Write your name here

Surname	Other names

Pearson Edexcel
Level 1/Level 2 GCSE (9-1)

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Paper 1 (Non-Calculator)

Foundation Tier

Thursday 2 November 2017 – Morning
Time: 1 hour 30 minutes

Paper Reference
1MA1/1F

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.
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.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**

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.

Turn over ▶

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Pearson

Please note that these worked solutions have neither been provided nor approved by Pearson Education and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue indicates what must be written in order to answer the questions and get the marks. The worked solutions have been designed to show the smallest amount of work which needs to be done to answer the question.

Anything written in green in a cloud doesn't have to be written in the exam.

Anything written in orange in a rectangle doesn't have to be written in the exam and is there to show what should be put into a calculator or measured using a ruler or protractor.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

.CG Maths.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Change 365 cm into metres.

There are 100cm in 1m

..... m

(1)

(b) Change 2.7 kg into grams.

There are 1000g in 1kg

..... g

(1)

(Total for Question 1 is 2 marks)

---

2 Work out $2 + 7 \times 10$

BIDMAS so we need to multiply first

.....

(Total for Question 2 is 1 mark)

---

3 Solve $\frac{y}{4} = 10.5$

Multiply both sides by 4 to make y the subject

$y =$ .....

(Total for Question 3 is 1 mark)

---

4 Here are four numbers.

–9 –2 2 9

Write one of these numbers in each box to make a correct calculation.

$\boxed{-9}$ + $\boxed{}$ = –7

(Total for Question 4 is 1 mark)

---

5 Here are the first four terms of a number sequence.

2 5 11 23

The rule to continue this sequence is

multiply the previous term by 2 and then add 1

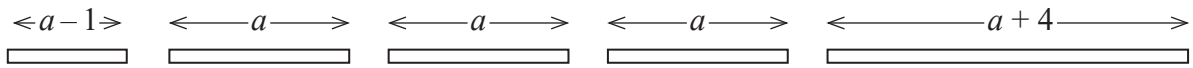
Work out the 5th term of this sequence.

Multiply 23 by 2 then add 1

.....

(Total for Question 5 is 1 mark)

6 Here are five straight rods.



All measurements are in centimetres.

The total length of the five rods is L cm.

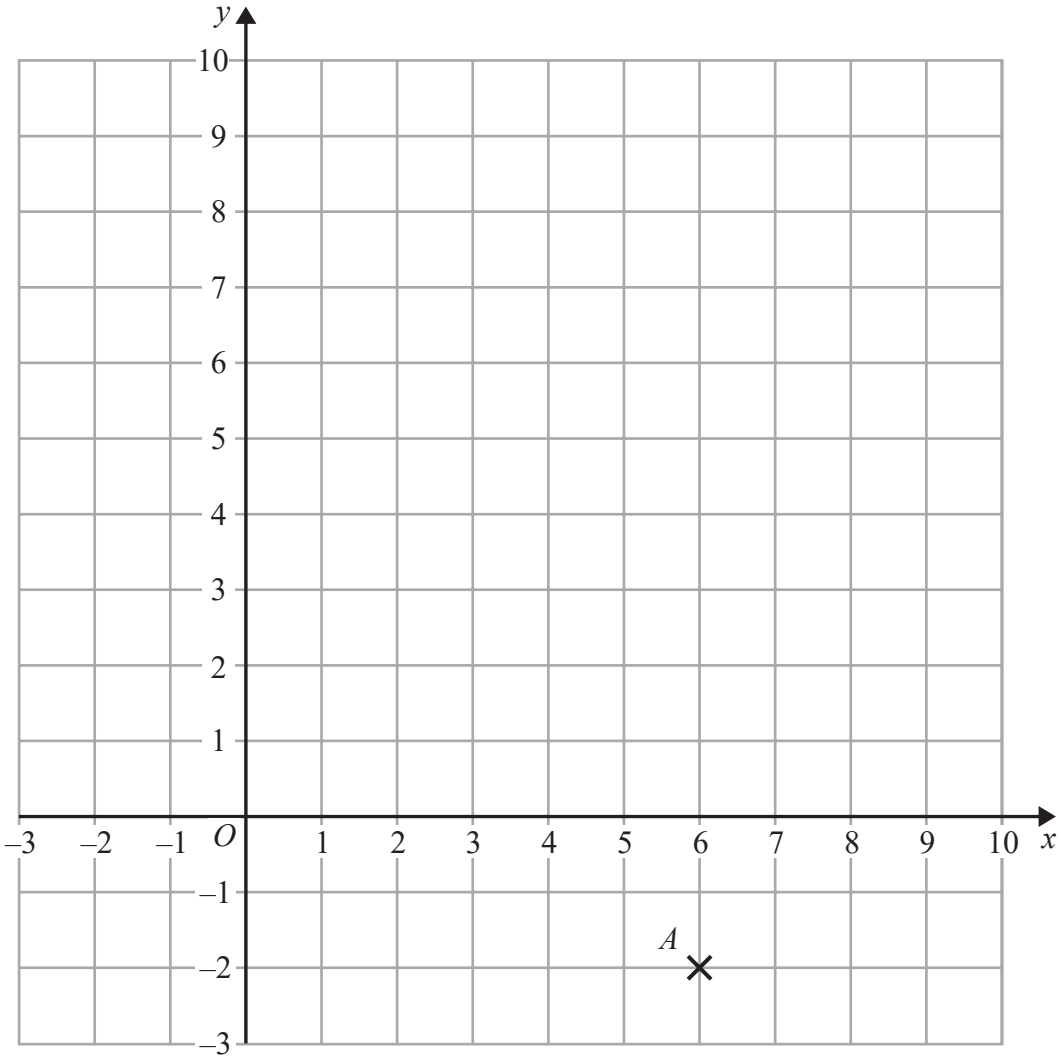
Find a formula for L in terms of a.
Write your formula as simply as possible.

Add together all of the lengths of the rods. This is equal to the total length L. Express this as an equation then collect like terms to simplify

.....

(Total for Question 6 is 3 marks)

7



(a) Write down the coordinates of the point A.

Coordinates are in the form (x , y) where x is the x-coordinate and y is the y-coordinate. Otherwise read across then down

(..... , ...)

(1)

DO NOT WRITE IN THIS AREA

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DO NOT WRITE IN THIS AREA

(b) (i) Plot the point with coordinates (2, 9).
Label this point B.

See the hint for part a

(1)

(ii) Does point B lie on the straight line with equation $y = 4x + 1$?
You must show how you get your answer.

Substitute x for 2 in the equation. If the correct y coordinate is calculated the point lies on the line. The y coordinate should be 9

.....

.....

(1)

(c) On the grid, draw the line with equation $x = -2$

(1)

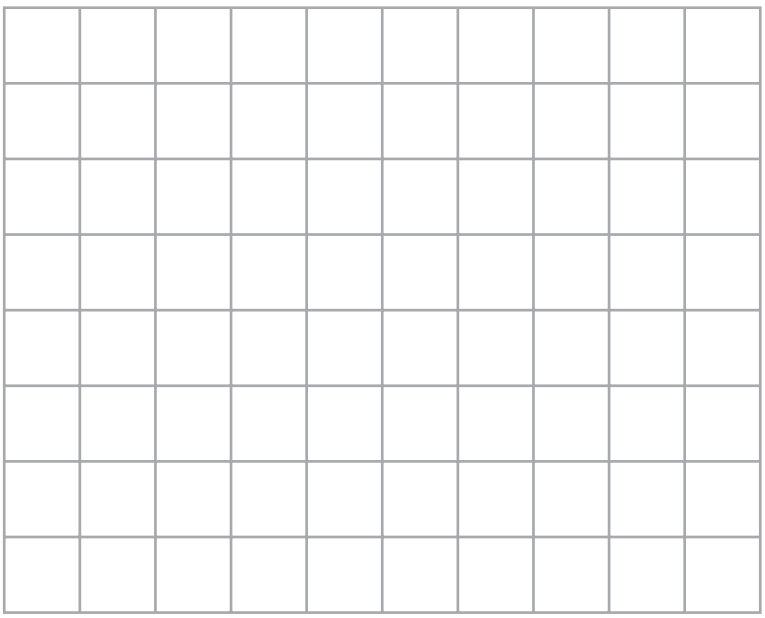
All points on the line must have an x coordinate of -2

(Total for Question 7 is 4 marks)

8 The length of a rectangle is twice as long as the width of the rectangle.
The area of the rectangle is 32 cm^2.

Draw the rectangle on the centimetre grid.

Area of rectangle = base x height
List out the factor pairs of 32 until one of the pair is double the other. These are base and height of the rectangle



(Total for Question 8 is 2 marks)

9 Jacqui wants to work out 3480 ÷ 5

She knows that 3480 ÷ 10 = 348

Jacqui writes 3480 ÷ 5 = 174

because 10 ÷ 5 = 2

and 348 ÷ 2 = 174

What mistake did Jacqui make in her method?

Dividing by half the amount doesn't half the result

.....

.....

(Total for Question 9 is 1 mark)

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10 Jake and Sarah each played a computer game six times.

Their scores for each game are shown below.

Jake	10	9	8	11	12	8
Sarah	2	10	7	14	4	10

(a) Who had the most consistent scores, Jake or Sarah?
You must give a reason for your answer.

Range is a measure of consistency.
Range = largest - smallest

.....

.....

(1)

Jake played a different game 20 times.

The stem and leaf diagram shows information about his scores.

0	9
1	2 3 3 4 5
2	5 6 6 6 6 7
3	1 3 4 6 8
4	0 2 9

Key
1 | 2 represents 12 points

Jake said his modal score was 6 points because 6 occurs most often in the diagram.

(b) Is Jake correct?
You must explain your answer.

There are no 6s.
Take note of the key

.....

.....

(1)

(Total for Question 10 is 2 marks)

11 There are 30 children in a nursery school.
At least 1 adult is needed for every 8 children in the nursery.

(a) Work out the least number of adults needed in the nursery.

Work out how many lots of 8 go into 30. Each lot of 8 need 1 adult. There should be a remainder and an extra adult is needed for these remaining children

.....

(2)

2 more children join the nursery.

(b) Does this mean that more adults are needed in the nursery?
You must give a reason for your answer.

Work out how many lots of 8 go into 32. Each lot of 8 need 1 adult. Compare this number of adults to the number needed for 30

.....

(1)

(Total for Question 11 is 3 marks)

12 Emma has 45 rabbits.

30 of the rabbits are male.
8 of the female rabbits have short hair.
12 of the rabbits with long hair are male.

(a) Use the information to complete the two-way table.

	Male	Female	Total
Long hair	12		
Short hair		8	
Total	30		45

(3)

One of Emma's rabbits is chosen at random.

(b) Write down the probability that this rabbit is a female with short hair.

? out of the 45 rabbits are female with short hair

45

.....

(1)

(Total for Question 12 is 4 marks)

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13 The total surface area of a cube is 294 cm^2.

Work out the volume of the cube.

A cube has 6 square faces all with the same area. First work out the area of one of the square faces. Then work out the side length to work out the volume of the cube.
Length squared = area of square
Length cubed = volume of cube

..... cm^3

(Total for Question 13 is 4 marks)

14 Here are two fractions.

$$\frac{7}{5} \qquad \frac{5}{7}$$

Work out which of the fractions is closer to 1
You must show all your working.

Convert both into decimals by doing 7 ÷ 5 and 5 ÷ 7. The divisions do not need to be completed to see which is closer to 1. They can be divided to 1 decimal place and compared to 1

(Total for Question 14 is 3 marks)

15 There are only red buttons, yellow buttons and orange buttons in a jar.
The number of red buttons, the number of yellow buttons and the number of orange buttons are in the ratio 7 : 4 : 9

Work out what percentage of the buttons in the jar are orange.

Express the number of parts for orange as a fraction of the total number of parts. Percentage is out of 100 so converting the fraction so it has a denominator of 100 gives the percentage

..... %

(Total for Question 15 is 2 marks)

16 Berenika wants to buy 35 T-shirts.

Each T-shirt costs £5.80
Berenika does the calculation $40 \times 6 = 240$ to estimate the cost of 35 T-shirts.

(a) Explain how Berenika's calculation shows the actual cost will be less than £240

Compare 40 to 35 and £6 to £5.80

.....

.....

(1)

There is a special offer.

T-shirts £5.80 each. Buy 30 or more T-shirts. Get 10% off the total cost.

(b) Work out the actual cost of buying 35 T-shirts using the special offer.

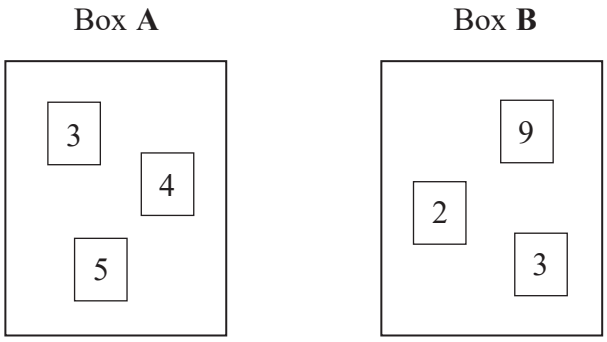
Multiply £5.80 by 35 to work out the cost before the discount. Find 10% of this then take the result away from the cost before the discount

£.....

(4)

(Total for Question 16 is 5 marks)

17 There are 3 cards in Box **A** and 3 cards in Box **B**.
There is a number on each card.



Ryan takes at random a card from Box **A** and a card from Box **B**.
He adds together the numbers on the two cards to get a total score.

Work out the probability that the total score is an odd number.

3 + 9 = 12
3 + 2 = 5
3 + 3 = 6
4 +

List out all of the possible scores. Express the number of odd scores as a fraction of the total number of possible scores

.....

(Total for Question 17 is 2 marks)

18 Harry, Regan and Kelan share £450 in the ratio 2 : 5 : 3

How much money does Kelan get?

Work out how many parts there are in total in the ratio. These parts represent £450. Divide by the total number of parts to work out the value of 1 part. Then multiply by the number of parts which represent Kelan

£.....

(Total for Question 18 is 2 marks)

19 Here is a list of ingredients for making 16 flapjacks.

Ingredients for 16 flapjacks
120 g butter
140 g brown sugar
250 g oats
2 tablespoons syrup

Jenny wants to make 24 flapjacks.

Work out how much of each of the ingredients she needs.

$16x = 24$ ← x is what 16 has been multiplied by to get 24

Rearrange to find x, simplify x then multiply all the ingredients by x

butter ..... g

brown sugar ..... g

oats ..... g

syrup ..... tablespoons

(Total for Question 19 is 3 marks)

20 Ami and Josh use a calculator to work out $\dfrac{595}{4.08^2 + 5.3}$

Ami's answer is 27.1115
Josh's answer is 271.115

One of these answers is correct.

Use approximations to find out which answer is correct.

Round all numbers to 1 significant figure to begin with (e.g. 595 rounds to 600). Round again part way through the calculation to make it easier. Whoever's answer is closest to our estimate is correct

(Total for Question 20 is 3 marks)

21 Work out $\dfrac{0.06 \times 0.0003}{0.01}$

Give your answer in standard form.

Convert all the numbers into standard form ($a \times 10^n$, where $1 \leq a < 10$ and n is a whole number) to make the calculation easier. 0.06 becomes 6×10^{-2}. Multiplication can be done in any order.

$a^x \times a^y = a^{x+y}$

$a^x \div a^y = a^{x-y}$

.....

(Total for Question 21 is 3 marks)

22 (a) Work out $\frac{2}{5} + \frac{1}{4}$

Convert them into equivalent fractions with the same denominators so they can be added

.....

(2)

(b) Write down the value of 2^{-3}

The power of 3 means to cube. The negative power means it is the reciprocal

.....

(1)

(Total for Question 22 is 3 marks)

23 Write 36 as a product of its prime factors.

Do a factor tree of 36 and circle the primes. Multiplying the primes together gives the product of its prime factors

.....

(Total for Question 23 is 2 marks)

24 Kiaria is 7 years older than Jay.
Martha is twice as old as Kiaria.
The sum of their three ages is 77

Find the ratio of Jay's age to Kiaria's age to Martha's age.

Let J be Jay's age. Express each of their ages in terms of J then add them together to give the sum of their ages. An equation can be created which can be simplified, rearranged and solved to find J. Now we have Jay's age, we can find the other ages and write them as a ratio

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(Total for Question 24 is 4 marks)

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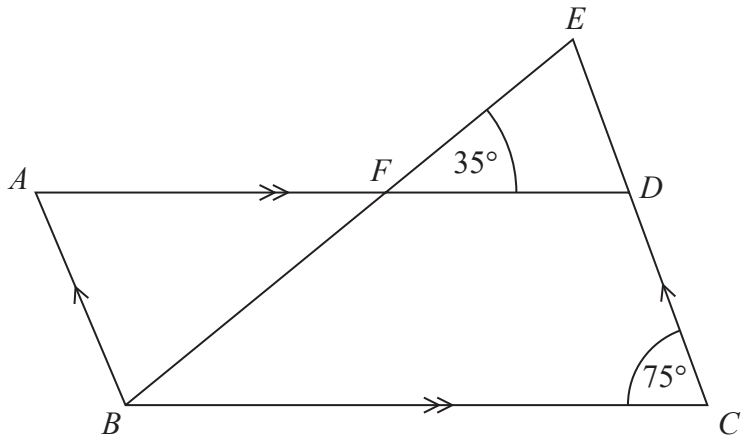
25



ABCD is a parallelogram.
EDC is a straight line.
F is the point on *AD* so that *BFE* is a straight line.

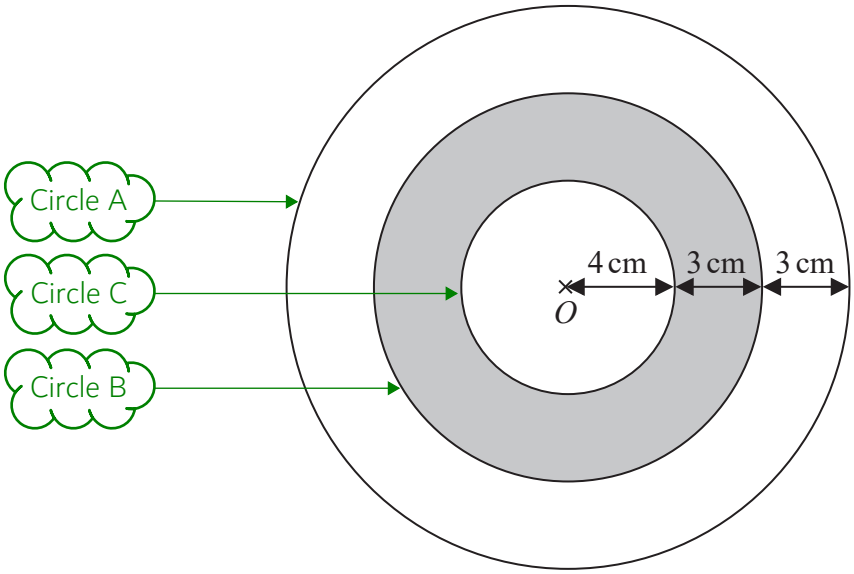
Angle *EFD* = 35°
Angle *DCB* = 75°

Show that angle *ABF* = 70°
Give a reason for each stage of your working.

Angle ABF can be shown using the following reasons: opposite angles in a parallelogram are equal, vertically opposite angles are equal and there are 180° in a triangle.

(Total for Question 25 is 4 marks)

26 The diagram shows a logo made from three circles.



Each circle has centre O.

Daisy says that exactly $\frac{1}{3}$ of the logo is shaded.

Is Daisy correct?
You must show all your working.

Express the shaded area as a fraction of the total area and simplify it. Then compare it to 1/3.
Area of circle = π x radius^2
Shaded area = circle B - circle C
Total area = circle A

(Total for Question 26 is 4 marks)

27 The table shows information about the weekly earnings of 20 people who work in a shop.

Weekly earnings (£x)	Frequency	Mid	fx
$150 < x \leqslant 250$	1	200	200
$250 < x \leqslant 350$	11	300	3300
$350 < x \leqslant 450$	5		
$450 < x \leqslant 550$	0		
$550 < x \leqslant 650$	3		

(a) Work out an estimate for the mean of the weekly earnings.

Work out the midpoint of each category then multiply the midpoint by the frequency to get an estimated total for each category. Then add up the totals to get an overall total

Mean = total/number

£.....

(3)

Nadiya says,

"The mean may **not** be the best average to use to represent this information."

(b) Do you agree with Nadiya?
You must justify your answer.

.....

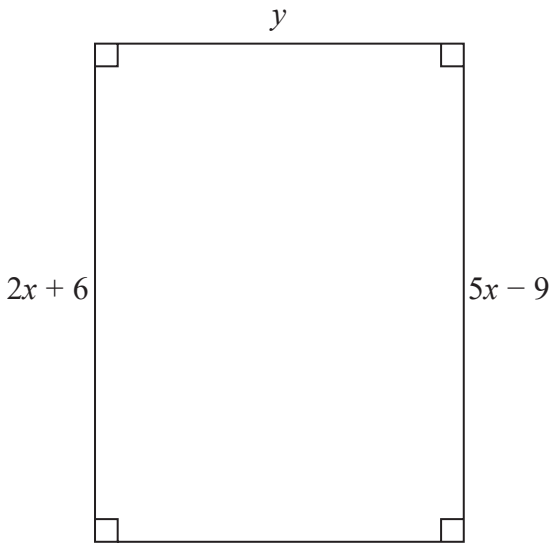
Median is usually used for average earnings

.....

(1)

(Total for Question 27 is 4 marks)

28 Here is a rectangle.



All measurements are in centimetres.

The area of the rectangle is 48 cm^2.

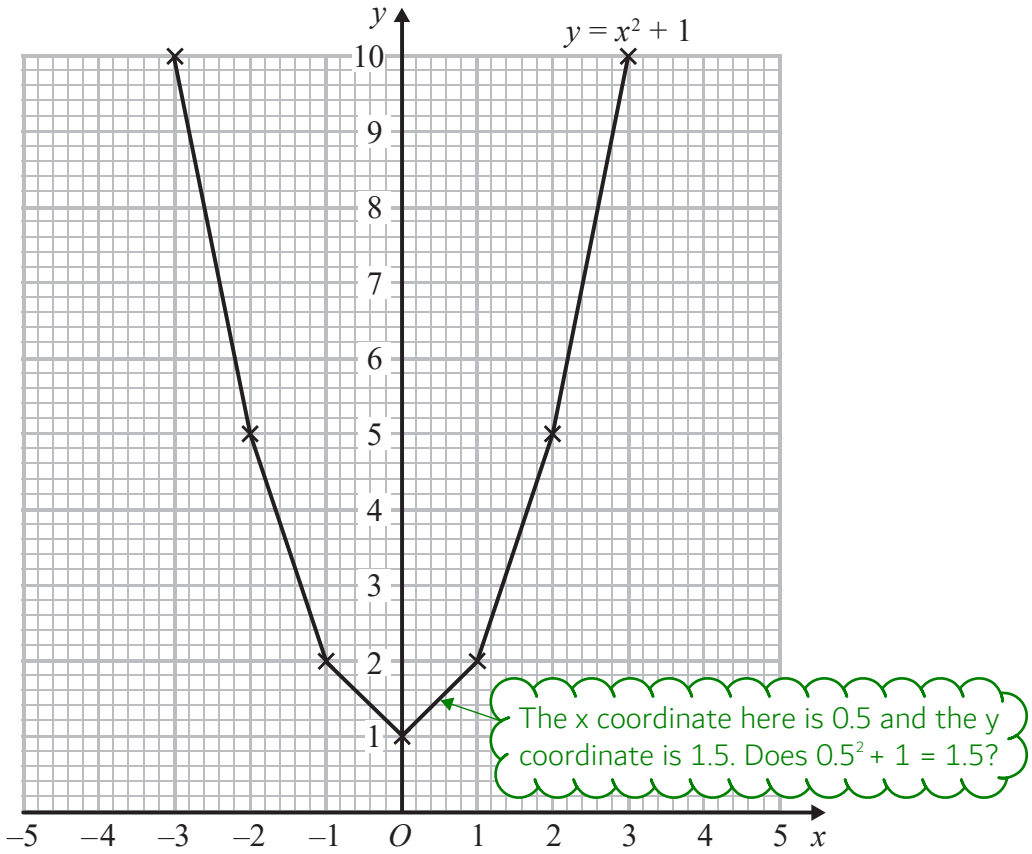
Show that $y = 3$

Opposite sides on a rectangle are equal. Using this fact, an equation in terms of x can be formed, rearranged and solved to find x. Substitute in the value of x into one of the expressions for the length. Then express the area in terms of y, rearrange and solve. Area of rectangle = length x width

(Total for Question 28 is 4 marks)

29 Brogan needs to draw the graph of $y = x^2 + 1$

Here is her graph.



Write down one thing that is wrong with Brogan's graph.

.....

.....

(Total for Question 29 is 1 mark)

30 In a sale, the normal price of a book is reduced by 30%.
The sale price of the book is £2.80

Work out the normal price of the book.

$x \times 0.7 = 2.80$ ← x is the normal price. Multiplying by 0.7 reduces it by 30%

£.....

(Total for Question 30 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS