AQA

GCSE
MATHEMATICS

F

Foundation Tier   Paper 3 Calculator

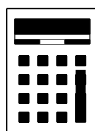Tuesday 11 June 2019   Morning   Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments.

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.
- 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	
26	
TOTAL	

8300/3F

Answer **all** questions in the spaces provided

1 Circle the value of the digit 2 in the answer to $5200 \div 10$

[1 mark]

2   20   200   2000

2 Solve $x - 8 = 5$

Circle your answer.

[1 mark]

$x = -13$ $x = -3$ $x = 3$ $x = 13$

3 Circle the fraction that is equal to $2\dfrac{1}{4}$

[1 mark]

$\dfrac{7}{4}$ $\dfrac{9}{4}$ $\dfrac{21}{4}$ $\dfrac{25}{4}$

4   Circle the expression which means x divided by y

[1 mark]

$$\dfrac{x}{y} \qquad\qquad \dfrac{y}{x} \qquad\qquad \dfrac{1}{xy} \qquad\qquad \dfrac{1}{x+y}$$

5   Put these numbers in order from smallest to largest.

$$\dfrac{31}{40} \qquad\qquad \dfrac{3}{4} \qquad\qquad \dfrac{7}{10} \qquad\qquad 0.725$$

[2 marks]

Smallest

Largest

6

Turn over ▶

6   Josh downloads album A.

        A has 11 tracks.

        Each track on A costs the same.

        The total cost of downloading A is £8.80

    Josh also downloads album B.

    B has 14 tracks.

6 **(a)**   Work out the total cost of downloading B.

    Assume each track costs the same as a track on A.

[3 marks]

Answer £ _____

6 (b) In fact, compared to the cost of each track on A

the cost of 6 tracks on B is **more** by 5p each

the cost of 8 tracks on B is **less** by 5p each.

What does this tell you about your answer to part (a)?

Tick **one** box.

☐ The total cost is **less** than my answer to part (a)

☐ The total cost is **more** than my answer to part (a)

☐ The total cost is **the same** as my answer to part (a)

Give a reason for your decision.

[2 marks]

_____

_____

_____

_____

Turn over for the next question

Turn over ▶

7   The pictogram shows information about the houses in a street.

Each house has 3, 4 or 5 bedrooms.

Key: ⌂ represents 2 houses

3-bedroom houses	⌂ ⌂ ⌂ ⌂ ◁
4-bedroom houses	⌂ ⌂ ⌂ ⌂ ⌂
5-bedroom houses	⌂ ◁

In total, how many bedrooms do these houses have?

[3 marks]

Answer _____

8 Four positive whole numbers add up to 84

One of the numbers is a multiple of 17

The other three numbers are equal.

What are the four numbers?

[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____ _____ _____ _____

Turn over for the next question

Turn over ▶

9   Jim wants to buy 10 rolls of wallpaper.

He sees these prices.

Wallpaper	
Single roll	£12.50
Pack of 3 rolls	£34.50
Pack of 5 rolls	£58.75

What is the cheapest price for 10 rolls?
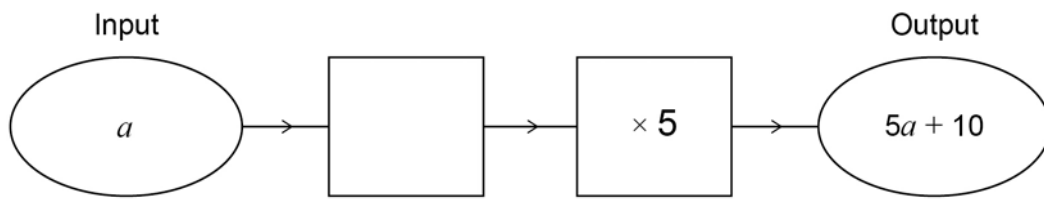
[4 marks]

Answer £_____

10 In rectangle *ABCD*

triangle *ABE* is equilateral

triangle *CDE* is isosceles, with *CE* = *DE*
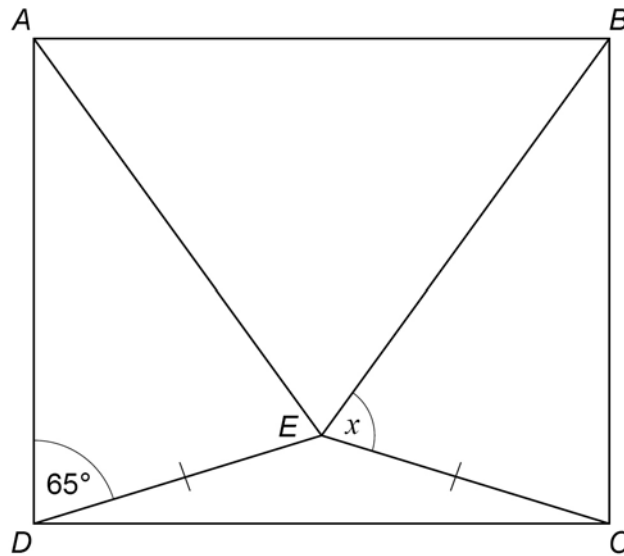
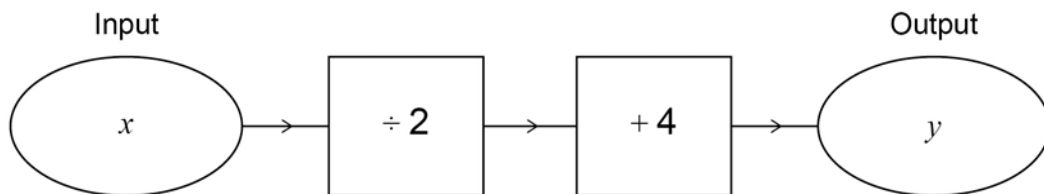Not drawn
accurately

Work out the size of angle x.

[4 marks]

Answer _____ degrees

Turn over ▶

11 (a) Complete the number machine.

Input

a → ☐ → × 5 → Output $5a + 10$

[1 mark]

11 (b) Write down the output y in terms of x.

Input

x → ÷ 2 → + 4 → Output y

[1 mark]

Answer _____

12 The first four triangular numbers are 1, 3, 6, 10

Circle the next triangular number.

[1 mark]

14 15 16 19

13 Write down **all** the prime numbers between 40 and 50

[2 marks]

_____

_____

_____

_____

Answer _____

Turn over for the next question

5

Turn over ▶

14 In this question use

1 cubic foot = 6.23 gallons

1 cubic foot = 0.028 cubic metres

Convert 3115 gallons into cubic metres.

[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____ m³

15 Circle the correct statement.

[1 mark]

$$\frac{1}{3} \leqslant 30\% \qquad \frac{1}{3} = 30\% \qquad \frac{1}{3} < 30\% \qquad \frac{1}{3} \neq 30\%$$

16 Which shape **must** have rotational symmetry?

Circle your answer.

[1 mark]

isosceles triangle   trapezium   kite   parallelogram

Turn over for the next question

5

Turn over ▶

17 A shop sells ice creams.

Each ice cream has two scoops.

The possible flavours are vanilla (V), strawberry (S), chocolate (C) and mint (M).

The two scoops can be the same flavour or different flavours.

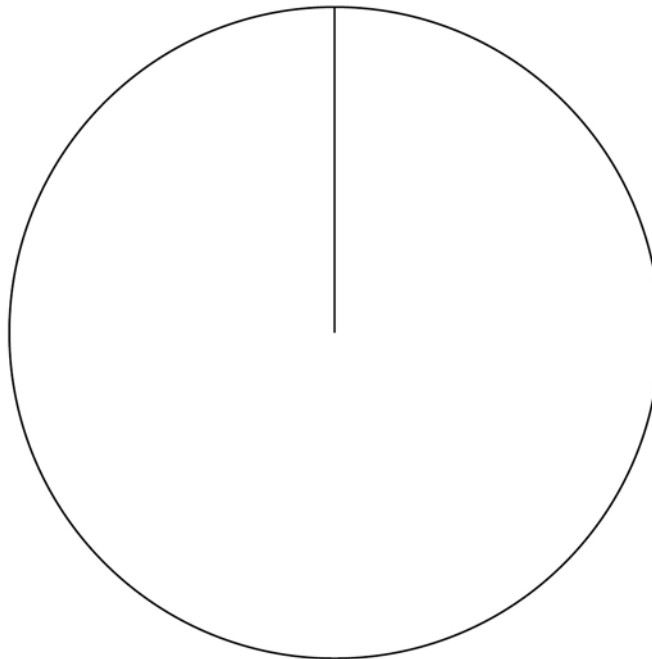**17 (a)** List **all** the possible options for the two scoops.

[2 marks]

17 (b) In one hour the shop sells 180 scoops of ice cream.

The number of scoops of each flavour is shown in the table.
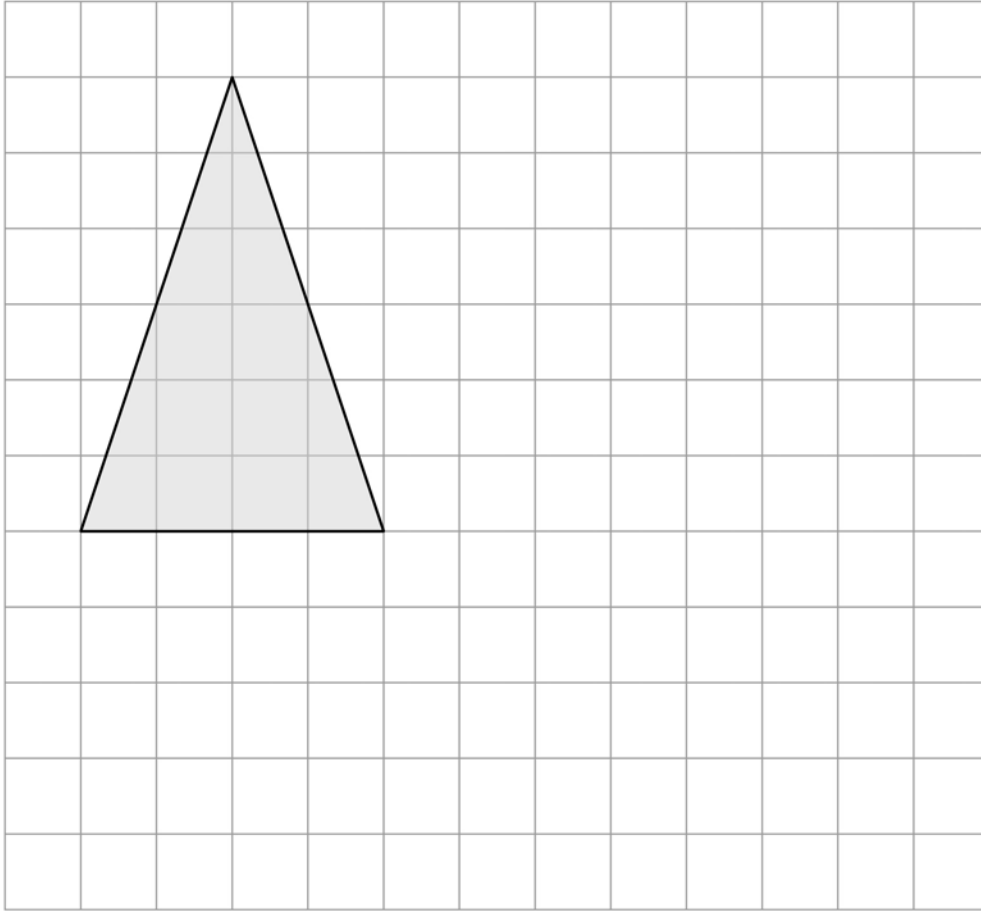
Flavour	Vanilla	Strawberry	Chocolate	Mint
Number of scoops	45	75	50	10

Complete the pie chart to represent the data.

[4 marks]

_____

_____

_____

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_____

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_____

6

Turn over ▶

18 On the grid, draw an enlargement of the triangle with scale factor $\dfrac{1}{2}$

[2 marks]

19 (a) Simplify fully $3a^2 + 7a + 3 - a^2 + 8a - 4$

[3 marks]

Answer _____

19 (b) Factorise fully $24y^2 - 20y$

[2 marks]

Answer _____

20 Solve $x^2 = 196$

[2 marks]

Answer _____

9

Turn over ▶

21 To the nearest pound, Jon has £9

To the nearest 50p, Ellie has £6.50

Work out the maximum possible total amount of money.

[3 marks]

Answer £_____

22 Here is a formula.

$$T = n^2 - \frac{12}{n}$$

22 (a) Work out T when $n = 5$

[1 mark]

Answer _____

22 (b) Why is T **always** positive when n is negative?

[2 marks]

Turn over ►

23 In one hour a machine can make

600 nuts

or

720 bolts.

At 3 pm the machine starts working.

It makes 900 nuts and then changes to making bolts.

How many **bolts** will the machine make by 8 pm?

[4 marks]

_____

_____

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_____

_____

Answer _____

24 Two solids, J and K, have the same density.

Complete the table.

Include units in your answers.

[3 marks]

	J	**K**
Mass	48 g	78 g
Volume	8 cm^3	
Density		

_____

_____

_____

Turn over for the next question
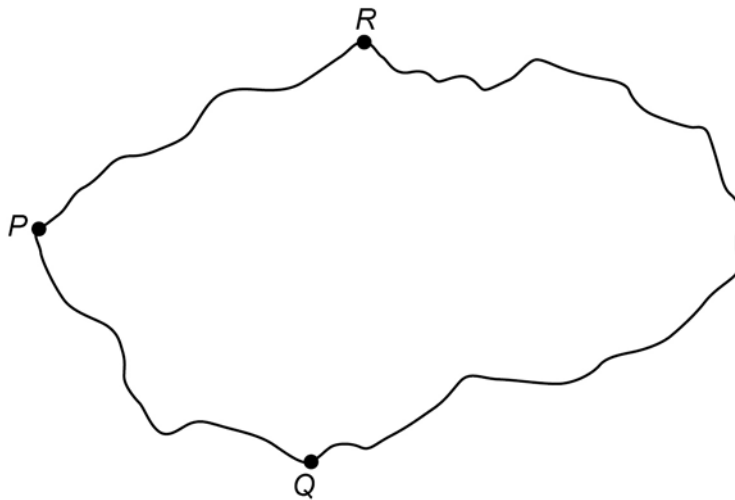
7

Turn over ▶

25 Towns P, Q and R are connected by roads PQ, PR and QR.

PR is 10 km longer than PQ.

QR is twice as long as PR.

The total length of the three roads is 170 km

Not drawn accurately

Work out the length of PQ.

[4 marks]

Answer _____ km

26 Mia wants to borrow £6000 and repay it, with interest, after two years.

She sees two offers for loans.

Offer 1	**Offer 2**
Compound interest	Compound interest
3% per year	First year 1%
	Second year 5%

Mia says,

"I will pay back the same amount because the average of 1% and 5% is 3%"

Is she correct?

You **must** show your working.

[3 marks]

_____

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Turn over for the next question

Turn over ▶

27 Here are two sets of numbers, A and B.

Set A

200	160
104	100

Set B

270	400	483
	300	x

mean of Set A : mean of Set B = 3 : 8

Work out the value of x.

[4 marks]

_____

_____

_____

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_____

_____

_____

Answer _____

28 A straight line

   has gradient 4

   and

   passes through the point (5, 23)

Work out the equation of the line.

Give your answer in the form $y = mx + c$

[3 marks]

_____

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Answer _____

Turn over for the next question

7

Turn over ▶

29 Two sides of a triangle have lengths 13 cm and 27 cm

Which of these is a **possible** length of the other side?
Circle your answer.

[1 mark]

13 cm   14 cm   27 cm   40 cm

30 Here is a right-angled triangle.

Not drawn accurately

13 cm   16 cm

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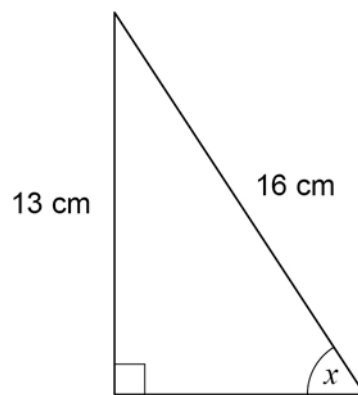
Use trigonometry to work out the size of angle x.

[2 marks]

_____

_____

_____

_____

_____

Answer _____ degrees

END OF QUESTIONS

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