AQA

GCSE
MATHEMATICS

F

Foundation Tier   Paper 3 Calculator
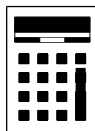
Tuesday 13 June 2017   Morning   Time allowed: 1 hour 30 minutes

Materials

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

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- 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	
TOTAL	

8300/3F

Answer **all** questions in the spaces provided

1 Circle the lowest of these temperatures.

[1 mark]

−4.9°C   0°C   −7°C   0.1°C

2 Circle the expression that is four times bigger than n.

[1 mark]

$n + 4$ $4n$ $\dfrac{n}{4}$ n^4

3 Circle the fraction **greater** than $\dfrac{3}{10}$

[1 mark]

$\dfrac{1}{3}$ $\dfrac{3}{11}$ $\dfrac{4}{15}$ $\dfrac{29}{100}$

4   Circle the value of 2^5

[1 mark]

10   25   32   64

5 (a)   Simplify $a \times a \times a + b + b$

[2 marks]

Answer

5 (b)   Simplify $5(x + 3) - x + 2$

[3 marks]

Answer

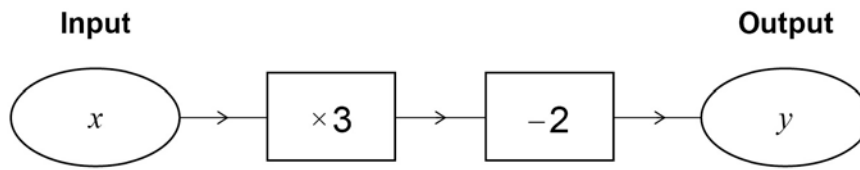**Turn over for the next question**

Turn over ▶

6   Twelve cards numbered 1 to 12 are put into six pairs.

Each pair has a total.

Complete the table to show the pairs and their totals.

[4 marks]

Cards	Total
1 and 2	3
_____ and _____	9
_____ and _____	11
_____ and _____	14
_____ and _____	19
_____ and _____	22

7 Here is a number machine.

Input   Output

x → ×3 → −2 → y

7 (a) Work out the output when the input is 4

[1 mark]

Answer

7 (b) Work out the output when the input is –4

[1 mark]

Answer

Turn over for the next question

6

Turn over ▶

8 Here is information about the goals scored in some hockey games.

Each game has four quarters.

Goals in hockey games
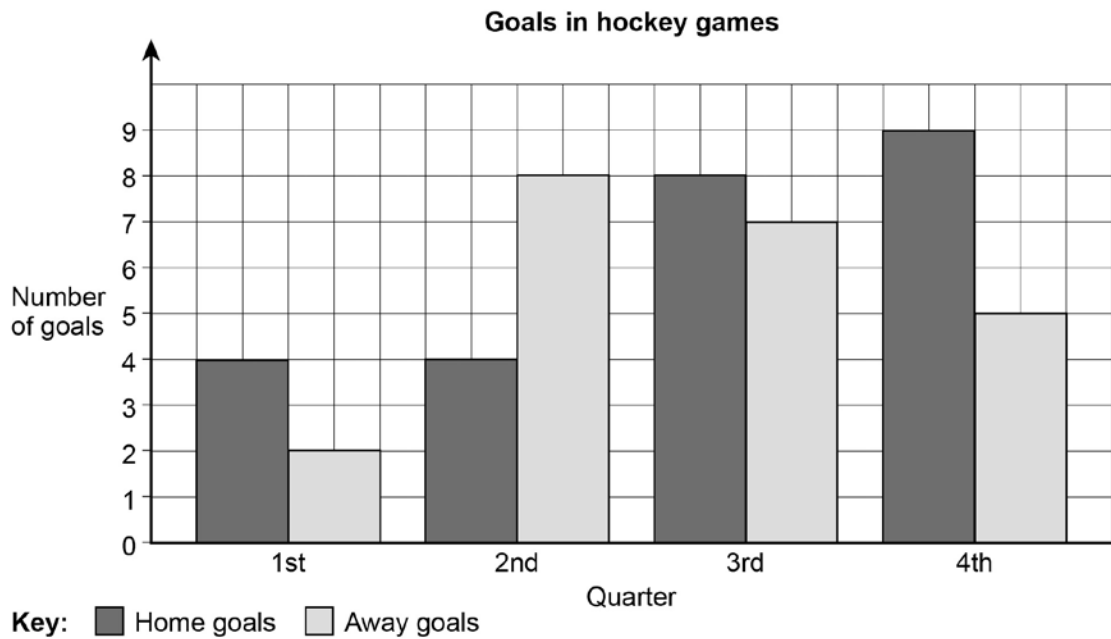
8 (a) Which quarter was the mode for **away** goals?

Circle your answer.

[1 mark]

1st   2nd   3rd   4th

8 (b) There were 10 games.

Work out the mean number of goals per game.

[2 marks]

Answer

8 (c) In total, how many **more** home goals were scored than away goals?

[2 marks]

Answer

8 (d) Rob says,

"More home teams **must** have won because there were more home goals."

Is he correct?

Give a reason for your answer.

[1 mark]

6

Turn over ▶

9 (a) List **all** the factors of 30

[2 marks]

Answer

9 (b) A factor of 30 is chosen at random.

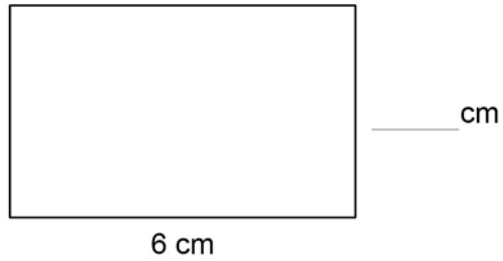What is the probability that it is a 2-digit number?

[1 mark]

Answer

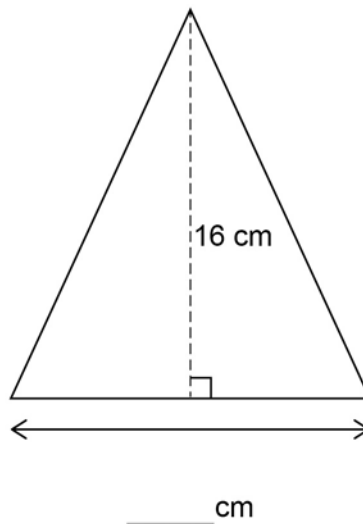**10** Each shape below has an area of 24 cm^2

Complete the missing lengths.

[3 marks]

Rectangle

6 cm

_____ cm

Not drawn accurately

Triangle

16 cm

_____ cm

Turn over for the next question

6

Turn over ▶

11 A television channel shows 12 minutes of adverts in each half hour.

How many **minutes** of adverts does it show from 5 am to 11 pm?

[3 marks]

_____

_____

_____

_____

_____

Answer _____ minutes

12 Put these probabilities in order, starting with the least likely.

44% $\dfrac{1}{4}$ 0.404 $\dfrac{4}{10}$

[2 marks]

_____

_____

Answer _____ , _____ , _____ , _____

13   A circle is drawn on a centimetre grid.
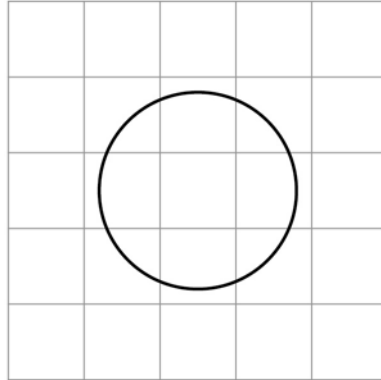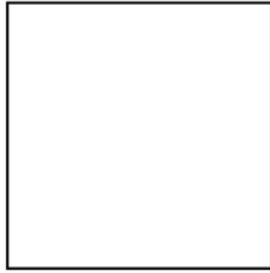

13 (a)   Draw a tangent to the circle.

[1 mark]

13 (b)   Grace works out that the area of the circle is more than 9 cm^2

Why must this be wrong?

[1 mark]

_____

_____

_____

_____

_____

_____

Turn over for the next question

7

Turn over ▶

14 (a) The front elevation, side elevation and plan of a solid are all the same, as shown.
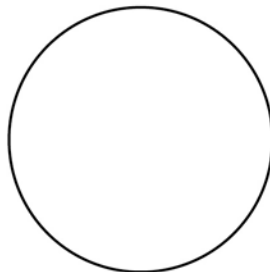
Write down the name of the solid.

[1 mark]

Answer _____

14 (b) The front elevation, side elevation and plan of a solid are all the same, as shown.

Write down the name of the solid.

[1 mark]

Answer _____

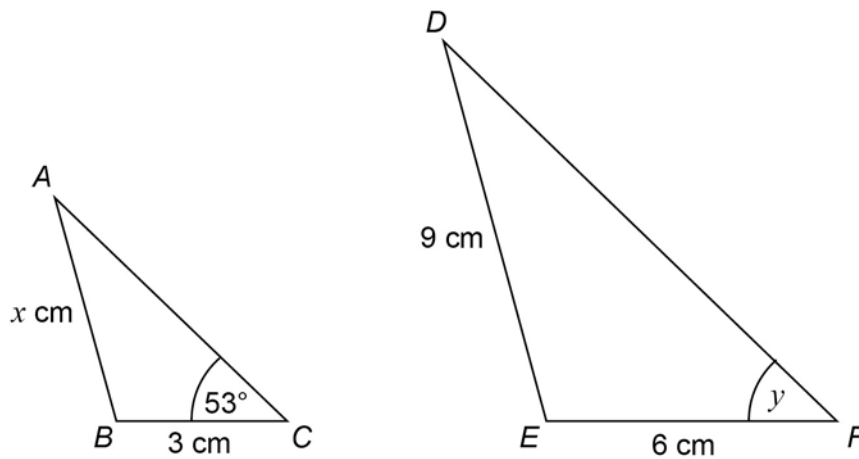**15**   Show that there are **exactly** five 3-digit cube numbers.

[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Turn over for the next question

5

Turn over ▶

16 Triangles *ABC* and *DEF* are similar.

Not drawn accurately

16 (a) Work out the value of x.

[2 marks]

Answer

16 (b) Write down the size of angle y.

[1 mark]

Answer_____degrees

17   *CD* and *PQ* are lines of length 12 cm

17 (a)   *CE* : *CD* = 1 : 2
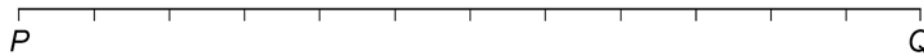
Mark point *E* on the line with a cross.

[1 mark]

C ├─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┤ D

17 (b)   *PR* : *RQ* = 1 : 3

Mark point *R* on the line with a cross.

[1 mark]

P ├─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┤ Q
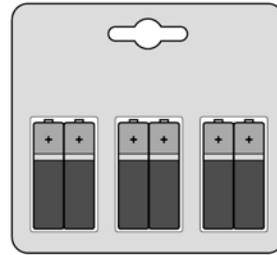
Turn over for the next question

5

Turn over ▶

18 A shop sells two brands of battery.
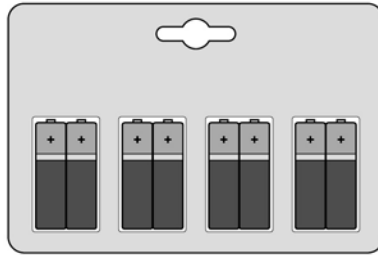
Brand A
Pack of 8
Price £3.60

Brand B
Pack of 6
Price £2.94

One brand A battery powers a toy for 5 hours.

One brand B battery powers the same toy for $5\frac{1}{2}$ hours.

Which brand is better value?

You **must** show your working.

[5 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

19 The value of x can be 2 or 5

The value of y can be 3 or 12

19 (a) List the possible values of xy

[2 marks]

Answer

19 (b) Work out the **least** possible value of $\dfrac{x-y}{x}$

You **must** show your working.

[2 marks]

Answer

Turn over for the next question

9

Turn over ▶

20 An exam has two papers.

Anil scores

33 out of 60 on paper 1

and

75 out of 100 on paper 2

Work out his percentage score for the exam.

[3 marks]

Answer _____ %

21 Purple paint is made by mixing red paint and blue paint in the ratio 5 : 2

Yan has 30 litres of red paint and 9 litres of blue paint.

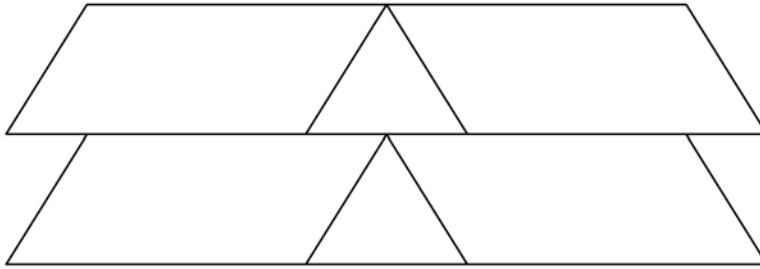What is the **maximum** amount of purple paint he can make?

[3 marks]

_____

_____

_____

_____

_____

_____

Answer _____ litres

Turn over for the next question

6

Turn over ▶

22 This shape is made from two triangles and four congruent parallelograms.

Not drawn
accurately

For each statement, tick the correct box.

22 (a) The triangles are equilateral.

[1 mark]

☐ Must be true

☐ Could be true

☐ Must be false

22 (b) The triangles are congruent.

[1 mark]

☐ Must be true

☐ Could be true

☐ Must be false

23 (a)   The length of a pipe is 6 metres to the nearest metre.

Complete the error interval for the length of the pipe.

[2 marks]

Answer_____m ⩽ length <_____m

23 (b)   The length of a different pipe is 4 metres to the nearest metre.
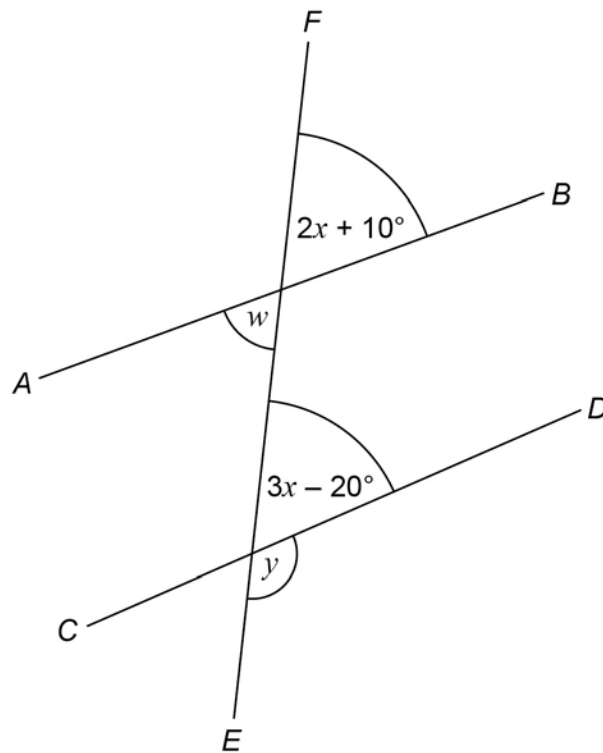
Olly says,

"The total length of the two pipes is 11 metres to the nearest metre."

Give an example to show that he could be correct.

[2 marks]

_____

_____

Turn over for the next question

6

Turn over ▶

24   *AB*, *CD* and *EF* are straight lines.

F

Not drawn
accurately

B

$2x + 10°$

w

A

D

$3x - 20°$

y

C

E

24 (a)   Ava assumes that *AB* and *CD* are parallel.

What answer should she get for the size of angle *y*?

[4 marks]

Answer   degrees

24 (b) In fact,

AB and CD are **not** parallel

angle *w* is 60°

What effect does this have on the size of angle *y*?

Tick a box.

☐   *y* is bigger

☐   *y* is the same

☐   *y* is smaller

Show working to support your answer.

[3 marks]

_____

_____

_____

_____

_____

_____

Turn over for the next question

7

Turn over ►

25 There are 720 boys and 700 girls in a school.

The probability that a boy chosen at random studies French is $\dfrac{2}{3}$

The probability that a girl chosen at random studies French is $\dfrac{3}{5}$

25 (a) Work out the number of students in the school who study French.

[3 marks]

Answer

25 (b) Work out the probability that a student chosen at random from the whole school does **not** study French.

[2 marks]

Answer

26   Circle the expression equivalent to $x^2 - 4x - 12$

[1 mark]

$(x - 4)(x - 8)$ $(x + 3)(x - 4)$ $(x - 12)(x + 1)$ $(x + 2)(x - 6)$

27   How are the whole number solutions to A and B different?

    A   Solve $3 \leqslant 3x < 18$

    B   Solve $3 < 3x \leqslant 18$

[2 marks]

END OF QUESTIONS

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