GCSE
MATHEMATICS

F

Foundation Tier   Paper 1 Non–Calculator

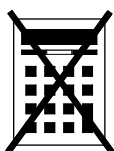Friday 19 May 2023   Morning   Time allowed: 1 hour 30 minutes

Materials
For this paper you must have:
- mathematical instruments
- the Formulae Sheet (enclosed).

You must **not** use a calculator.

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

Advice
In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22	
TOTAL	

Answer **all** questions in the spaces provided.

1   Here is a list of numbers.

             14   9   20   29   3   45   33

1   (a)   Which number in the list is a multiple of 4 ?

[1 mark]

Answer _____

1   (b)   Which number in the list is a square number?

[1 mark]

Answer _____

**1 (c)** Which **two** numbers in the list have a total of 43 ?

[1 mark]

Answer _____ and _____

1 (d) Work out

largest number in the list ÷ smallest number in the list

[1 mark]

_____

Answer _____

Turn over for the next question

4

Turn over ▶

Answer all questions in the spaces provided.

1 Here is a list of numbers.

12   20   42   27   18   36   6

1 (a) Which number in the list is a multiple of 5?

[1 mark]

Answer _____

1 (b) Which number in the list is a square number?

[1 mark]

Answer _____

1 (c) Which **two** numbers in the list have a total of 45 ?

[1 mark]

Answer _____ and _____

1 (d) Work out

largest number in the list ÷ smallest number in the list

[1 mark]

Answer _____
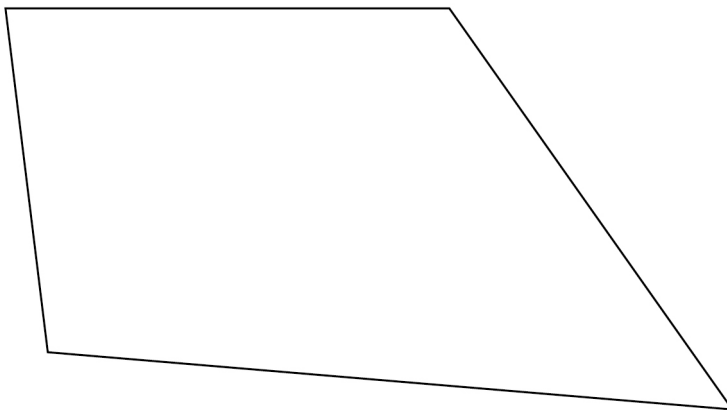
2 (a) Here is a square.
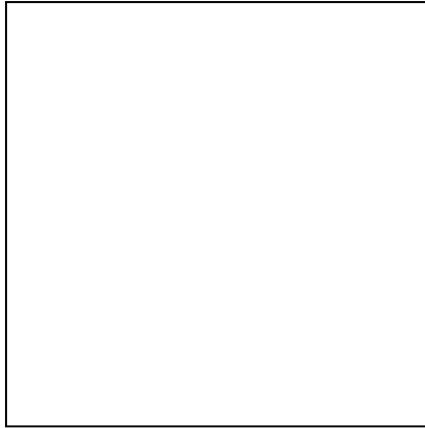
Use a ruler to measure a side length of the square.

Give your answer in **millimetres**.

[1 mark]

Answer _____ mm
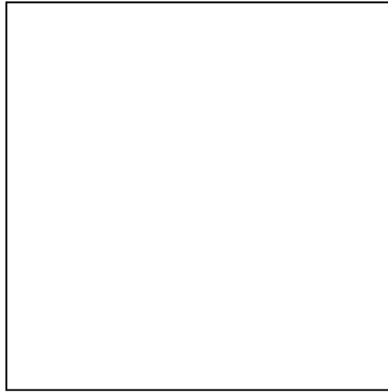
2 (b) Here is a quadrilateral.

Use a protractor to measure the size of the **smallest** angle.

[1 mark]
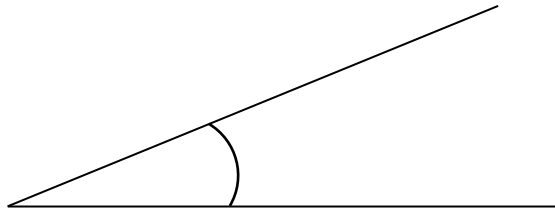
Answer _____ °

2 (a) Here is a square.

Use a ruler to measure a side length of the square.

Give your answer in **millimetres**.

[1 mark]
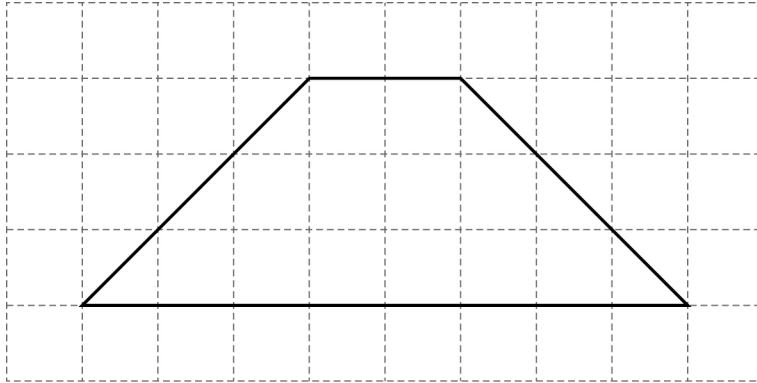
Answer _____ mm

2 (b) Here is an angle.

Use a protractor to measure the size of the angle.

[1 mark]

Answer _____ °

Turn over for the next question

6

Turn over ▶

2 (c) A different quadrilateral is drawn on a centimetre grid.

By counting squares, work out the **area** of the quadrilateral.

[1 mark]

Answer _____ cm^2

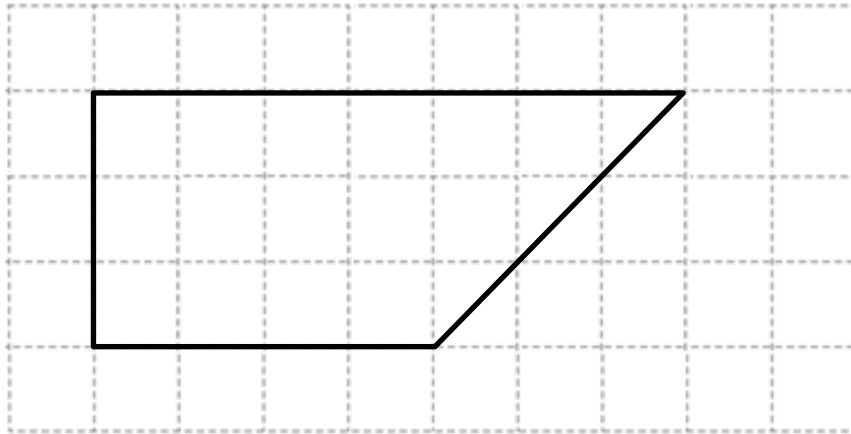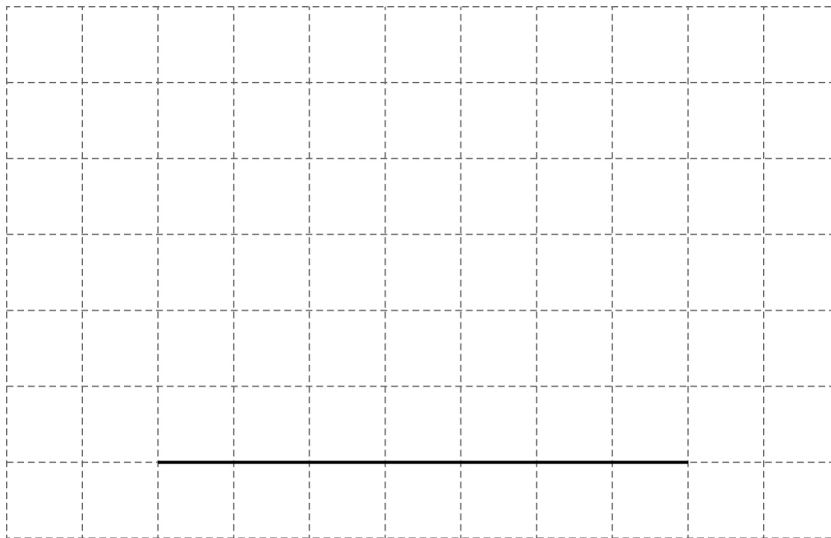**2 (d)** One side of a rectangle is drawn on this centimetre grid.

Complete the rectangle so that it has a **perimeter** of 20 cm

[1 mark]

4

Turn over ►

2 **(c)** A quadrilateral is drawn on a centimetre grid.

By counting squares, work out the **area** of the quadrilateral.

[1 mark]

Answer _____ cm^2

2 **(d)** One side of a rectangle is drawn on this centimetre grid.

Complete the rectangle so that it has an **area** of 28 square centimetres.

[1 mark]

3 (a) Work out $(-4) \times (-3)$

[1 mark]

Answer _____

3 (b) Work out $6 \times (-5)$

[1 mark]

Answer _____

3 (c) Work out $(-8)^2$

[1 mark]

Answer _____

3 (d) Work out 10^3

[1 mark]

Answer _____

3 (a) Work out $(-2) \times (-5)$

[1 mark]

Answer _____

3 (b) Work out $3 \times (-8)$

[1 mark]

Answer _____

3 (c) Work out $(-4)^2$

[1 mark]

Answer _____

3 (d) Work out 2^3

[1 mark]

Answer _____

Turn over for the next question

6

Turn over ▶

4 Write 18 out of 30 as a fraction in its simplest form.

[2 marks]

Answer _____

5 At a shop

the normal price of one pen is 24p

the normal price of one calculator is £7

The shop has these special offers.

Pens	**Calculators**
Half the normal price	£1.50 less than the normal price

Work out the **total** price of 5 pens and 1 calculator using the special offers.

[4 marks]

Answer £ _____

10

Turn over ▶

4 Write 12 out of 40 as a fraction in its simplest form.

[2 marks]

Answer _____

5 At a cinema

       the normal price of a ticket is £12

       the normal price of a regular popcorn tub is £4.90

The cinema has these special offers.

Cinema Ticket	**Regular popcorn tub**
Half the normal price	£1.40 less than the normal price

Work out the **total** price of 3 cinema tickets and 1 regular popcorn tub using the special offers.

[4 marks]

Answer £ _____

6 (a) Write $3\frac{2}{5}$ as an improper fraction.

[1 mark]

Answer _____

6 (b) Write 0.19 as a fraction.

[1 mark]

Answer _____

6 (a) Write $2\dfrac{3}{7}$ as an improper fraction.

[1 mark]

Answer _____

6 (b) Write 0.23 as a fraction.

**[1 mark]**

Answer _____

Turn over for the next question

8

Turn over ▶

7 Misha recorded the main type of weather each day for **55 days**.

The pictogram shows the results for rain, snow and cloud.

Key: = 4 days

Rain	
Snow	
Cloud	
Sun	
Fog	

Sun was recorded on 1 **more** day than fog.

Complete the pictogram for the 55 days.

[4 marks]

7 Talal recorded the colour of 100 cars.

The pictogram shows the results.

Key: ⊞ = 8 cars

White	⊞ ⊞ ⊞ ⊞
Black	⊞ ⊞ ▯
Blue	⊞ ⊞
Red	
Silver	
Other	⊞ ▯

There were 4 **more** red cars than silver cars.

Complete the pictogram for the 100 cars.

[4 marks]

8

$$T = 5P - W$$

8 (a) Work out the value of T when $P = 4$ and $W = 2$

[2 marks]

$T =$ _____

8 (b) Work out the value of P when $T = -40$ and $W = 10$

[3 marks]

$P =$ _____

8

$$T = 2A - B$$

8 (a) Work out the value of T when $A = 10$ and $B = 8$

[2 marks]

$T =$ _____

8 (b) Work out the value of A when $T = -22$ and $B = 16$

[3 marks]

$A =$ _____

Turn over for the next question

9

Turn over ▶

9 Match each box on the left to the box on the right with the same value.

One has been done for you.

[3 marks]

$\dfrac{1}{10}$ ———————————	0.1
	0.05
$\dfrac{1}{2}$	20%
	$\dfrac{2}{6}$
$\dfrac{1}{4}$	0.25
$\dfrac{1}{5}$	$\dfrac{10}{20}$

Turn over for the next question

8

Turn over ▶

9 Match each box on the left to the box on the right with the same value.

One has been done for you.

[3 marks]

$\dfrac{1}{25}$ ———————————	0.04
$\dfrac{1}{2}$	$\dfrac{2}{100}$
$\dfrac{1}{50}$	20%
$\dfrac{1}{4}$	$\dfrac{2}{6}$
	25%
	0.5

8300/1F

10 Here are two calculations, A and B.

A	$8 \times 3 + 2$
B	$21 - (15 - 4)$

Work out   answer to A × answer to B

[3 marks]

_____

_____

_____

_____

_____

_____

Answer _____

11 Convert 7 gallons to litres.

Use   1 gallon = 4.5 litres

[2 marks]

_____

_____

_____

Answer _____ litres

10 Here are two calculations, **A** and **B**.

A	$12 \times 2 + 6$
B	$11 - (10 - 7)$

Work out   answer to **A** × answer to **B**

[3 marks]

_____

_____

_____

_____

_____

_____

Answer _____

11 Convert 18 litres to gallons.

Use   1 gallon = 4.5 litres

[2 marks]

_____

_____

_____

Answer _____ gallons

Turn over for the next question

8

Turn over ▶

12 The table shows monthly payments for electricity.

October	November
£120	£240

Write down the percentage increase from October to November.

[1 mark]

Answer _____ %

13 Students choose juice with their school meal in the ratio

orange : apple : lime = 5 : 2 : 3

Complete the bar chart.

[3 marks]

9
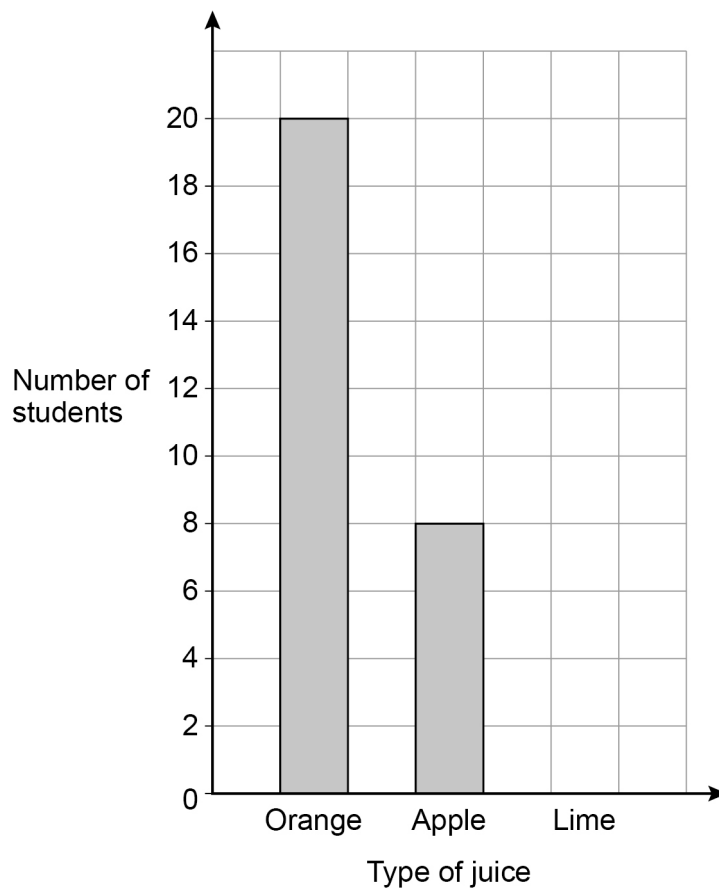
Turn over ▶

12 The table shows the number of visitors to a museum.

October	November
200	400

Write down the percentage increase from October to November.

[1 mark]

Answer _____ %

13 A shop stocks juice in the ratio

orange : apple : lime $= 4 : 2 : 3$

Type of juice
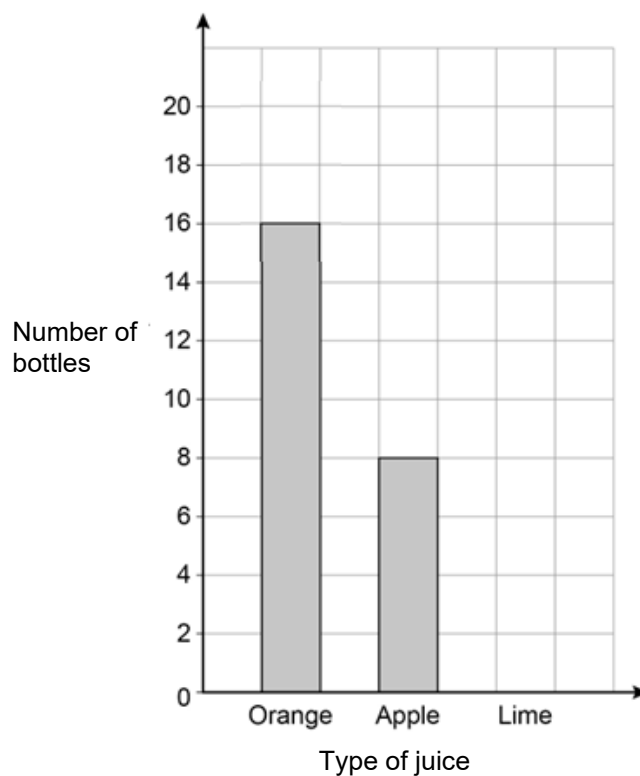
Complete the bar chart.

[3 marks]

_____

_____

14 Here is some data about people visiting a gym one week.

	Percentage of all visitors	Mean number of hours visiting	Range of number of hours visiting
Members	64	4	6
Guests	36	$2\frac{1}{2}$	8

Compare the data for the members with the data for the guests.

Make **three** comparisons.

[3 marks]

Comparison 1 _____

_____

_____

Comparison 2 _____

_____

_____

Comparison 3 _____

_____

_____

14 Here is some data about people visiting a ski centre one week.

	Percentage of all visitors	Mean number of hours visiting	Range of number of hours visiting
Members	32	3.5	3
Guests	68	2	4

Compare the data for the members with the data for the guests.

Make **three** comparisons.

[3 marks]

Comparison 1 _____

_____

Comparison 2 _____

_____

Comparison 3 _____

_____

Turn over for the next question

7

Turn over ▶

15 A large rectangle has a rectangular hole cut out.

4 cm

2 cm

3 cm

5 cm
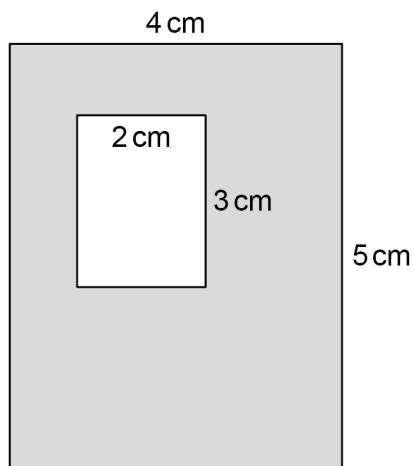
Not drawn accurately

Work out the percentage of the large rectangle that is shaded.

[3 marks]

Answer _____ %

16 Liz travels 18 miles in 20 minutes.

Work out her average speed in miles per hour.

[3 marks]

Answer _____ mph

9

Turn over ▶

15 A large rectangle has a rectangular hole cut out.

5 cm

3 cm

4 cm

6 cm

Not drawn accurately
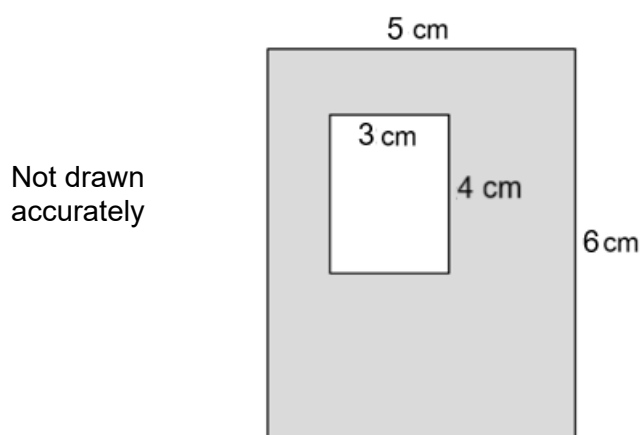
Work out the percentage of the large rectangle that is shaded.

[3 marks]

Answer _____ %

16 Sabina travels 12 miles in 15 minutes.

Work out her average speed in miles per hour.

[3 marks]

Answer _____ mph

17 *ABC*, *BD* and *BE* are straight lines.
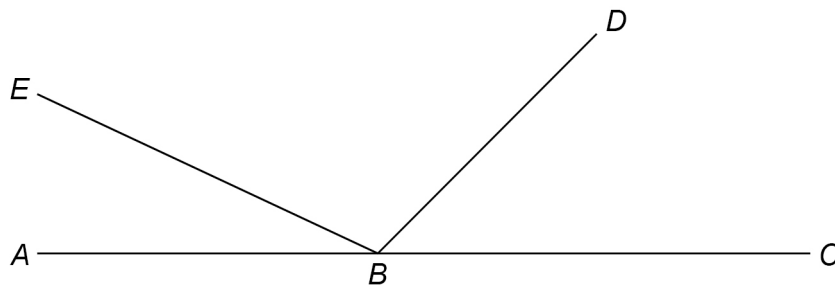
Not drawn accurately

angle *EBD* = 5 × angle *ABE*

angle *DBC* = 3 × angle *ABE*

Work out the size of angle *EBD*.

[3 marks]

Answer _____ °

17 *ABC*, *BD* and *BE* are straight lines.

Not drawn accurately
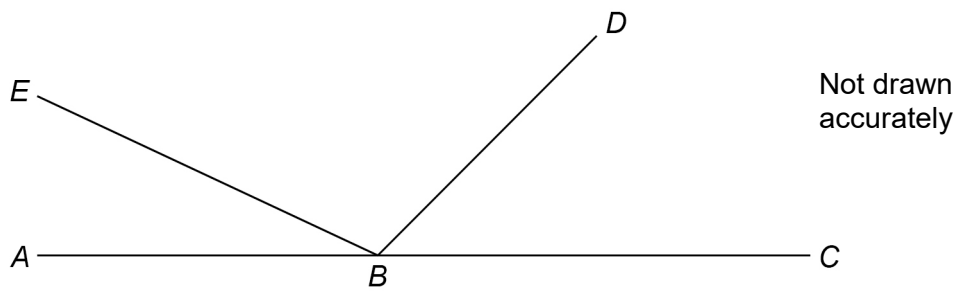
angle *EBD* = 6 × angle *ABE*

angle *DBC* = 3 × angle *ABE*

Work out the size of angle *DBC*.

[3 marks]

Answer _____ °

Turn over for the next question

9

Turn over ▶

18 Two prime numbers are multiplied together.

The answer is an **even** number between 50 and 60

Complete the calculation.

[3 marks]

$$\boxed{} \times \boxed{} = \boxed{}$$

19 Andrew and Bruce share some money in the ratio 5 : 6

Bruce gets £96

Andrew gives $\frac{1}{4}$ of his share to Carl.

Bruce gives $\frac{2}{3}$ of his share to Carl.

How much money does Carl receive?

[4 marks]

Answer £ _____

10

Turn over ▶

18   Two prime numbers are multiplied together.

The answer is an **even** number between 40 and 50

Complete the calculation.

[3 marks]

$$\boxed{} \times \boxed{} = \boxed{}$$

19   Chloe and Mikey share some money in the ratio   3 : 4

Mikey gets £72

Chloe gives $\dfrac{1}{6}$ of her share to Pippa.

Mikey gives $\dfrac{4}{9}$ of his share to Pippa.

How much money does Pippa receive?

[4 marks]

Answer £ _____

20 Players score points in a game.

The scatter graph shows the time played and the points scored by some players.

20 (a) Circle the strength and type of correlation shown.

[1 mark]

weak positive   strong positive   weak negative   strong negative

20 (b) Players get one extra life for every 2000 points they score.

Jonah plays the game for 15 hours.

Use a line of best fit to estimate the number of extra lives he gets.

[3 marks]

_____

_____

_____
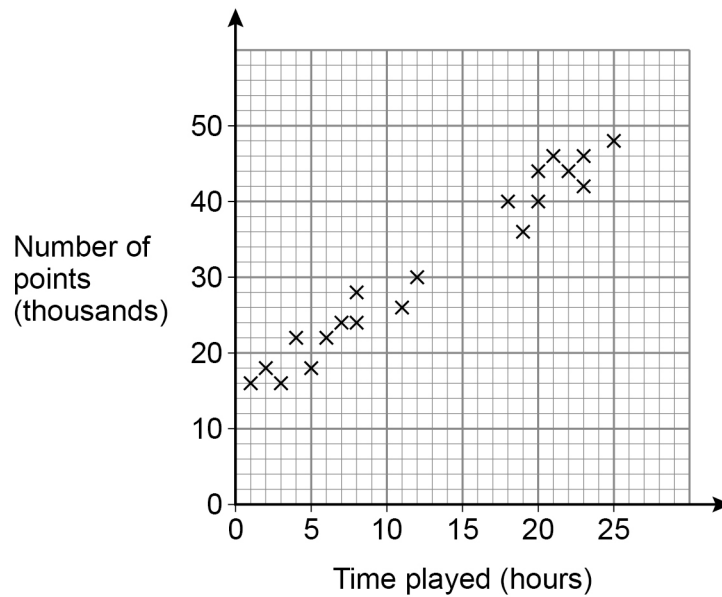
Answer _____

20 Players score points in a game.

The scatter graph shows the time played and the points scored by some players.

Number of points (thousands) / Time played (hours)

20 (a) Circle the type of correlation shown.

[1 mark]

none   weak   negative   positive

20 (b) Players get one extra life for every 500 points they score.

Amy plays the game for 10 hours.

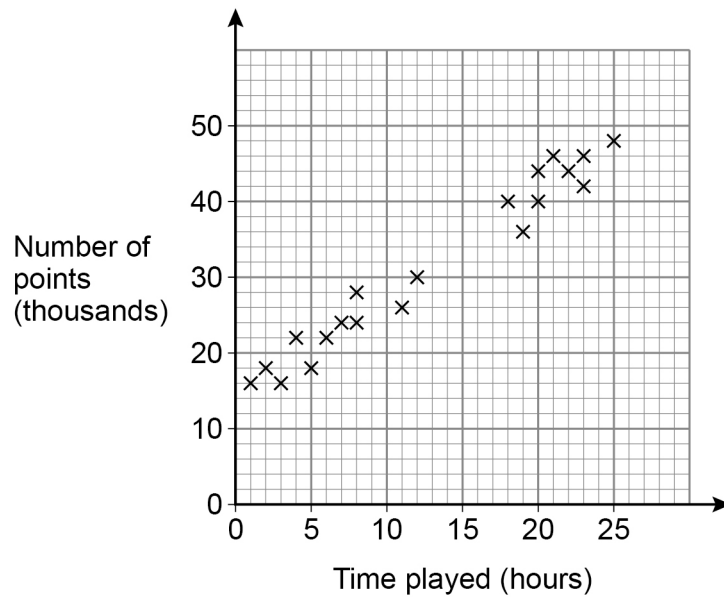Use a line of best fit to estimate the number of extra lives she gets.

[3 marks]

_____

_____

_____

Answer _____

Turn over for the next question

11

Turn over ▶

21 $2^a \times 3 \times 5^2 = 600$

Work out the value of a.

You **must** show your working.

[3 marks]

$a =$ _____

22 Expand and simplify fully $5(3x + 4) - 2(x - 1)$

[2 marks]

Answer _____

9

Turn over ▶

21 $2^a \times 3^2 \times 5 = 360$

Work out the value of a.

You **must** show your working.

[3 marks]

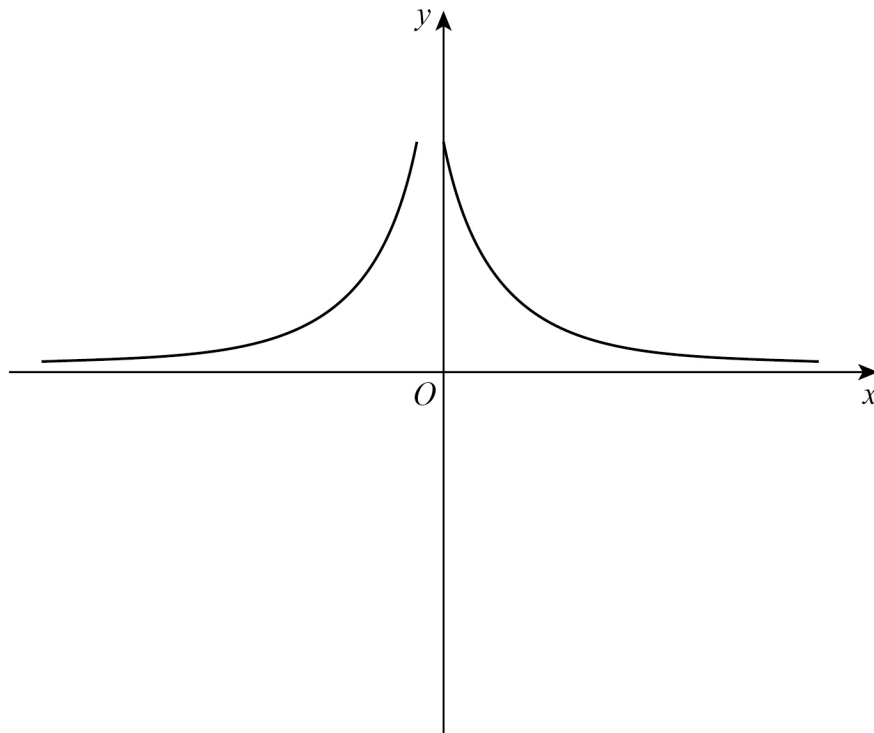$a =$ _____

22   Expand and simplify fully $2(5x + 6) - 3(x - 2)$

[2 marks]

Answer _____

23 Erika tries to sketch the graph $y = \dfrac{1}{x}$ with $x \neq 0$

Make **two** different criticisms of her sketch.
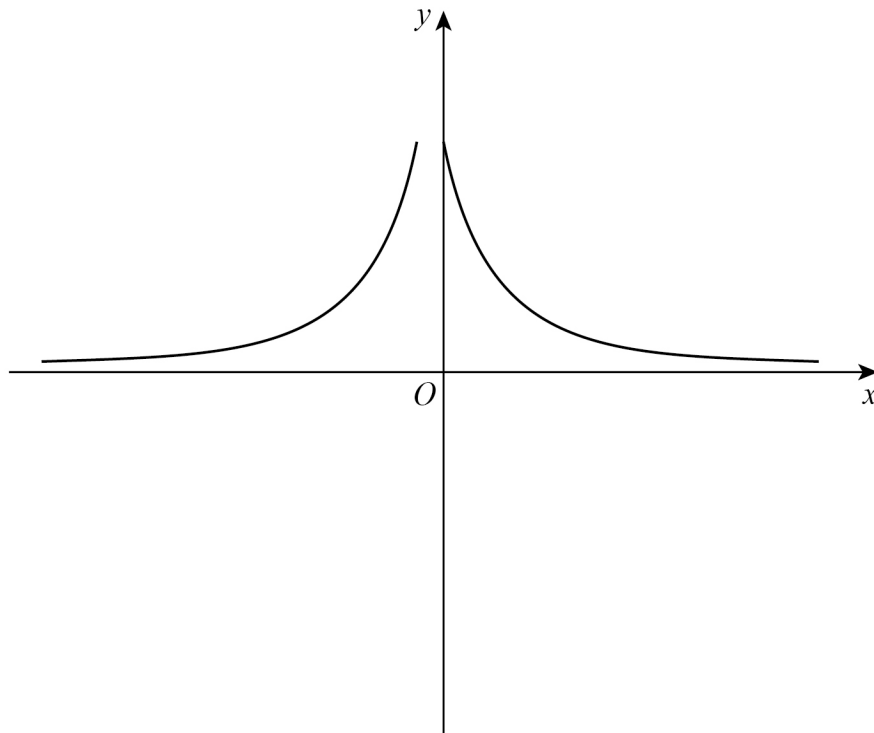
[2 marks]

Criticism 1 _____

_____

_____

Criticism 2 _____

_____

_____

23 Erika tries to sketch the graph $y = \dfrac{1}{x}$ with $x \neq 0$

Make **two** different criticisms of her sketch.

[2 marks]

Criticism 1 _____

_____

_____

Criticism 2 _____

_____

_____

Turn over for the next question

7

Turn over ▶

24 Sunita is x years old.

      Beth is one year younger than Sunita.

      Joel is double Sunita's age.

The mean of their ages is 5

How old is **Joel**?

[5 marks]

Answer _____

Turn over for the next question

Turn over ▶

24   Wenjie is x years old.

Megan is five years older than Wenjie.

Conor is three times Wenjie's age.

The mean of their ages is 35

How old is **Conor**?

[5 marks]

Answer _____

25 Work out $2\dfrac{1}{3} \div \dfrac{4}{5}$

Give your answer as a mixed number.

[4 marks]

Answer _____

END OF QUESTIONS

4

25 Work out $3\dfrac{1}{4} \div \dfrac{2}{5}$

Give your answer as a mixed number.

[4 marks]

Answer _____

END OF QUESTIONS