemon juice and olive oil in the ratio 2 : 5 by volume.

(b) Work out how much olive oil he uses to make the salad dressing.

.....millilitres
(2)

Salad dressing is made by mixing lemon juice and olive oil in the ratio 2 : 5 by volume.
The cost of lemon juice is $13.50 per litre.
The cost of olive oil is $18 per litre.

(c) Work out the ratio

cost of lemon juice in the salad dressing : cost of olive oil in the salad dressing

Give your ratio in its simplest form.

.....
(3)

(Total for Question 20 is 7 marks)

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21 Write 336 as a product of its prime factors.
Show your working clearly.

.....

(Total for Question 21 is 3 marks)

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22 (a) Expand $x(2x + 5)$

.....

(1)

(b) Simplify

(i) $y^5 \times y^3$

.....

(ii) $\frac{k^8}{k}$

.....

(iii) $(t^3)^4$

.....

(3)

Pamela, Sophia and Zoe are three friends.

Pamela has x dollars.
Sophia has 4 dollars more than Pamela.
Zoe has three times the number of dollars that Sophia has.

In total, the three friends have T dollars.

(c) Write an expression, in terms of x, for T.

.....

(2)

(Total for Question 22 is 6 marks)

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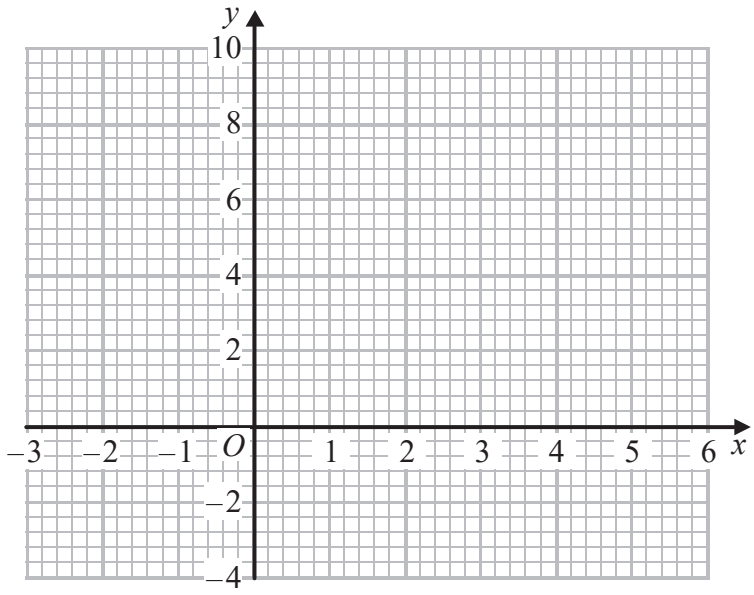
23 (a) Complete the table of values for $y = x^2 - 3x - 1$

x	−2	−1	0	1	2	3	4	5
y		3		−3		−1		9

(2)

(b) On the grid, draw the graph of $y = x^2 - 3x - 1$ for values of x from −2 to 5



(2)

The point P on the graph of $y = x^2 - 3x - 1$ has coordinates (p, q)

(c) Use the graph to find an estimate for the least possible value of q.

.....

(1)

(Total for Question 23 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

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