AQA

GCSE
MATHEMATICS

F

Foundation Tier   Paper 3 Calculator

Monday 11 November 2019   Afternoon   Time allowed: 1 hour 30 minutes

Materials

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

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	
TOTAL	

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.

Maths Made Easy

Answer **all** questions in the spaces provided

1 On a circle, which of these is **not** a straight line?

Circle your answer.

[1 mark]

circumference   radius   chord   diameter

2 Circle the expression that can be written as $3cd$

[1 mark]

$3 + c + d$ $c + c + c + d$ $c \times c \times c \times d$ $3 \times c \times d$

3 Which two numbers, when added together, make a cube number?

Circle your answer.
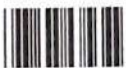
[1 mark]

1 and 8   2 and 4   9 and 18   8 and 64

4   Convert $2\frac{1}{2}$ kilograms into grams.

Circle your answer.

[1 mark]

25 grams   250 grams   (2500 grams)   25 000 grams

5 (a)   Convert $\frac{47}{8}$ to a mixed number.

[1 mark]

_____

_____

Answer $5\frac{7}{8}$

5 (b)   Convert $\frac{61}{128}$ to a decimal.

Give your answer to 2 decimal places.

[2 marks]

0.477

Answer   0.48

7

Turn over ▶

Maths Made Easy

6   George buys some food for £16.55

He pays the exact amount with two notes and four coins.

List the notes and coins.

[2 marks]

_____

_____

_____

Notes £10   £5

Coins 50p   50p   50p   5p

7   Choose **one** of the following to make a correct statement each time.

[4 marks]

is less than   is equal to   is greater than

When $a = 3$ $\begin{matrix}12\\4a\end{matrix}$ __is greater than__ $\begin{matrix}10\\a+7\end{matrix}$

When $b = 8$ $\begin{matrix}10\\2b-6\end{matrix}$ __is equal to__ $\begin{matrix}10\\18-b\end{matrix}$

When $c = 0.5$ $\begin{matrix}3/2\\3c\end{matrix}$ __is equal to__ $\begin{matrix}3/2\\c+1\end{matrix}$

When $d = -1$ $\begin{matrix}-1\\d\end{matrix}$ __is less than__ $\frac{1}{d^2}$

8   Write down **all** the whole numbers that

are between 20 and 50

and

have a difference of 4 between their digits.

[2 marks]

Answer   26   37   40   48

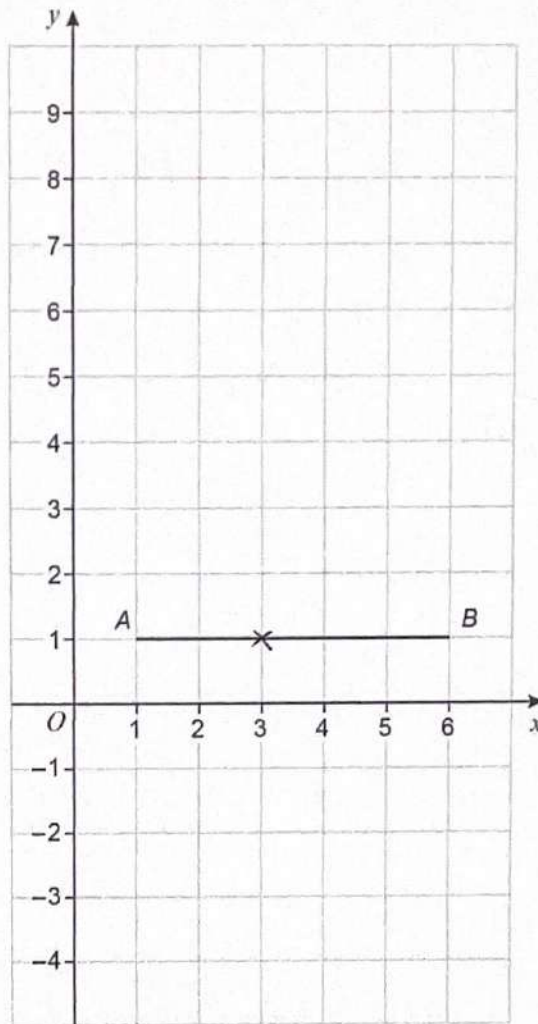9 (a)   Rearrange $m = p + 2$ to make p the subject.

[1 mark]

p = m - 2

Answer   p = m - 2

9 (b)   Simplify $5x^2 - x^2$

[1 mark]

Answer $4x^2$

10

Turn over ▶

Maths Made Easy

10   A line joins A (1, 1) and B (6, 1) on a centimetre grid.

P is a point on the line AB such that

   $AP : PB = 2 : 3$

C is a point such that

   angle APC is $90°$

   and

   $PC = 4$ cm

Write down the coordinates of the **two** possible points for C.

[3 marks]

Answer   (__3__ , __5__) and (__3__ , __-3__)

Maths Made Easy

11   At a school there are six lessons in a day.

In total, the six lessons last for five hours.

11 (a)   Assume that each lesson lasts the same amount of time.

How many minutes long is the final lesson?

[2 marks]

$$5 \times 60 = 300$$
$$300 \div 6$$

Answer   50   minutes

11 (b)   In fact, the first lesson of the day lasts longer than the other lessons.
The other lessons last the same amount of time.

What does this tell you about the length of the final lesson?
Tick **one** box.

[1 mark]

[✓]   It is shorter than the answer to part (a)

[ ]   It is the same as the answer to part (a)

[ ]   It is longer than the answer to part (a)

6

Turn over ▶

Maths Made Easy

12 A bottle contains 1.5 litres of water.

650 millilitres of the water is poured into a jug.

How much water is left in the bottle?

State the units of your answer.

[3 marks]

$1.5 \times 1000 = 1500$

$1500 - 650 = 850$

Answer ___850 millilitres___

13 The cost of 5 kg of potatoes is £3.20

The cost of $\frac{1}{2}$ kg of carrots is 29p

Work out the **total** cost of 12 kg of potatoes and $1\frac{1}{2}$ kg of carrots.

[3 marks]

£$3.20 \div 5 = 0.64$

$12(0.64) + 3(0.29)$

Answer £___8.55___

Maths Made Easy

14 (a) The term-to-term rule for a sequence is

> add 4 then divide by 2

The 1st term of the sequence is 36

Work out the 3rd term.

[2 marks]

$$2nd = (36+4) \div 2 = 20$$
$$3rd = (20+4) \div 2 = 12$$

Answer ___12___

14 (b) The term-to-term rule for a different sequence is

> divide by 3 then add 10

The 2nd term of this sequence is 60

Work out the 1st term.

[2 marks]

$$60 - 10 = 50$$
$$50 \times 3 = 150$$

Answer ___150___

10

Turn over ▶

Maths Made Easy

15 The table shows the cost of hiring a concrete mixer for up to 5 days.

Number of days	1	2	3	4	5
Cost	£14	£24	£34	£44	£54

Eva hires the concrete mixer for 5 days.

She says,

"The rate is £14 per day because the cost for 1 day is £14"

Is she correct?

Give a reason for your answer.

[2 marks]

No, it is only £10 per day after the first day

16 x is a **negative** number.

Which statement is correct?

Tick **one** box.

[1 mark]

☐ $x + 10$ is always positive

☐ $x + 10$ is always negative

☐ $x + 10$ cannot be zero

☑ $x + 10$ could be positive or negative or zero

Maths Made Easy

17 The table shows the number of films watched one week by 30 people.

Number of films	Frequency	
0	5	
1	9	
2	8	
3	6	
4	2	

Total = 30

17 (a) Write down the modal number of films watched.

[1 mark]

Answer _____1_____

17 (b) Work out the mean number of films watched per person.

[3 marks]

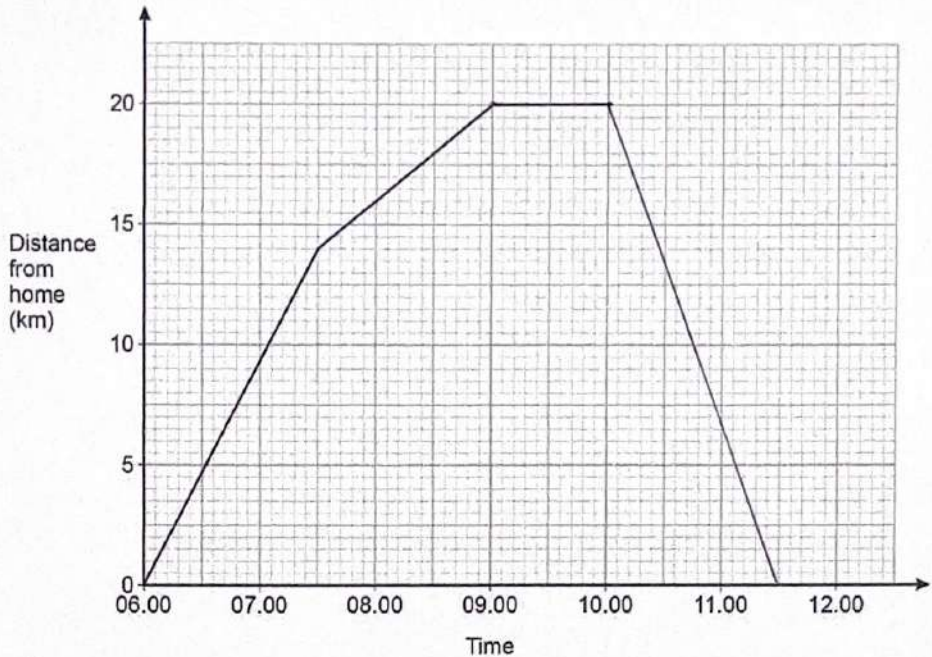$(0 \times 5) + (9 \times 9) + (2 \times 8) + (3 \times 6) + (4 \times 2)$

$= 51$

$51/30$

Answer _____= 1.7_____

7

Turn over ▶

Maths Made Easy

18   Jenny leaves home at 06.00

She runs for 3 hours.

Here is a distance-time graph of her run.

18 (a)   How far from home is she after 3 hours?

[1 mark]

Answer _____ 20 _____ km

18 (b)   For the next hour she rests.

She then gets a bus home.

She arrives home at 11.30

Complete the distance-time graph.

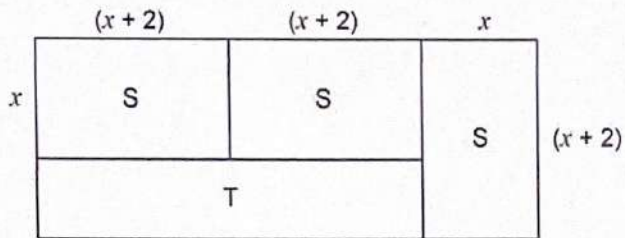Assume the bus travels at a constant speed.

[2 marks]

Maths Made Easy

19 S and T are rectangles.

S has dimensions $(x + 2)$ and x.

Some of these rectangles make the larger rectangle shown.

Not drawn accurately

Work out an expression for the perimeter of T.

Give your answer in its simplest form.

[3 marks]

$$x + 2 + x + 2 + x + 2 + x + 2 + 2 + 2$$
$$4x + 12$$

Answer ___ $4x + 12$ ___

20 $a : b = 7 : 1$

Circle the correct equation.

[1 mark]

$\boxed{a = 7b}$ $\qquad$ $b = 7a$ $\qquad$ $a = 6b$ $\qquad$ $b = 6a$

7

Turn over ▶

Maths Made Easy

21   A spinner has five equal sections.
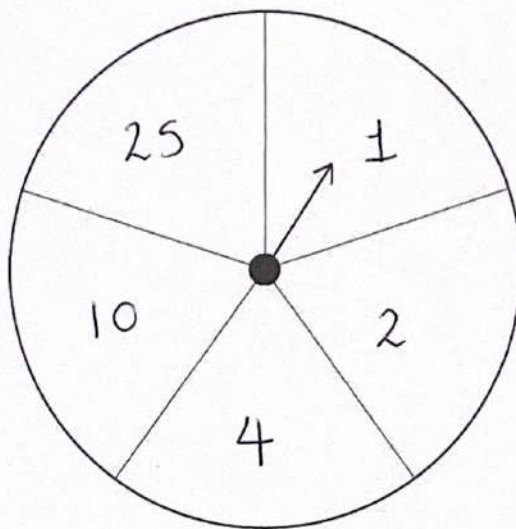
Write a number in each section so that

the numbers are all different factors of 100
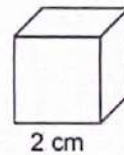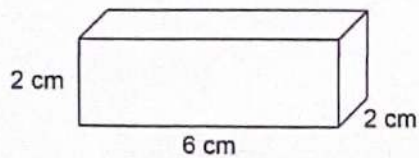
P(single-digit number) = $\frac{3}{5}$
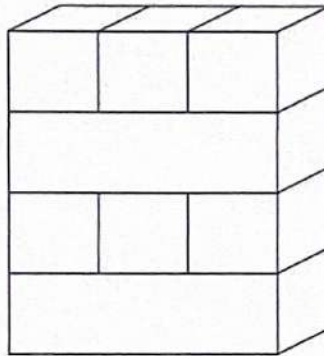
P(multiple of 25) = $\frac{1}{5}$

[3 marks]

_____

_____

_____

Maths Made Easy

22 Here is a small cuboid and a cube.

2 cm

6 cm

2 cm

2 cm

2 cm

Small cuboids and cubes are stacked in layers to make larger cuboids.

Here is a cuboid made with four layers.

The pattern is continued to make a cuboid with volume 336 cm^3

How many **cubes** are used?

[3 marks]

6 × 2 × 2 = 24

336 ÷ 24 = 14

Answer ___21___

Maths Made Easy

23 (a)   Tom is tiling a wall.

He needs to buy at least 100 tiles.

The tiles are sold in large packs and small packs.

> Large pack   40 tiles   £18
> Small pack   28 tiles   £14
>
> *Special offer*
> 25% reduction when you buy 3 or more **large** packs

Work out the cheapest cost for Tom to buy the packs of tiles he needs.

[3 marks]

large: 3 x 18 = 54   x 0.75   =   40.5

Small   =   4 x 14 =   56

Answer £ 40.5

Maths Made Easy

23 (b)   Tom is also tiling a floor.

The floor is a rectangle with length 600 cm and width 240 cm

Each tile is a square with side 40 cm

Tom uses this method to work out the number of tiles he needs.

> Number of tiles that will fit along the length = 600 ÷ 40
> = 15
>
> Number of tiles that will fit along the width = 240 ÷ 40
> = 6
>
> Total number of tiles needed = 15 + 6
> = 21

Give a reason why Tom's method is wrong.

[1 mark]

he should have multiplied 15 by 6

Turn over for the next question

4

Turn over ▶

Maths Made Easy
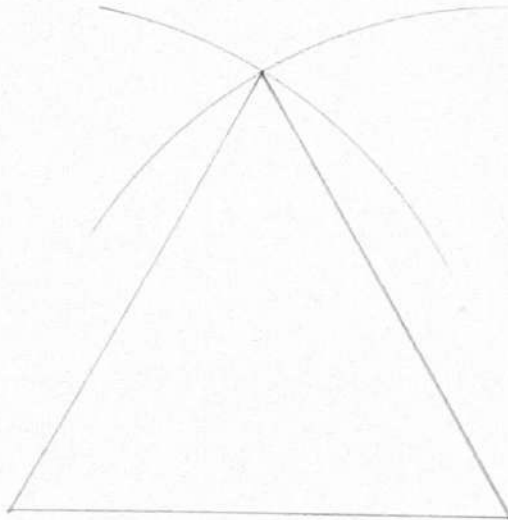
24 An equilateral triangle has side length 16 metres.

Using ruler and compasses only, construct a scale drawing of the triangle.

Use the scale   1 centimetre represents 2 metres.

[3 marks]

16m = 8cm

Scale: 1 cm represents 2 m

Maths Made Easy

25   In a choir there are 35 men and 48 women.

The probability that a man chosen at random wears glasses is $\frac{2}{5}$

The probability that a woman chosen at random wears glasses is $\frac{3}{8}$

25 (a)   Work out the number of people in the choir who wear glasses.

[3 marks]

$\frac{2}{5} \times 35 = 14$ $\frac{3}{8} \times 48 = 18$

$14 + 18 = 32$

Answer _____ 32 _____

25 (b)   A person is chosen at random from the choir.

Work out the probability that the person does **not** wear glasses.

[2 marks]

$35 + 48 = 83$

$83 - 32 = 51$

Answer $\frac{51}{83}$

8

Turn over ▶

26 Density $= \dfrac{\text{mass}}{\text{volume}}$

The mass is divided by 2 and the volume is multiplied by 4

What happens to the density?

Circle your answer.

[1 mark]

× 2   ÷ 2   × 8   (÷ 8)

27 Solve the simultaneous equations

① $7x + 2y = 36$

② $3x + 2y = 16$

[3 marks]

① − ② $4x = 20$ $x = 5$

$3(5) + 2y = 16$ $2y = 1$ $y = 0.5$

$x =$ _____5_____ $y =$ _____0.5_____

Maths Made Easy

28   The pie chart shows information about people at a theme park.

Not drawn
accurately
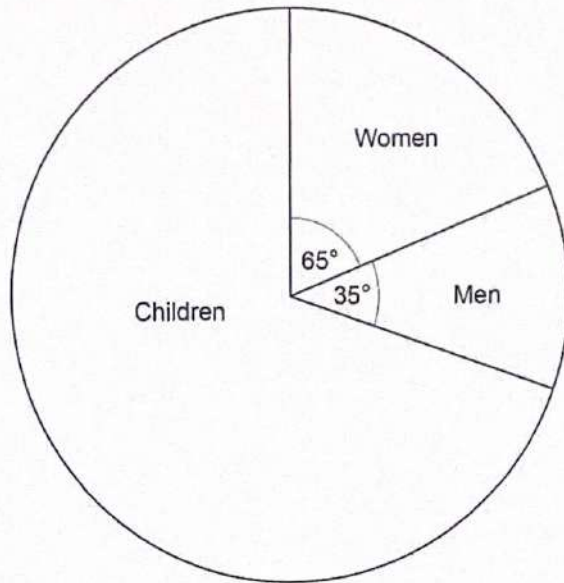
There were 450 **more** women than men.

Work out the number of children.

[3 marks]

$$\frac{450}{65-35} = \cancel{360}\ 15$$

$$(360 - 65 - 35) \times 15$$

$$= 260 \times 15$$

Answer   3900

7

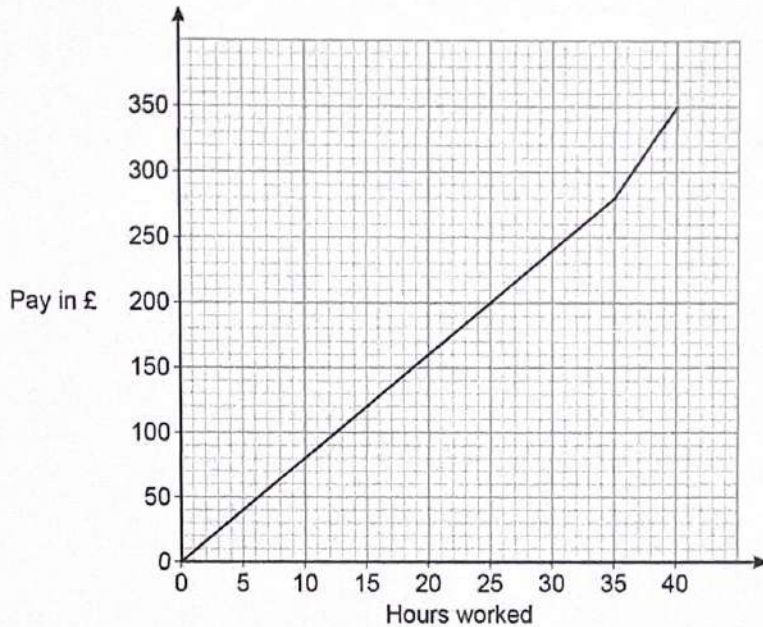**Turn over ▶**

Maths Made Easy

29   The graph shows how much Molly is paid for working for up to 40 hours.

She receives

        a basic rate of pay for the first 35 hours worked

        a higher rate of pay for the next 5 hours worked.

Pay in £

Hours worked

Work out the difference between the higher rate of pay and the basic rate of pay.

Give your answer in £ per hour.

[3 marks]

$$280 \div 35 = 8$$

$$(350 - 280) \div (40 - 35) = 14$$

$$14 - 8$$

Answer £ _____6_____ per hour

2 2

30 Work out

cube root of 512 : reciprocal of 0.4

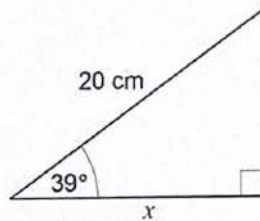Give your answer in the form $n : 1$

[3 marks]

$$\sqrt[3]{512} = 8 \qquad \frac{1}{0.4} = 2.5$$

$$8 : 2.5$$

Answer   3.2   :   1

31 Use trigonometry to work out the value of x.

Not drawn
accurately

20 cm

39°

x

[2 marks]

$$\cos 39 = \frac{x}{20}$$

$$x = 20\cos 39$$

Answer   15.5   cm

END OF QUESTIONS

8