ANSWERS

Write your name here

Surname	Other names

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

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Paper 2 (Calculator)

Foundation Tier

Mock Set 2 – Spring 2017
Time: 1 hour 30 minutes

Paper Reference
1MA1/2F

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of 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.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

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.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Write down the value of the 3 in the number 4302

3 HUNDRED

(Total for Question 1 is 1 mark)

2. Write down an even cube number.

8

(Total for Question 2 is 1 mark)

3. Here is a list of numbers.
7 10 25 42 13
From the numbers in the list, write down a multiple of 3

42

(Total for Question 3 is 1 mark)

4. There are 29 children in a class.
13 of the children are girls.
One of the children is chosen at random.

Write down the probability that the child is a boy.

29 − 13 = 16

$\frac{16}{29}$

(Total for Question 4 is 2 marks)

5. There are 3 boys and 3 girls on a school council.

Boys	Girls
Alfie	Denise
Brian	Emily
Cliff	Freya

A teacher wants to choose one of the boys and one of the girls to go to a meeting.
List all the possible combinations the teacher can choose.

A, D A, E A, F

B, D B, E B, F

C, D C, E C, F

(Total for Question 5 is 2 marks)

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6. (a) Simplify $4x - 2y + 3x - 6y$

$7x - 8y$

(2)

(b) Expand $2x(3 - x)$

$6x - 2x^2$

(1)

(Total for Question 6 is 3 marks)

7.

Cafe Price List	
tea	65p
coffee	79p
hot chocolate	84p

Dylan and some friends went to the cafe.

Dylan bought himself a cup of tea.
He bought each of his friends a cup of coffee.

He paid with a £10 note.
He got £4.61 change.

How many friends were with Dylan at the cafe?

SPENT $10 - 4.61 = £5.39$

LESS 1 CUP OF TEA = $539 - 65 = £4.74$

NUMBER OF FRIENDS = $\frac{474}{79} = 6$

6

(Total for Question 7 is 4 marks)

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8. Here are the first five terms of a sequence.

14 11 8 5 2

−3 −3 −3 −3

(i) Write down the next term of this sequence.

−1

(ii) Explain how you got your answer.

SUBTRACT 3

(Total for Question 8 is 2 marks)

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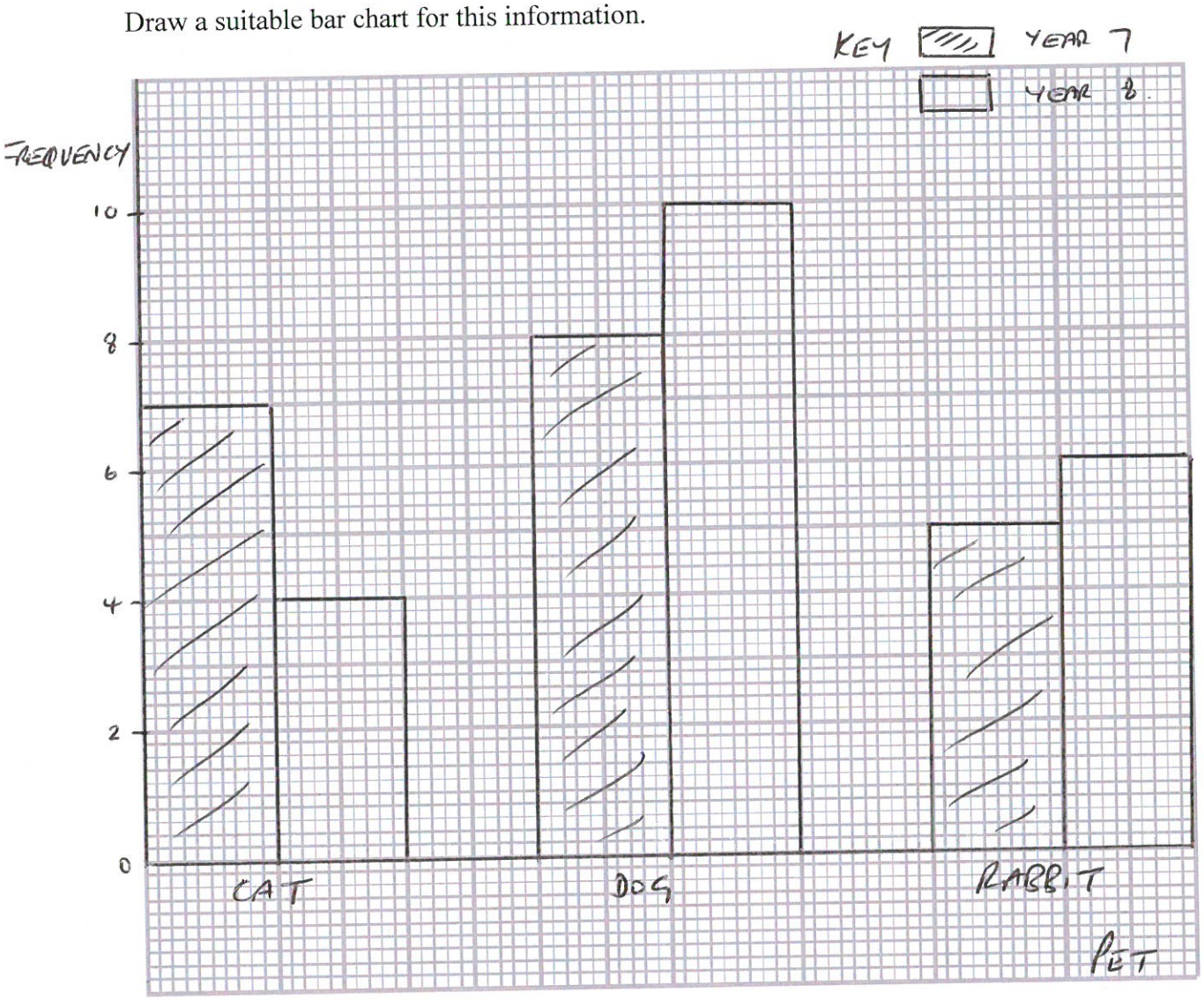
9. Bruna asked 20 students in each of Year 7 and Year 8 what pet they liked best.
The table gives information about her results.

	Year 7	Year 8
Cat	7	4
Dog	8	10
Rabbit	5	6

Draw a suitable bar chart for this information.



(Total for Question 9 is 4 marks)

10. A map has a scale of 1 cm to 25 km.

The distance between the cities of Edinburgh and Bristol is 500 km.

What is the distance on the map between these two cities?

1 cm : 25 km

500 km) ×20

20 ..... cm

(Total for Question 10 is 2 marks)

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11 Robyn is describing a shape to her friend Lily.

Robyn says,

"The shape has four sides.
It only has one pair of parallel sides."

(a) What shape is Robyn describing?

TRAPEZIUM .....

(1)

Lily then describes a shape.

Lily says,

"The shape has four sides.
It has two pairs of equal opposite sides.
The opposite sides are parallel."

Robyn says there are two possible shapes.

(b) Is she correct?
Explain your answer.

YES RHOMBUS AND SQUARE .....

.....

.....

(1)

(Total for Question 11 is 2 marks)

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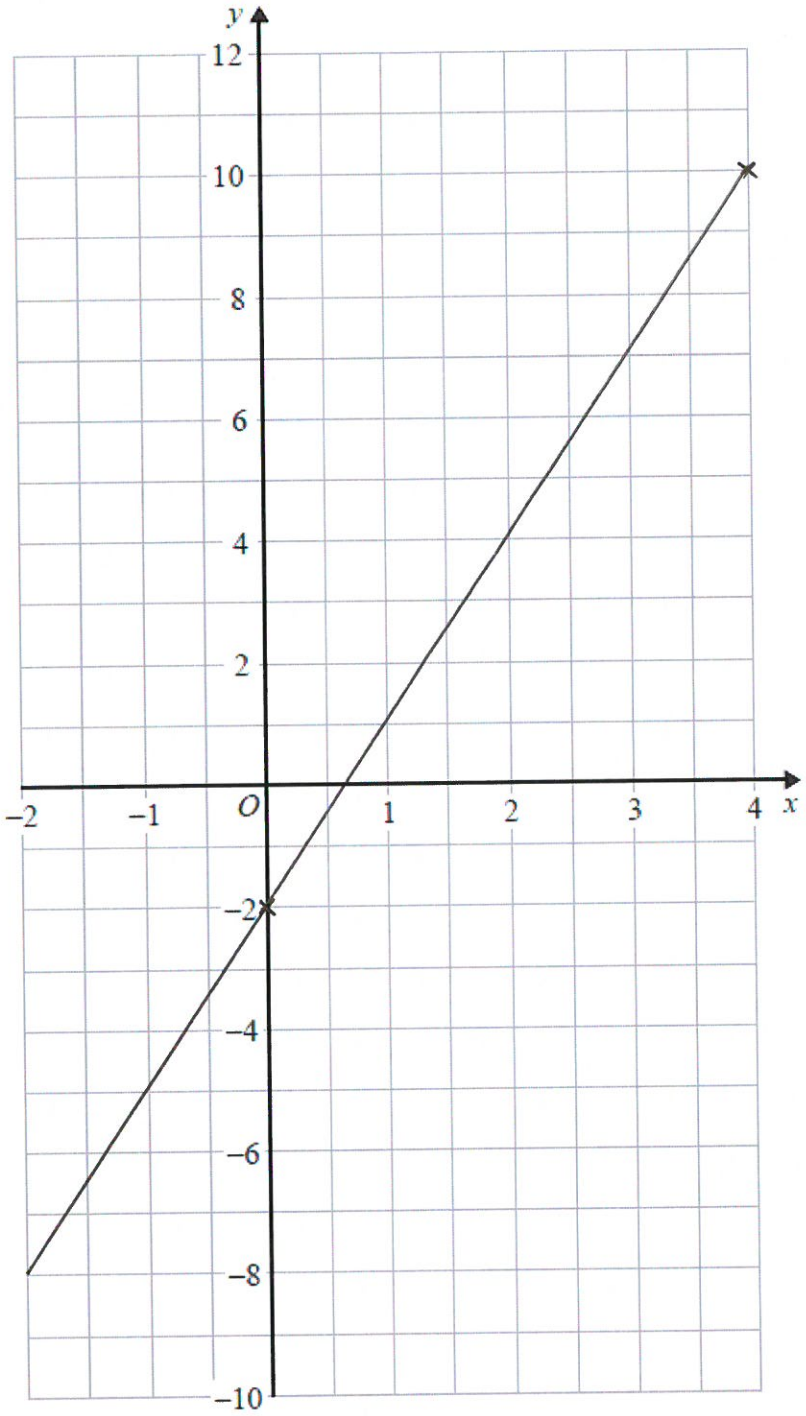
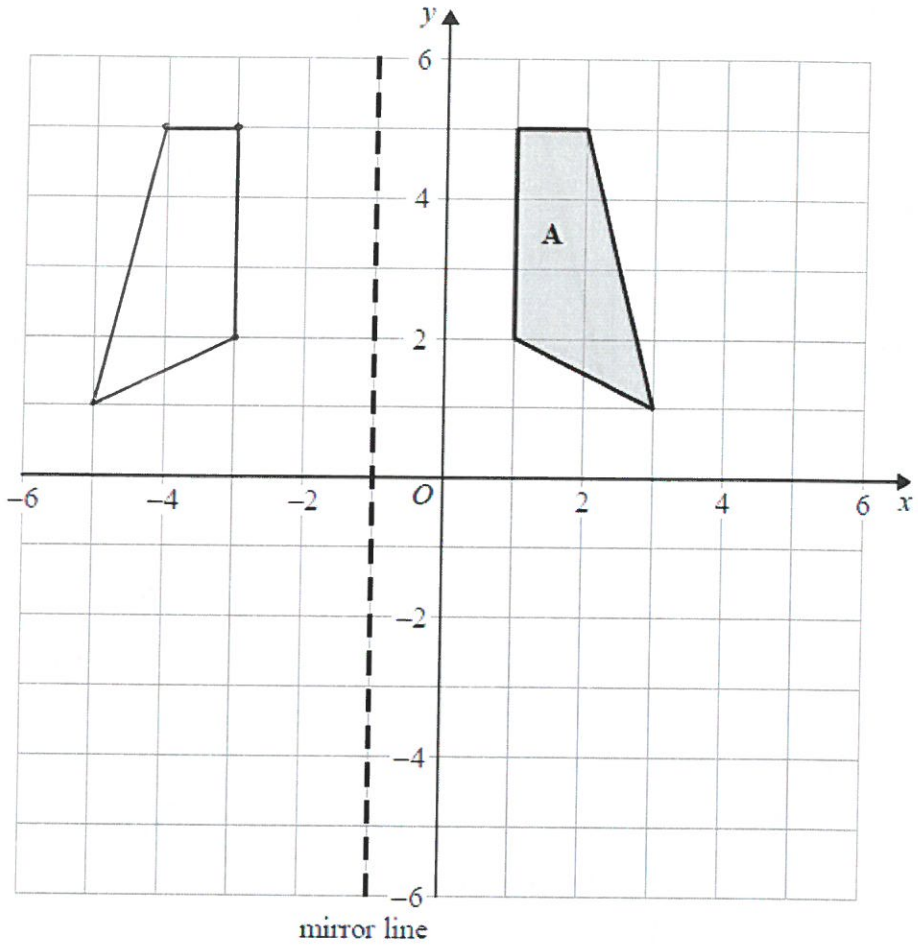
12 On the grid, draw the graph of $y = 3x - 2$ for values of x from -2 to 4



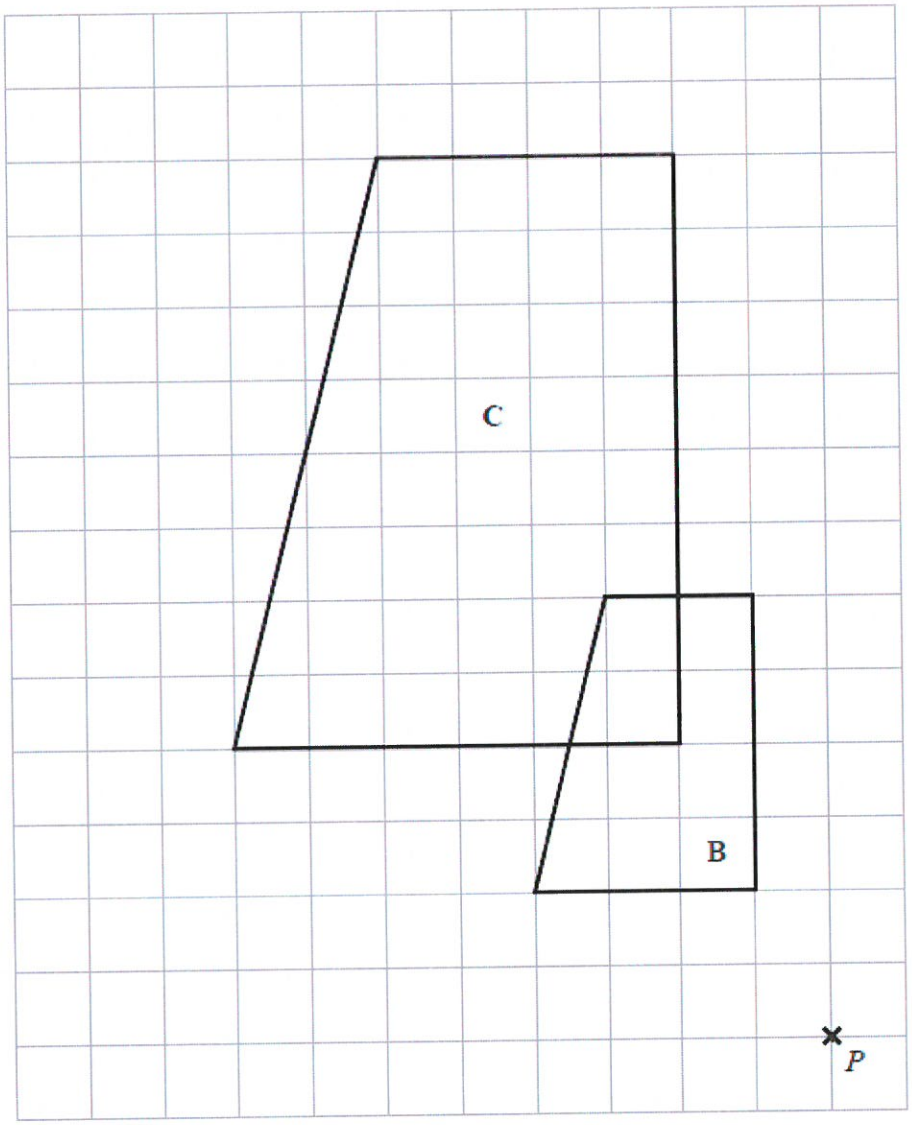
(Total for Question 12 is 3 marks)

13. (a) On the grid, reflect shape **A** in the mirror line.



(2)

(b)



Describe fully the single transformation that maps trapezium **B** onto trapezium **C**.

ENLARGEMENT, SCALE FACTOR 2, CENTRE OF ENLARGEMENT P

(2)

(Total for Question 13 is 4 marks)

14. A teacher asked Tyrese to find the value of $2n^2 - 3n$ when $n = 3$

Here is his working.

$2 \times 3^2 - 3 \times 3$

$= 6^2 - 9$

$= 36 - 9$

$= 27$

(i) What mistake has Tyrese made?

SHOULD DO $3^2 = 9$ THEN $2 \times 9 = 18$ AND NOT $2 \times 3 = 6$ $6^2 = 36$.

.....

(1)

The teacher then asked Megan to find the value of $2n^2 - 3n$ when $n = -4$

Here is her working.

$2 \times -4^2 - 3 \times -4$

$= 2 \times -16 + 12$

$= -32 + 12$

$= -20$

(ii) What mistake has Megan made?

SHE SHOULD HAVE DONE $(-4)^2 = 16$ AND NOT $-4^2 = -16$

.....

(1)

(Total for Question 14 is 2 marks)

15 Here is a list of ingredients for making 20 gingerbread men.

350 g	flour
10 g	ground ginger
100 g	butter
175 g	brown sugar
60 g	syrup
1	egg

60.
3×350 = 1050
3×10 = 30
3×100 = 300
3×175 = 525
3×60 = 180
3×1 = 3

Sue has,

1 kg flour = 1000g
200 g ground ginger
500 g butter
600 g brown sugar
100 g syrup
2 eggs

Sue wants to make 60 gingerbread men.
She has not got enough of all the ingredients.

(a) Work out how much more of each ingredient she needs.

$\frac{60}{20} = 3$

FLOUR : 1050 − 1000 = 50g
GINGER : SHE HAS ENOUGH
BUTTER : SHE HAS ENOUGH
SUGAR : SHE HAS ENOUGH
SYRUP : 180 − 100 = 80g
EGGS : 3 − 2 = 1

(4)

On a different day Sue wants to make 50 gingerbread men.
She has no eggs.
She works out she needs to buy at least 3 eggs.

(b) Explain why she needs to buy at least 3 eggs.

1 EGG FOR 20, 2 EGGS FOR 40 ∴ FOR 50 NEEDS 2.5 EGGS ~~MORE~~ ~~EGGS~~

$\frac{1}{2}$ SO NEEDS TO BUY 3

(1)

(Total for Question 15 is 5 marks)

16. Fayyaz bought a mobile phone for £180
He sold it at a profit of 22%

How much money did Fayyaz sell the mobile phone for?

1.22×180

£219.60

(Total for Question 16 is 2 marks)

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17. (a) Use your calculator to work out $\dfrac{43.2+\sqrt{99.05}}{0.193}$

Write down all the digits on your calculator display.

275.4009671

(2)

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

280

(1)

(Total for Question 17 is 3 marks)

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18. Solve $4x + 3 = 7 - x$

$5x = 4$

$x = \frac{4}{5}$

$x =$ $\frac{4}{5}$

(Total for Question 18 is 2 marks)

---

19. Neil, Craig and Keith are cousins.

Their ages are in the ratio 17 : 14 : 9
Craig is 42 years old.

How old are Neal and Keith?

N C K

17 : 14 : 9

×3

42

Neal 51 years

Keith 27 years

(Total for Question 19 is 3 marks)

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20. Lyn measures the length, x cm, of a piece of string as 3.5 cm correct to the nearest millimetre.

Write down the error interval for x.

$3.45 \leq x < 3.55$

(Total for Question 20 is 2 marks)

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21. There are 300 seeds in a packet of flower seeds.
Each seed will grow into a white flower or a yellow flower or a red flower.

The probability of a seed growing into a white flower is 0.62
45 of the seeds are expected to grow into yellow flowers.

One of the seeds is chosen at random from the packet.

What is the probability that this seed will grow into a red flower?

$P(Y) = \frac{45}{300} = 0.15$

$\therefore P(W) + P(Y) = 0.62 + 0.15 = 0.77$

$\therefore P(R) = 1 - 0.77$

$= 0.23$

0.23

(Total for Questions 21 is 3 marks)

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22. 100 adults were asked how they keep fit.

Each adult goes to the gym or runs or cycles.

45 of these adults are female.
30 of the 52 adults who go to the gym are female.
35 adults run.
9 men cycle.

How many females run?

	GYM	RUN	CYCLE	
M	22	24	9	55
F	30	11	4	45
	52	35	13	100

11

(Total for Question 22 is 3 marks)

23. On a school trip the ratio of the number of teachers to the number of students is 1 : 15 16

The ratio of the number of male students to the number of female students is 7 : 5 12

Work out what percentage of all the people on the trip are female students.
Give your answer correct to the nearest whole number.

$\frac{5}{12} \times \frac{15}{16} \times 100$

39 .....%

(Total for Question 23 is 3 marks)

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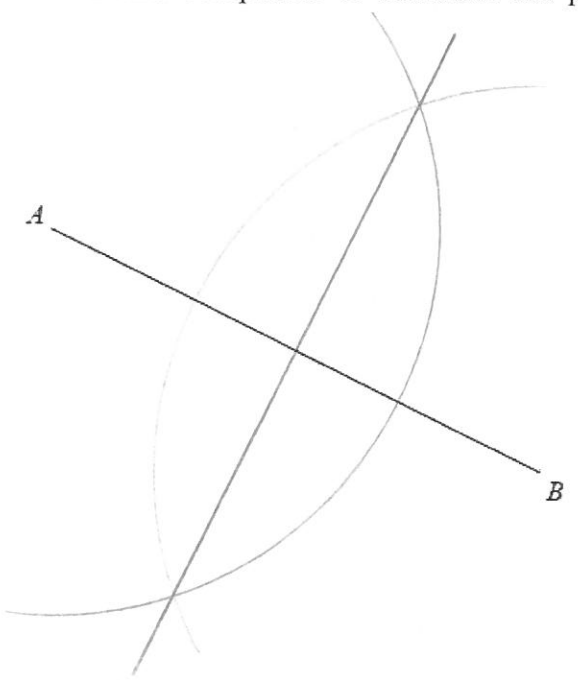
24. In the space below, use ruler and compasses to construct the perpendicular bisector of line AB.



(Total for Question 24 is 2 marks)

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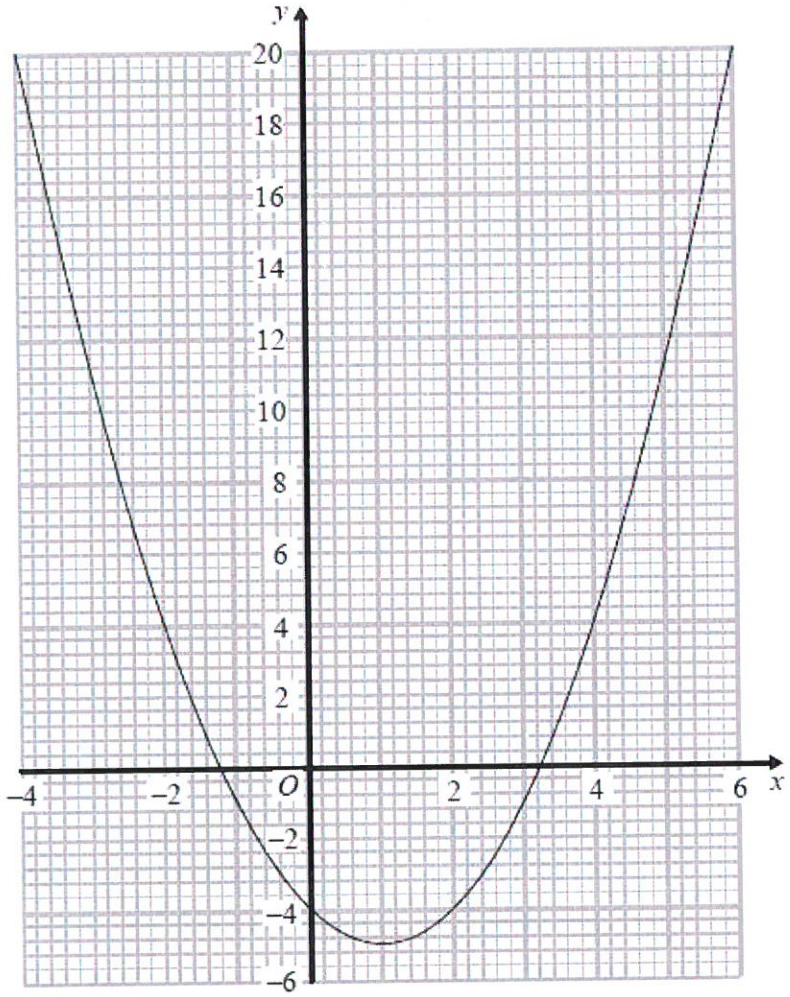
25. Here is the graph of $y = x^2 - 2x - 4$



(a) Write down estimates for the roots of $x^2 - 2x - 4 = 0$

..... −1.2 , 3.2 .....

(2)

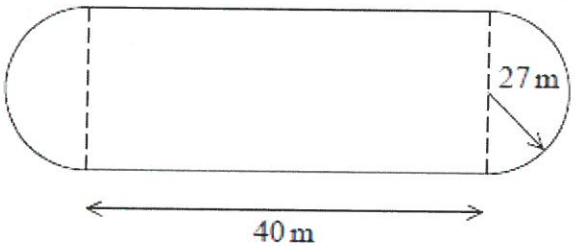
(b) Write down the coordinates of the turning point of $y = x^2 - 2x - 4$

(..... 1 ..... , ... −5 .....)

(1)

(Total for Question 25 is 3 marks)

26. The diagram shows a cycle track.



The track has two straight sides each of length 40 m.
Each end of the track is a semicircle of radius 27 m.

The diameter of each wheel of Ian's bike is 590 mm.
Ian is going to ride his bike around the track once.

Calculate how many complete revolutions each wheel of his bike will make.

TWO SEMI-CIRCLES → 1 FULL CIRCLE $= 2\pi r$

$= 2\pi \times 27$

$= 54\pi$

$\therefore$ PERIMETER $= 54\pi + 80 = 249.65\text{m}$

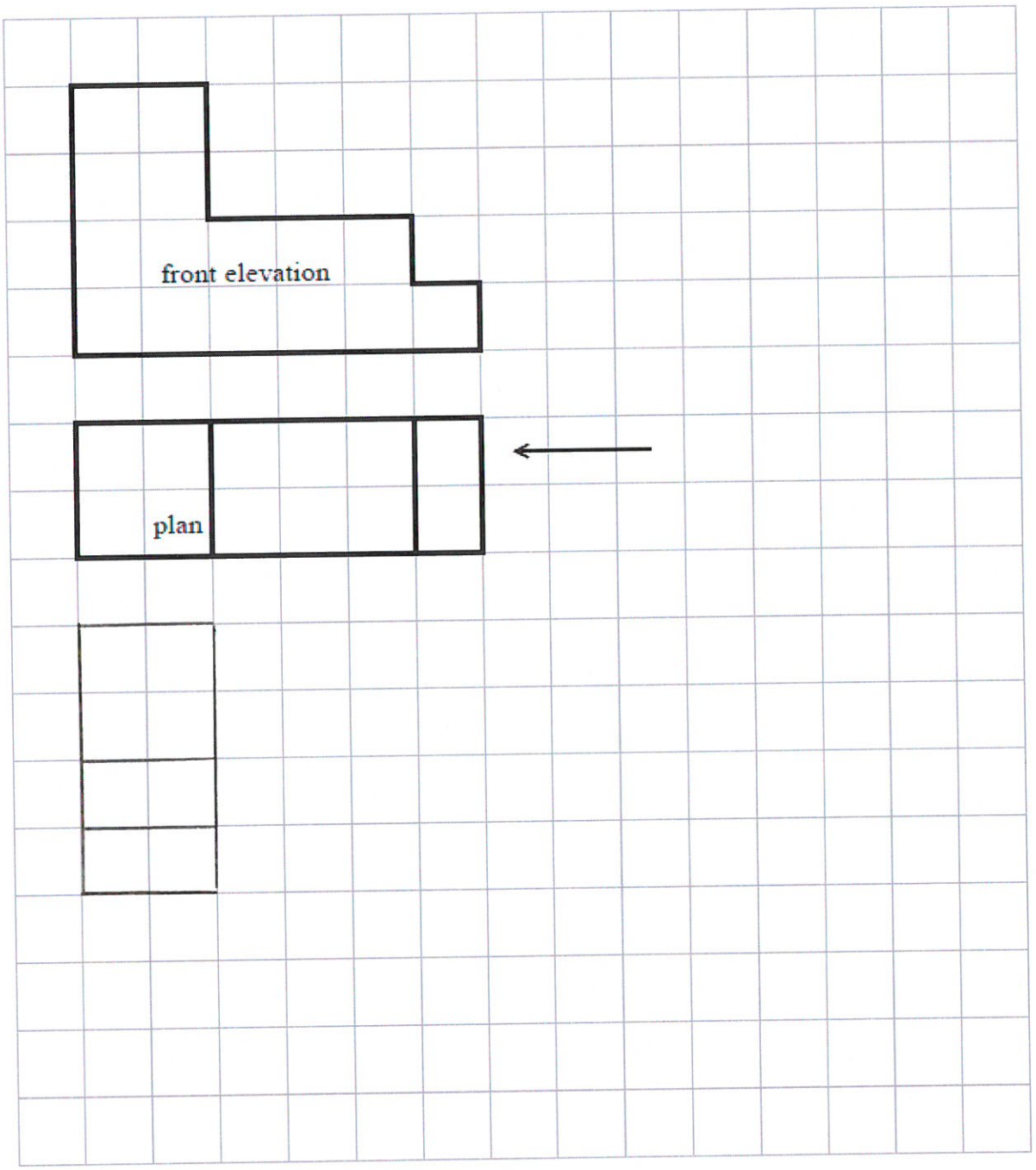
FOR EACH REVOLUTION OF HIS WHEEL, HE MOVES FORWARD $\pi \times 0.59\text{ m} = 1.8535\text{ m}$

$\therefore$ NUMBER OF REVOLUTIONS $= \dfrac{249.65}{1.8535} = 134.7$

134

(Total for Question 26 is 5 marks)

27. The front elevation and plan of a solid are shown on the grid.
On the grid, draw the side elevation from the direction of the arrow.



(Total for Question 27 is 2 marks)

28. The distance from the Earth to the Sun is 1.496×10^{11} metres.
The speed of light is 3×10^{8} metres per second.

(a) Show that, correct to 3 significant figures, light will take 0.139 hours to travel from the Sun to the Earth.

$$\text{TIME} = \frac{1.496 \times 10^{11}}{3 \times 10^{8}} \text{ SECONDS}$$

$$= 499.5$$

$$= \frac{499}{60 \times 60} \text{ HOURS}$$

$$= 0.139 \text{ HOURS}$$

(3)

1 googol is 1×10^{100}

Danesh says,

> When I multiply 1.496×10^{11} by 6.68×10^{9}
> I get nearly 1 googol because $1.496 \times 10^{11} \times 6.68 \times 10^{9} = 9.99 \times 10^{99}$

Is Danesh correct?

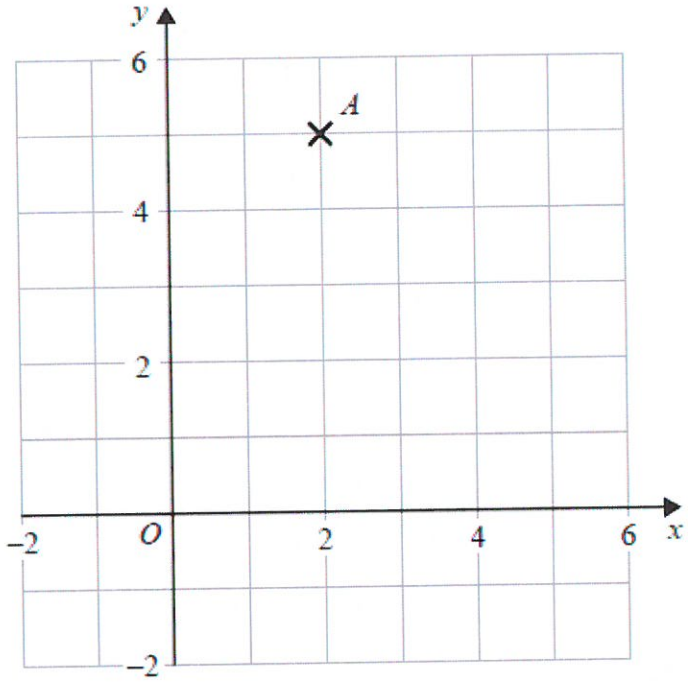
(b) Give a reason for your answer.

NO: $10^{11} \times 10^{9} = 10^{20}$ NOT 10^{99}. AND THE INDICES DON'T MULTIPLY.

(1)

(Total for Question 28 is 4 marks)

29. Find an equation of the straight line with gradient 3 that passes through point A. $(2, 5)$



$y = 3x + c$

$5 = 3 \times 2 + c = 6 + c$

$\therefore c = -1$

$y = 3x - 1$

(Total for Question 29 is 2 marks)

30. (a) Factorise $x^2 - 169$

$(x+13)(x-13)$

(1)

(b) Expand and simplify $(3x + 2)(2x - 1)$

$6x^2 - 3x + 4x - 2$

$6x^2 + x - 2$

(2)

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS