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 ▶

P49347A

6/6/6/7/2/

P 4 9 3 4 7 A 0 1 2 4

Pearson

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.

1m = 100 cm

3.65 m

(1)

(b) Change 2.7 kg into grams.

1kg = 1000g

2700 g

(1)

(Total for Question 1 is 2 marks)

2 Work out $2 + 7 \times 10$

2 + 70

72

(Total for Question 2 is 1 mark)

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

×4 ×4

y = 42

$y =$ 42

(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.

[−9] + [2] = −7

OR 2 + −9

(Total for Question 4 is 1 mark)

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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.

$23 \times 2 + 1$

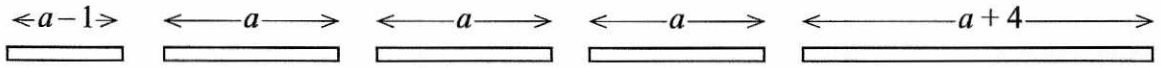
$46 + 1$

47

47

(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.

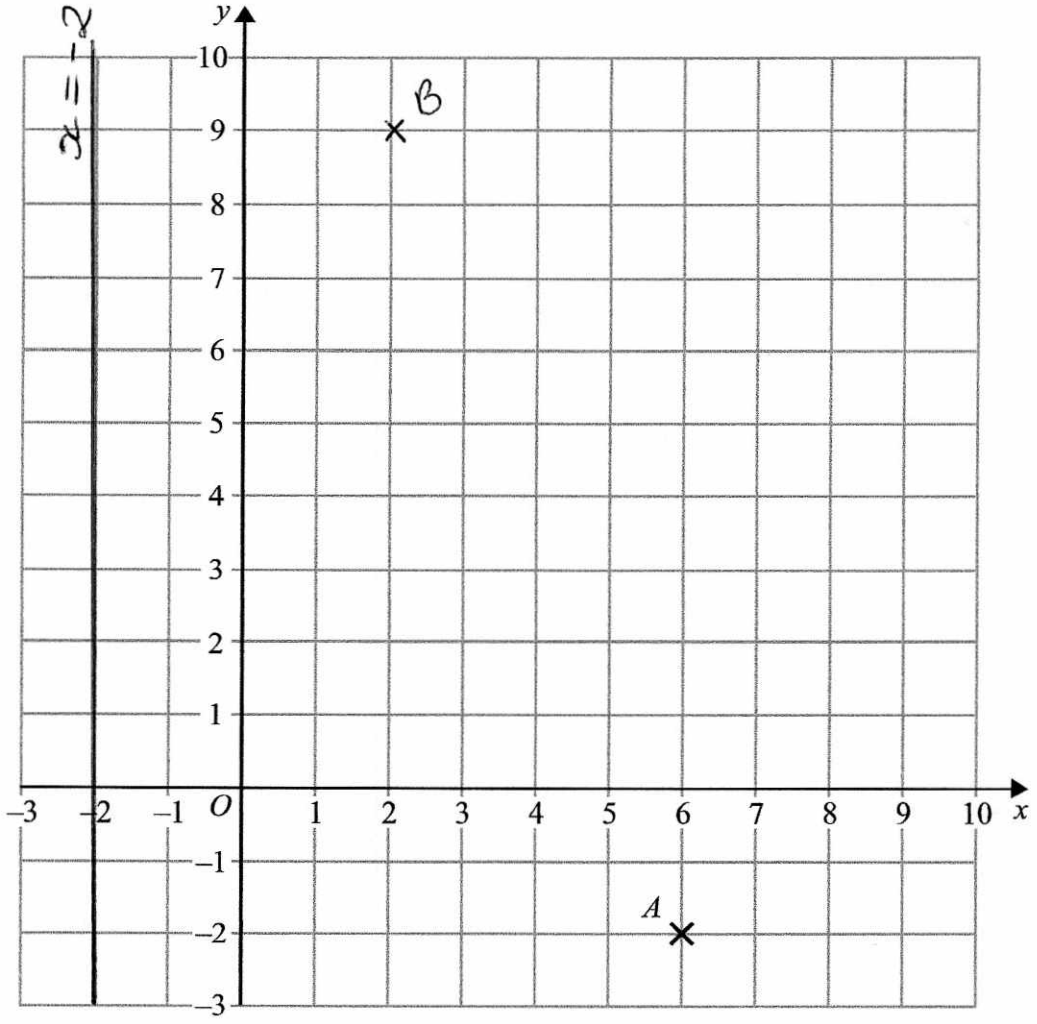
$a - 1 + a + a + a + a + 4 = L$

$5a + 3 = L$

$L = 5a + 3$

(Total for Question 6 is 3 marks)

7



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

(6 , -2)

(1)

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

(1)

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

when $x = 2$ $\quad y = 4(2) + 1$
$= 9$

Yes (2,9) lies on $y = 4x + 1$

(1)

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

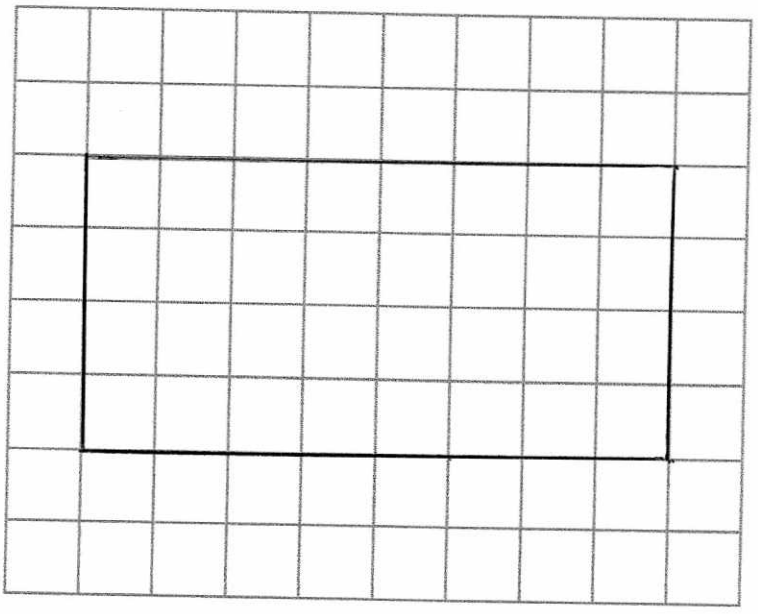
(1)

(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 cm².

Draw the rectangle on the centimetre grid.

4×8



(Total for Question 8 is 2 marks)

9 Jacqui wants to work out $3480 \div 5$ = 696

She knows that $3480 \div 10 = 348$

Jacqui writes $3480 \div 5 = 174$

because $10 \div 5 = 2$

and $348 \div 2 = 174$

What mistake did Jacqui make in her method?

She should have multiplied 348 by 2
(Dividing by 5 gives twice as much as dividing by 10)

(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.

Jake's range = 12 − 8 = 4
Sarah's range = 14 − 2 = 12

Jake had the more consistent scores → his range is lower.

(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.

No. 6 does not appear at all! 26 is the mode.

(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.

A	C
1	8
2	16
3	24
4	32

4

(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.

No. 4 adults and 32 children is still 1 : 8.

(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	7	19
Short hair	18	8	26
Total	30	15	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.

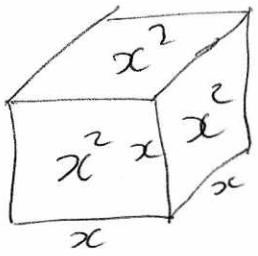
$\frac{8}{45}$

(1)

(Total for Question 12 is 4 marks)

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

Work out the volume of the cube.



Surface Area $= 6x^2$

$294 = 6x^2$

$49 = x^2$

$x = 7$

Volume $= x \times x \times x$

$= 7 \times 7 \times 7$

$= 49 \times 7$

$= 343$

343 cm^3

(Total for Question 13 is 4 marks)

14 Here are two fractions.

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

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

$\frac{7 \times 7}{5 \times 7}$ $\frac{5 \times 5}{7 \times 5}$

$\frac{49}{35}$ $\frac{25}{35}$

~~$\frac{14}{35}$~~ $\frac{49}{35} - \frac{35}{35} = \frac{14}{35}$

$\frac{35}{35} - \frac{25}{35} = \frac{10}{35}$

$\frac{5}{7}$ is closer 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
R Y O

20 PARTS

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

$\frac{9}{20}$ orange

$\frac{9 \times 5}{20 \times 5}$

$\frac{45}{100}$

45 %

(Total for Question 15 is 2 marks)

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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

Berenika has rounded both numbers up so her answer is an overestimate.

(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.

35 × 5.80

35 × 580

	500	80	
30	15000	2400	
5	2500	400	

15000
2500
2400
400
20300

35 × 580 = 20300
35 × 5.80 = 203

£203

10% = £20.30

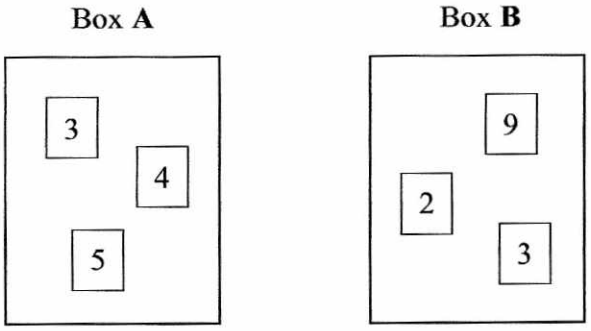
203.00
− 20.30
182.70

£ 182.70

(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 and 2
4 and 9
4 and 3
5 and 2

4 ways of getting an odd

3 and 9
3 and 2
3 and 3
4 and 9
4 and 2
4 and 3
5 and 9
5 and 2
5 and 3

9 possible outcomes

4/9

(Total for Question 17 is 2 marks)

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

H R K

10 PARTS

How much money does Kelan get?

H R K

45 45 : 45 45 45 45 45 : 45 45 45

$\frac{450}{10} = 45$

3 × 45

135

£ 135

(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

8 FLAPJACKS

60g
70g
125g
1 tbsp.

Jenny wants to make 24 flapjacks.

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

24 = 16 + 8

Butter: 120 + 60 = 180g

Sugar: 140 + 70 = 210g

Oats: 250 + 125 = 375g

Syrup: 2 + 1 = 3

butter 180 g

brown sugar 210 g

oats 375 g

syrup 3 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.

$$\frac{600}{4^2+5}$$

$$\frac{600}{16+5}$$

$$\frac{600}{21} \approx \frac{600}{20} = 30$$

Ami 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.

$$\frac{6 \times 10^{-2} \times 3 \times 10^{-4}}{1 \times 10^{-2}}$$

$$\frac{18 \times 10^{-6}}{1 \times 10^{-2}} \quad \left[(18 \times 10^{-6}) \div (1 \times 10^{-2})\right]$$

$$18 \times 10^{-4}$$

$$1.8 \times 10^{-3}$$

1.8×10^{-3}

(Total for Question 21 is 3 marks)

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

$\frac{8}{20}+\frac{5}{20}$

$\frac{13}{20}$

$\frac{13}{20}$

(2)

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

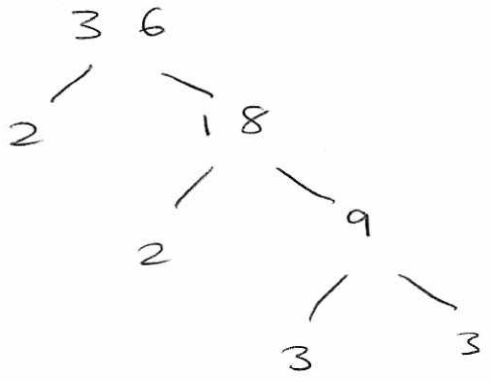
$2^{-3}=\frac{1}{2^3}=\frac{1}{8}$

$\frac{1}{8}$

(1)

(Total for Question 22 is 3 marks)

23 Write 36 as a product of its prime factors.



$2\times 2\times 3\times 3$

[or $2^2\times 3^2$]

$2\times 2\times 3\times 3$

(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.

$K = J + 7 \rightarrow J = K - 7$

$M = 2K$

$K + J + M = 77$

$K + K - 7 + 2K = 77$

$4K - 7 = 77$

$4K = 84$

$K = 21$

$J = K - 7$
$= 21 - 7$
$= 14$

$M = 2K$
$= 2(21)$
$= 42$

$14 : 21 : 42$
$2 : 3 : 6$

2 : 3 : 6

(Total for Question 24 is 4 marks)

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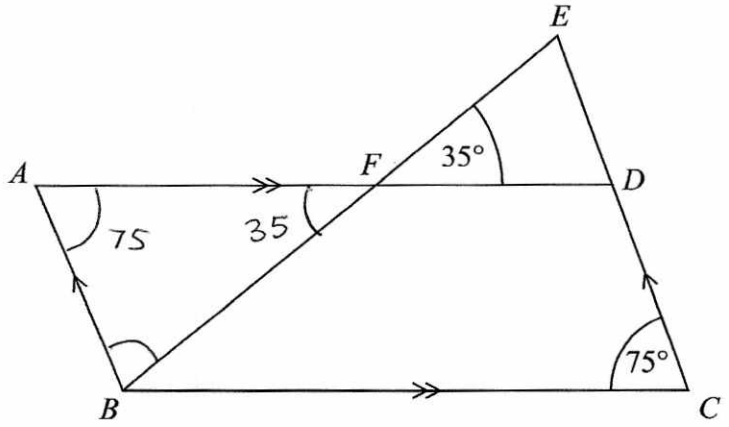
25



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.

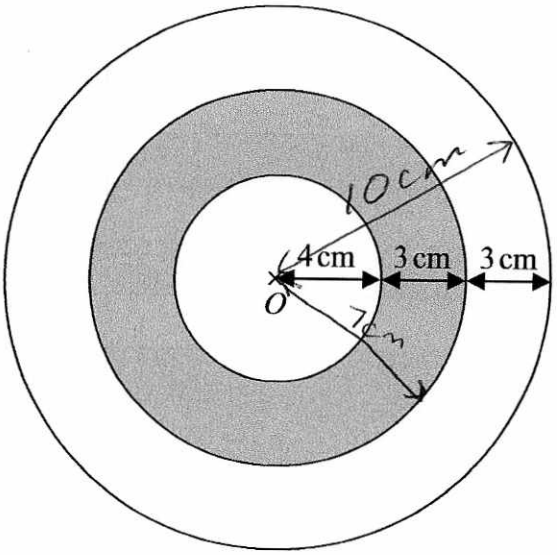
$A\hat{F}B = 35^\circ$ vertically opposite angles are equal

$B\hat{A}F = 75^\circ$ opposite angles in a parallelogram are equal

$A\hat{B}F = 180 - 75 - 35$
$= 70^\circ$ Angles in a triangle sum to 180°

(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.

Area $= \pi r^2$

CIRCLE 1
radius = 4cm
Area $= \pi(4)^2$
$= 16\pi$

CIRCLE 2
radius = 7cm
Area $= \pi(7)^2$
$= 49\pi$

CIRCLE 3
radius = 10cm
Area $= \pi(10)^2$
$= 100\pi$

SHADED AREA $= 49\pi - 16\pi$
$= 33\pi$

TOTAL AREA $= 100\pi$

$\frac{33\pi}{100\pi} = \frac{33}{100}$ is shaded. 33%

This is NOT exactly $\frac{1}{3}$ which is $33.\dot{3}\%$

Daisy is wrong

(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)	MIDPOINT	Frequency	M.P x f.
$150 < x \leqslant 250$	200	× 1	200
$250 < x \leqslant 350$	300	× 11	3300
$350 < x \leqslant 450$	400	× 5	2000
$450 < x \leqslant 550$	500	× 0	0
$550 < x \leqslant 650$	600	× 3	1800

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

3300
2000
1800
200
+ 7300

$\frac{7300}{20} = 365$

£ 365
(3)

Nadiya says,

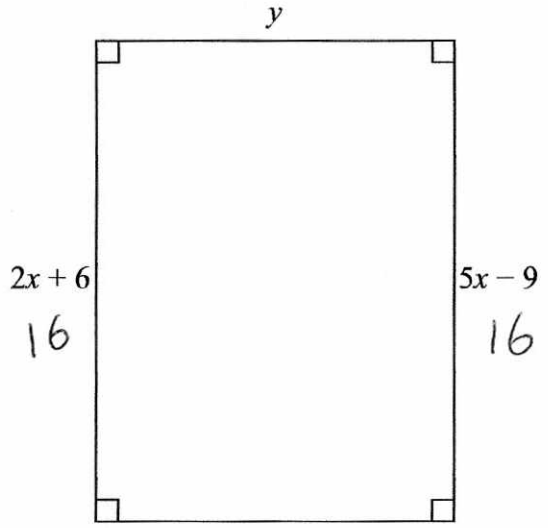
"The mean may **not** be the best average to use to represent this information."

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

Yes, the median may be better. [The 3 people earning a lot will affect the mean]
(1)
The mean is affected by extreme values.

(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 $y = 3$

$2x + 6 = 5x - 9$

$-2x \qquad -2x$

$6 = 3x - 9$

$+9 \qquad +9$

$15 = 3x$

$x = 5$

$2(5) + 6 = 16$

Area $= 48$

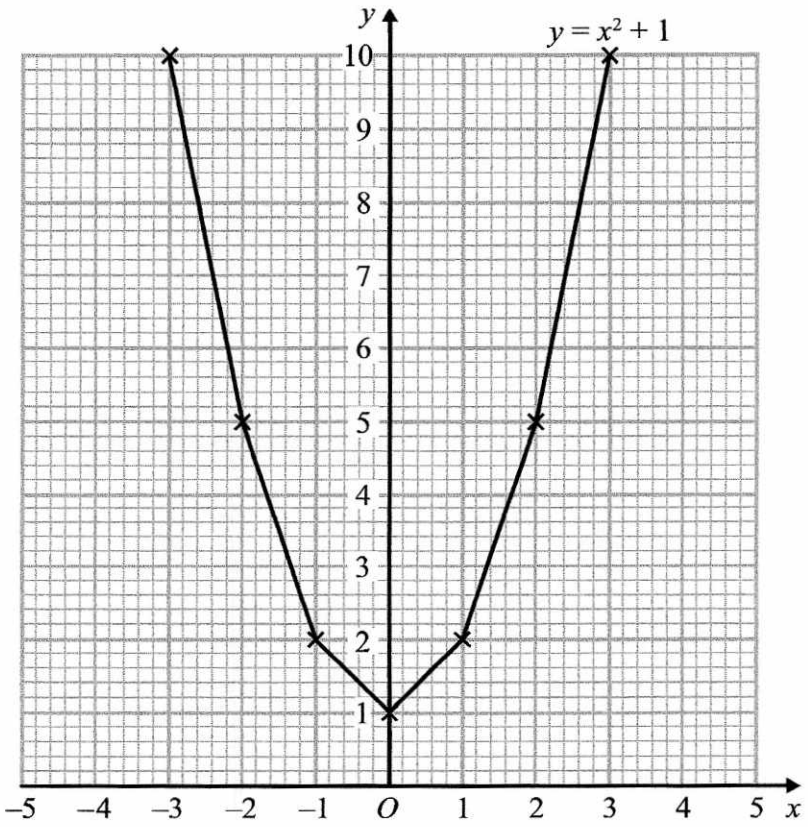
$16y = 48$

$y = 3$

(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.

Brogan should have drawn a curve.

(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.

£2.80 = 70%
÷7 ÷7
£0.40 = 10%
×10 ×10
£4 = 100%

£ 4

(Total for Question 30 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS

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