AQA

GCSE
MATHEMATICS

F

Foundation Tier   Paper 1 Non–Calculator

Shadow paper based on 2020 question paper

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
• mathematical instruments.

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	
22–23	
24–25	
TOTAL	

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

1 Here are some numbers.

5	5	8	13	14	15	17

Circle the mode.

[1 mark]

5 11 12 13

2 Circle the value of the digit 6 in 256 934

[1 mark]

600 600 000 6000 60 000

3 Work out −3 − 6

Circle your answer.

[1 mark]

−9 −3 3 9

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4 What is 320 millimetres in centimetres?

Circle your answer.

[1 mark]
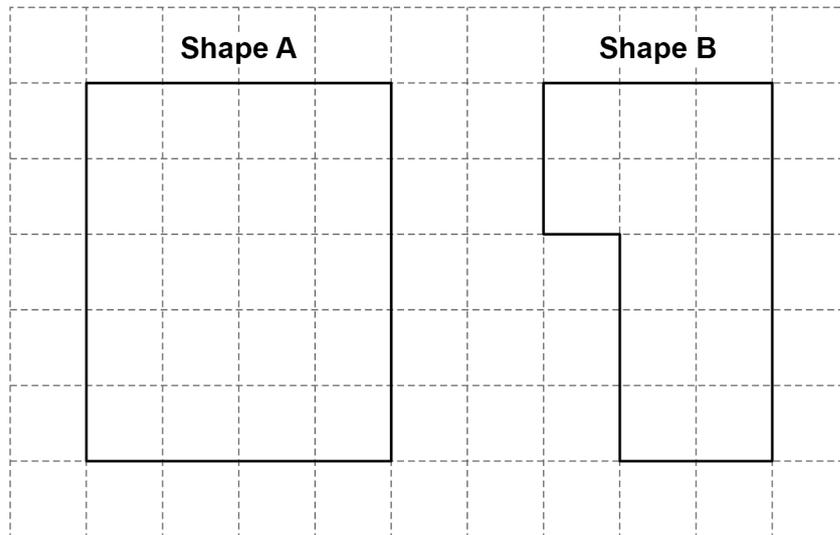
0.32 cm   3.2 cm   32 cm   3200 cm

5

Shape A   Shape B

Work out   perimeter of Shape A : perimeter of Shape B

Give your answer in its simplest form.

[2 marks]

_____

_____

_____

Answer _____ : _____

6

Turn over ▶

6 (a) Shane and Dolan run a race.

Shane finishes in $3\frac{1}{2}$ minutes.

Dolan finishes in 220 seconds.

Complete the following sentence.

[2 marks]

_____ wins by _____ seconds.

_____

_____

_____

6 (b) Alicia goes to stay with a friend.

She starts from home on Monday at 1 pm

She arrives back home 55 hours later.

Work out when she arrives back home.

[2 marks]

_____

_____

_____

Day _____

Time _____

7   Work out $(57 \times 6) + (336 \div 8)$

[3 marks]

Answer _____

Turn over for the next question

7

Turn over ▶

8   Here is some information, by ticket type, about the number of people visiting a zoo one week.

Key: ▦   represents 20 people
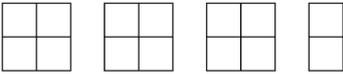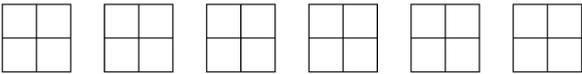
Adults	▦ ▦ ▦ ◰
Students	▦ ▦ ▦ ▦ ▦ ▦
Children	▦ ▦ ▦ ▦
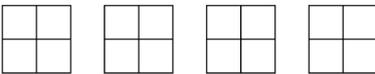
8 (a)   How many adults visited the zoo?
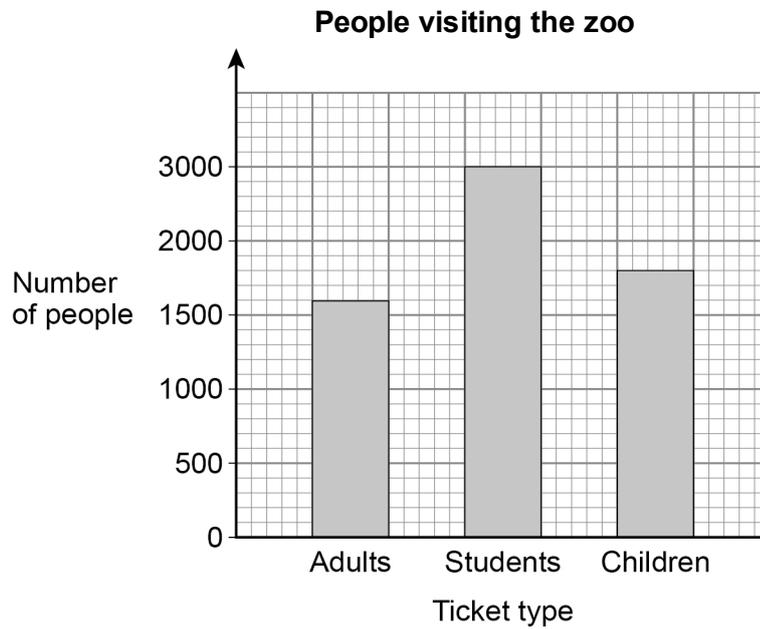
[1 mark]

Answer _____

8 (b)   How many **more** students than children visited the zoo?

[2 marks]

Answer _____

8 (c) A bar chart is drawn to show the number of people visiting the zoo one month.

Ticket type	Number of people
Adults	1600
Students	3000
Children	1800

People visiting the zoo

Give one criticism of the bar chart.

[1 mark]

_____

_____

4

Turn over ▶

9 Hatim will pay income tax if he earns more than £13 500 in a year.

After 7 months he has earned a **total** of £8600

For the rest of the year he earns £1100 each month.

Will he pay income tax?

You **must** show your working.

[3 marks]

_____

_____

_____

_____

_____

_____

10 x is a 3-digit whole number.

How many digits does the number $10x$ have?

Circle your answer.

[1 mark]

cannot tell   3   4   5

11 (a) Circle the answer to 500 × 0.2

[1 mark]

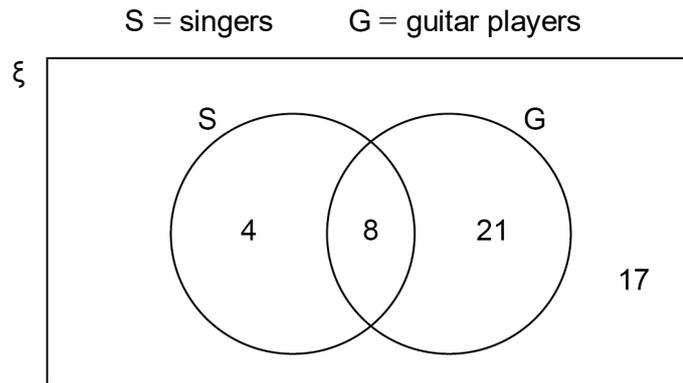10   100   1000   10000

11 (b) Work out 2.85 ÷ 5

Give your answer as a decimal.

[2 marks]

_____

_____

_____

Answer _____

Turn over for the next question

7

Turn over ▶

12 The Venn diagram shows information about 50 people who are in bands.

S = singers   G = guitar players

ξ

S   G

4   8   21

17

12 (a) How many of the people are singers?

[1 mark]

Answer _____

12 (b) How many of the people are guitar players but **not** singers?

[1 mark]

Answer _____

12 (c) One of the people is chosen at random.

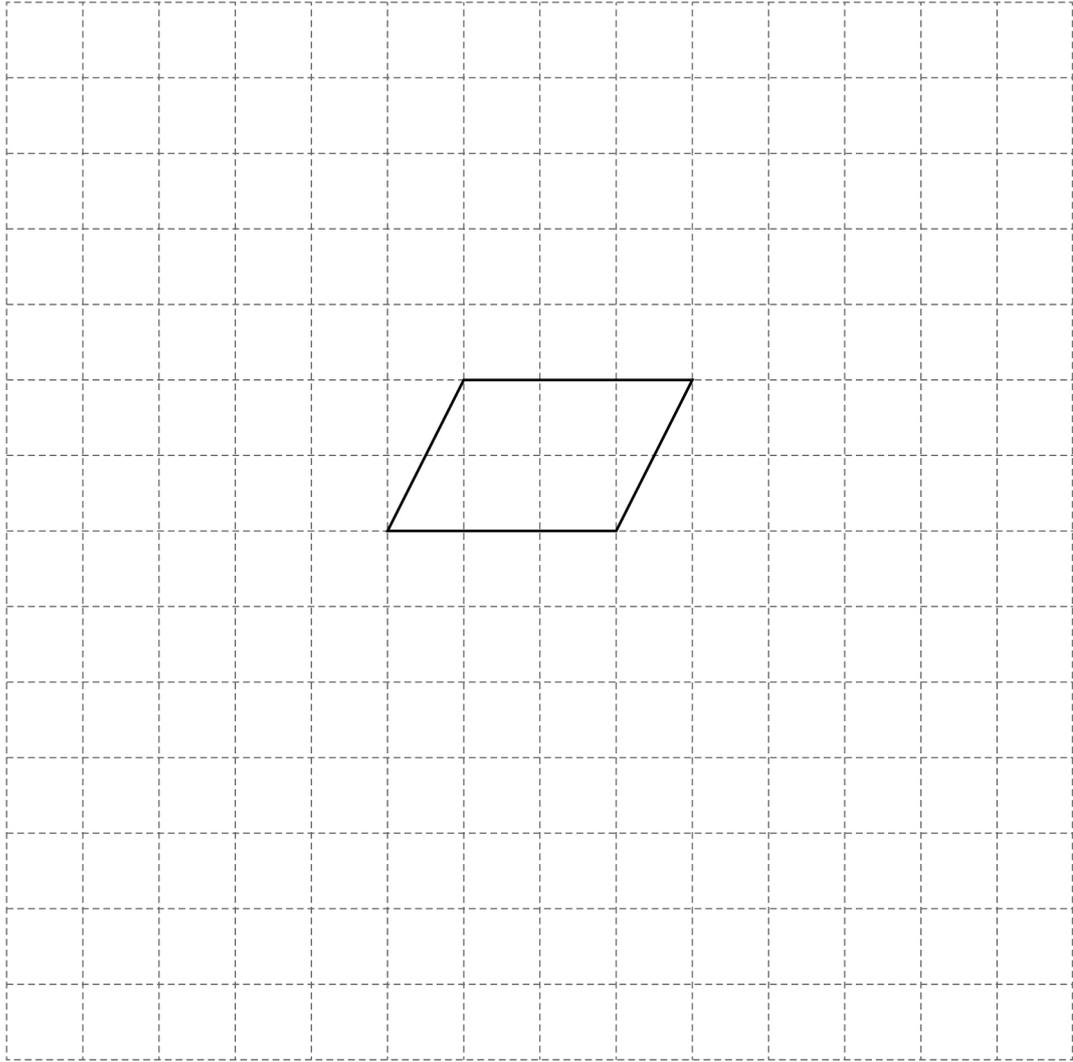Write down the probability that the person is

a singer

and

not a guitar player.

[1 mark]

Answer _____

13 Here is a parallelogram.

The parallelogram is translated 4 squares to the right and 3 squares down.

Draw the translated parallelogram.

[2 marks]

5

Turn over ▶

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14 (a)   Solve $8x - 9 = 31$

[2 marks]

_____

_____

_____

$x =$ _____

14 (b)   Simplify fully $(3 \times 5a) + 11 + \dfrac{12a}{3} - 9$
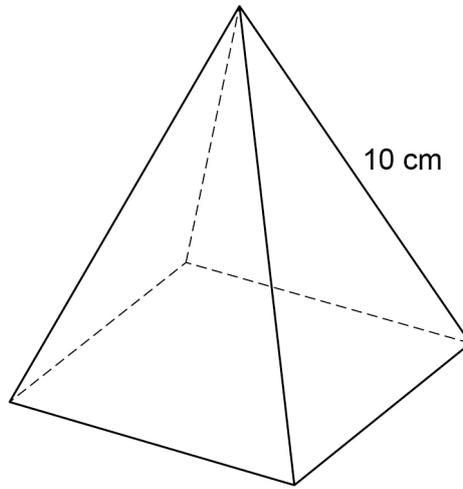
[3 marks]

_____

_____

_____

Answer _____

15 A pyramid has a square base.

Each of the four sloping edges has length 10 cm

10 cm

The total length of all eight edges is 76 cm

Work out the **area** of the square base.

[4 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____ cm^2

Turn over ▶

9

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16 The table shows information about how 180 students travel to school.

	Walk	**Bus**	**Car**	
Girls	30	41	24	Total = 95
Boys	23	41	21	Total = 85

16 (a) What fraction of the **girls** walk to school?

Give your answer in its simplest form.

[2 marks]

Answer _____

16 (b) One of the **boys** is chosen at random.

What is the probability that the boy travels to school by bus?
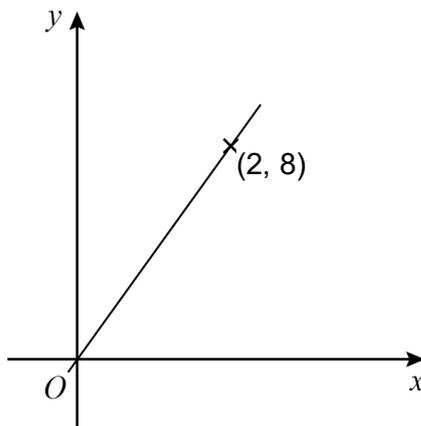
[1 mark]

Answer _____

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16 (c) What percentage of the 180 **students** travel to school by car?

[2 marks]

_____

_____

_____

Answer _____ %

17 A straight line passes through O and (2, 8)

Circle the equation of the line.

[1 mark]

$y = x + 8$ $\qquad$ $y = 8$ $\qquad$ $y = 4x$ $\qquad$ $y = \dfrac{1}{4}x$

6

Turn over ▶

18 (a) Work out   120% of 85

[2 marks]

Answer _____

18 (b) Work out 16 as a fraction of 12

Circle your answer.

[1 mark]

$$\frac{7}{4} \qquad \frac{4}{7} \qquad \frac{3}{4} \qquad \frac{4}{3}$$

19 Bags A and B each contain counters.

Bag A	Bag B
60 counters	12 counters
Each counter is green, blue or yellow	9 blue and 3 red

19 (a) P(green counter from A) = P(red counter from B)

Work out the number of green counters in A.

[2 marks]

_____

_____

_____

Answer _____

19 (b) All 72 counters are put into one bag.

One counter is picked at random.

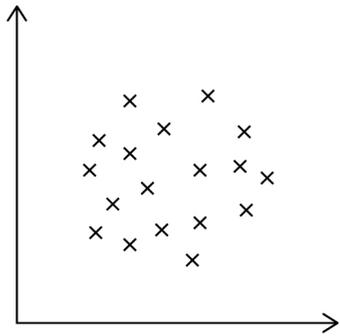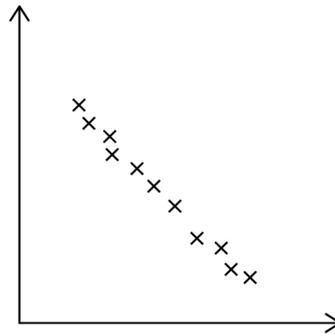Work out the probability that the counter is **not** red.

[2 marks]

_____

_____

_____

Answer _____

7

Turn over ▶

20 A and B are scatter graphs.

Graph A **Graph B**

What type of correlation is shown by each graph?

Choose from

| Weak positive |
| Strong positive |
| Weak negative |
| Strong negative |
| No correlation |

[2 marks]

Graph A _____

Graph B _____

21 (a) All the terms of a **geometric** progression are positive.

The second and fourth terms are shown.

……….   9   ……….   81

Work out the first and third terms.

[2 marks]

First term _____

Third term _____

21 (b) The first two terms of an **arithmetic** progression are shown.

q $4q$ …..

The sum of the first three terms is 84

Work out the value of q.

[3 marks]

Answer _____

7

Turn over ▶

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22 This formula converts temperature in degrees Fahrenheit (F) to kelvin (K)

$$K = \frac{5}{9}(F - 32) + 273$$

A blast furnace is heated to 2282 degrees Fahrenheit.

Work out this temperature in kelvin.

[3 marks]

Answer _____ kelvin

23 As a decimal $\frac{13}{40} = 0.325$

Work out $\frac{39}{400}$ as a decimal.

[2 marks]

Answer _____

24 The cost of a holiday is £3300

Rosanna pays a deposit followed by monthly payments, in the ratio

deposit : total of the monthly payments = 4 : 7

She makes 6 equal monthly payments.

Work out her monthly payment.

[4 marks]

Answer £ _____

25 Factorise fully $3x^2 + 15x$

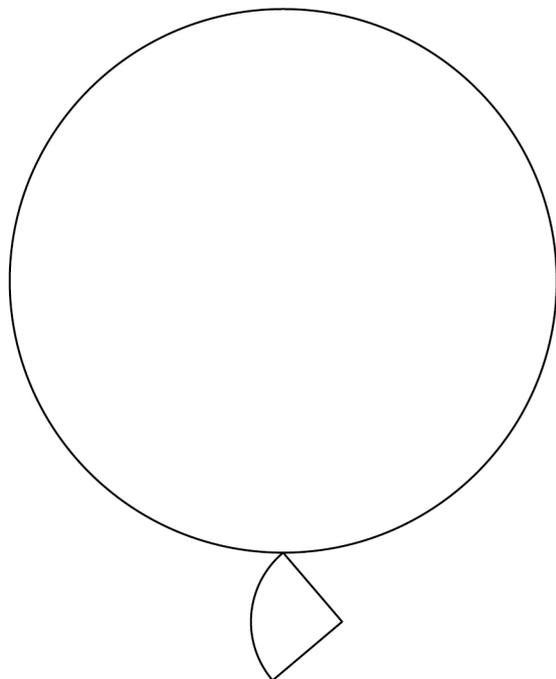**[2 marks]**

Answer _____

11

Turn over ▶

26 Two wire shapes make an earring.

The shapes are

a circle with radius 36 mm

and

a quarter circle.

Not drawn accurately

radius of circle : radius of quarter circle = 9 : 2

26 (a) Show that the radius of the quarter circle is 8 mm

[1 mark]

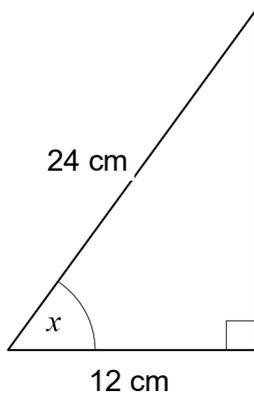**26 (b)**   Work out the **total** length of the wire in the earring.

Give your answer in the form $a\pi + b$ where a and b are integers.

[4 marks]

Answer _____ mm

Turn over for the next question

Turn over ▶

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27 Use trigonometry to work out the size of angle x.

Not drawn
accurately

24 cm

x

12 cm

[2 marks]

_____

_____

_____

_____

Answer _____ degrees

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28 Rearrange $a = \dfrac{b+5}{4}$ to make b the subject.

[2 marks]

_____

_____

_____

_____

Answer _____

29 (a) Write 4 800 000 in standard form.

[1 mark]

_____

Answer _____

29 (b) Write 6.7×10^{-4} as an ordinary number.

[1 mark]

_____

Answer _____

END OF QUESTIONS

6

Turn over ▶

There are no questions printed on this page

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