Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

GCSE MATHEMATICS

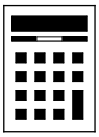
F

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.



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	
TOTAL	

Do not write outside the box

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

Do not write outside the box

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

Give your answer to 2 decimal places.

[2 marks]

Answer _____

7

Turn over ►

Do not write outside the box

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 _____ _____

Coins _____ _____ _____ _____

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 $a = 3$	$4a$				$a + 7$
When $b = 8$	$2b - 6$				$18 - b$
When $c = 0.5$	$3c$				$c + 1$
When $d = -1$	d				d^2

Do not write outside the box

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 _____

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

[1 mark]

Answer _____

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

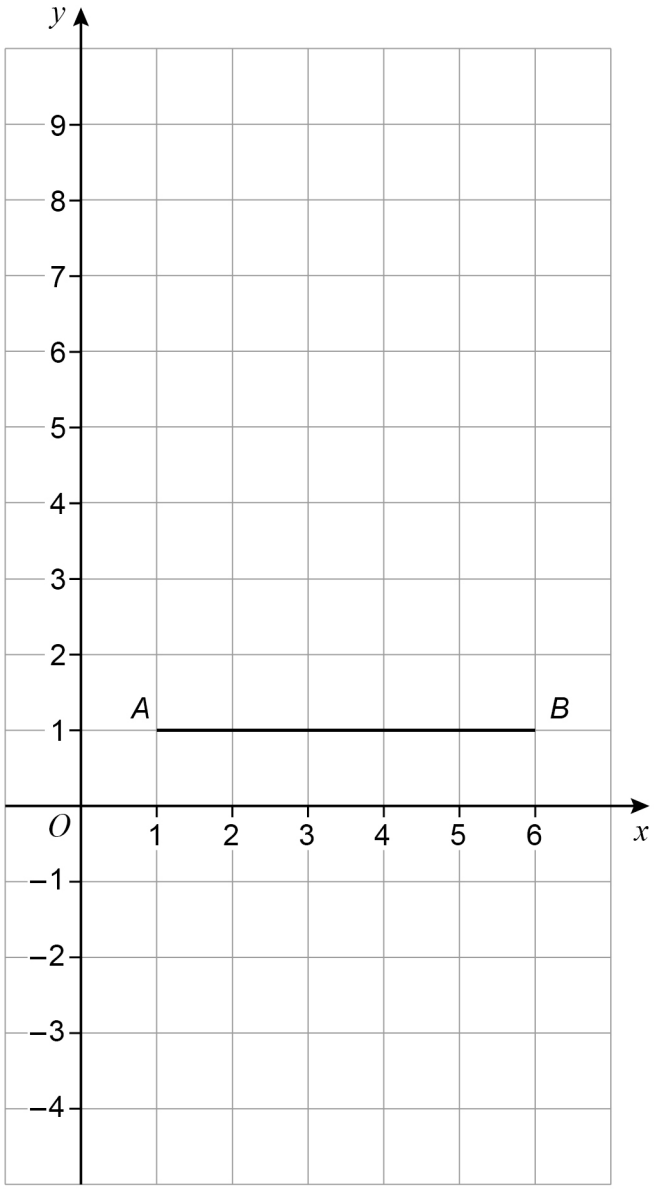
[1 mark]

Answer _____

10

Do not write outside the box

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 (_____ , _____) and (_____ , _____)

Do not write outside the box

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]

Answer _____ 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

Do not write outside the box

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]

Answer _____

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]

Answer £_____

Do not write outside the box

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]

Answer _____

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]

Answer _____

10

Do not write outside the box

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]

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

Do not write outside the box

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 _____

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

[3 marks]

_____

_____

_____

_____

Answer _____

7

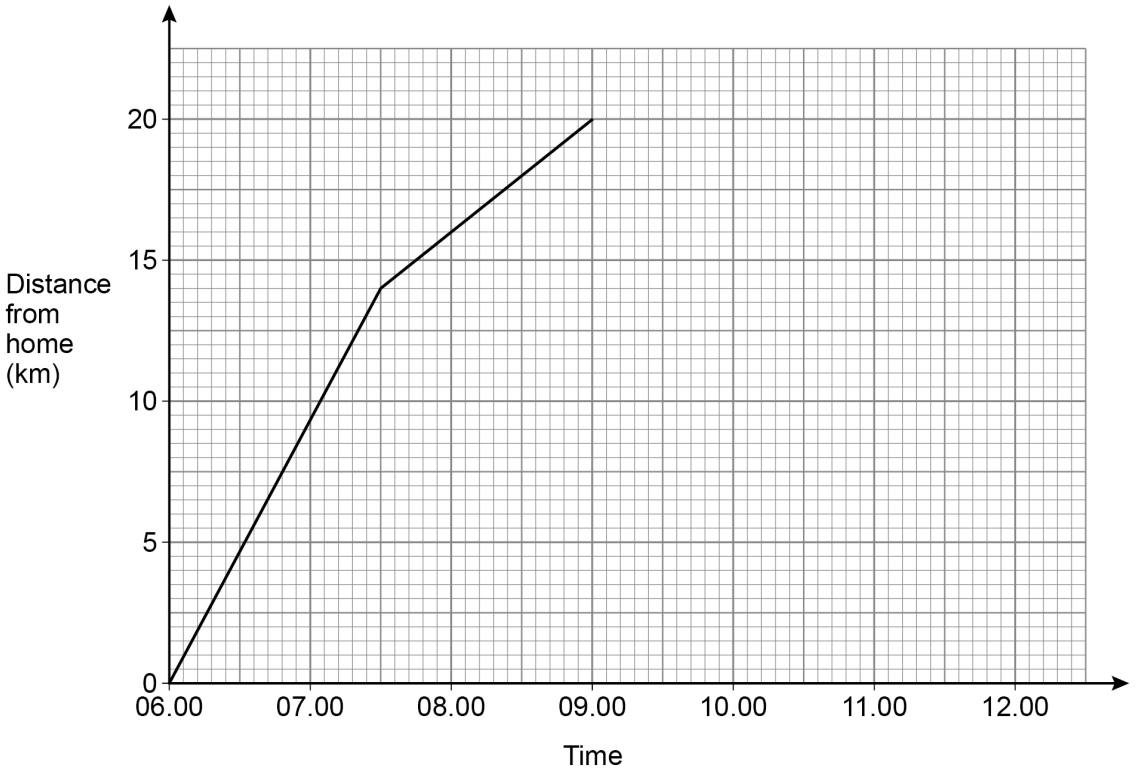
Turn over ►

Do not write outside the box

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 _____ 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.

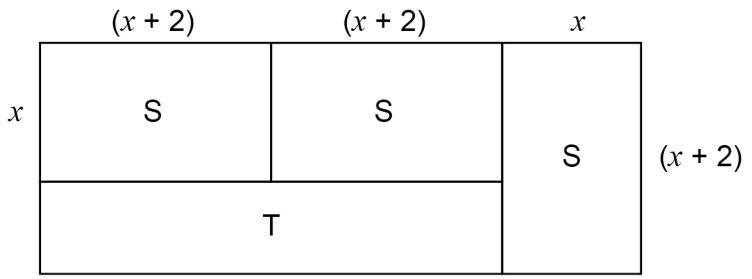
[2 marks]

Do not write outside the box

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]

Answer _____

20 $a : b = 7 : 1$

Circle the correct equation.

[1 mark]

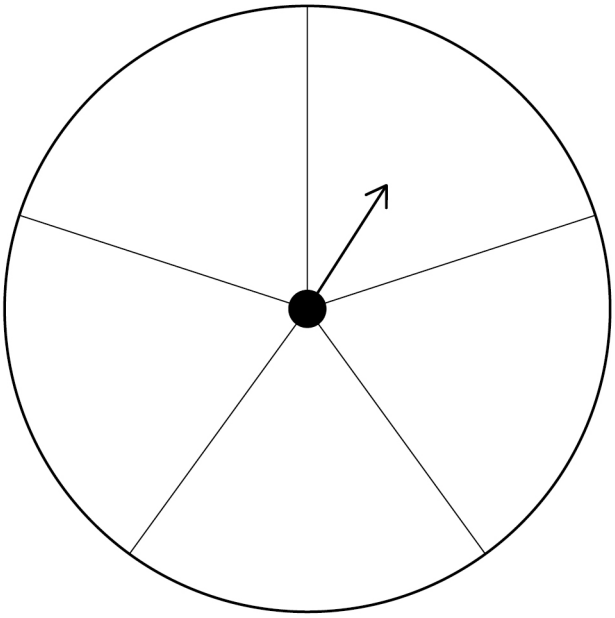
$a = 7b$ $\quad$ $b = 7a$ $\quad$ $a = 6b$ $\quad$ $b = 6a$

7

Turn over ►

Do not write outside the box

21 A spinner has five equal sections.



Write a number in each section so that

the numbers are all different factors of 100

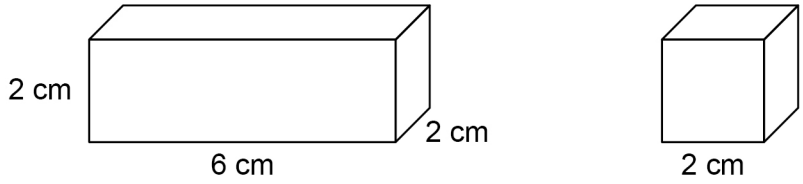
P(single-digit number) = $\frac{3}{5}$

P(multiple of 25) = $\frac{1}{5}$

[3 marks]

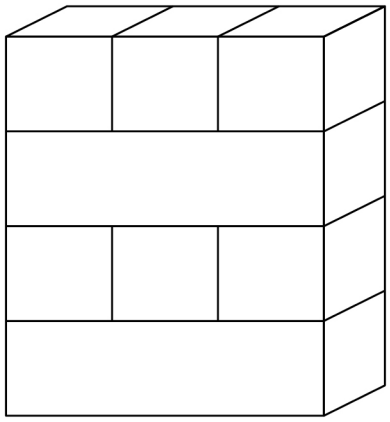
Do not write outside the box

22 Here is a small cuboid and a cube.



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]

Answer _____

6

Turn over ►

Do not write outside the box

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]

Answer £ _____

Do not write outside the box

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]

Turn over for the next question

4

Do not write outside the box

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]

Scale: 1 cm represents 2 m

Do not write outside the box

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]

Answer _____

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

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

[2 marks]

Answer _____

8

Turn over ►

Do not write outside the box

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

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

$7x + 2y = 36$

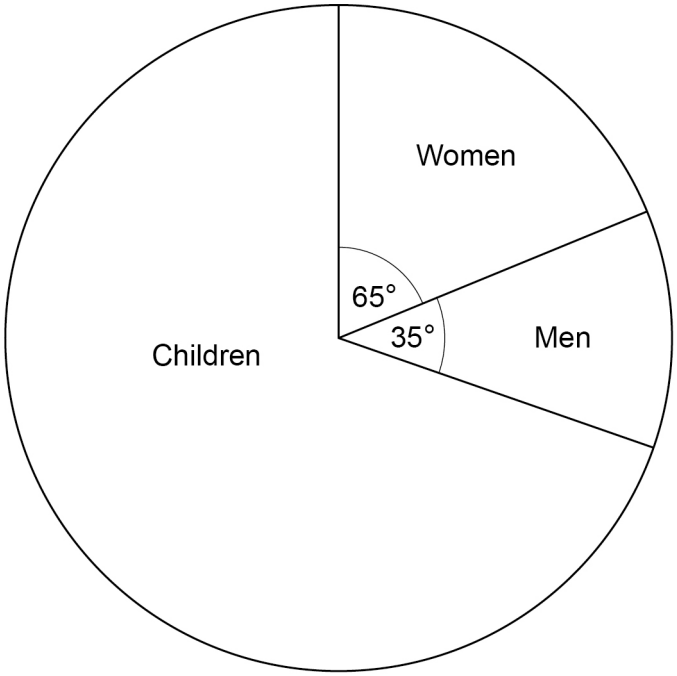
$3x + 2y = 16$

[3 marks]

$x =$ _____ $y =$ _____

Do not write outside the box

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



There were 450 **more** women than men.

Work out the number of children.

[3 marks]

Answer _____

7

Turn over ►

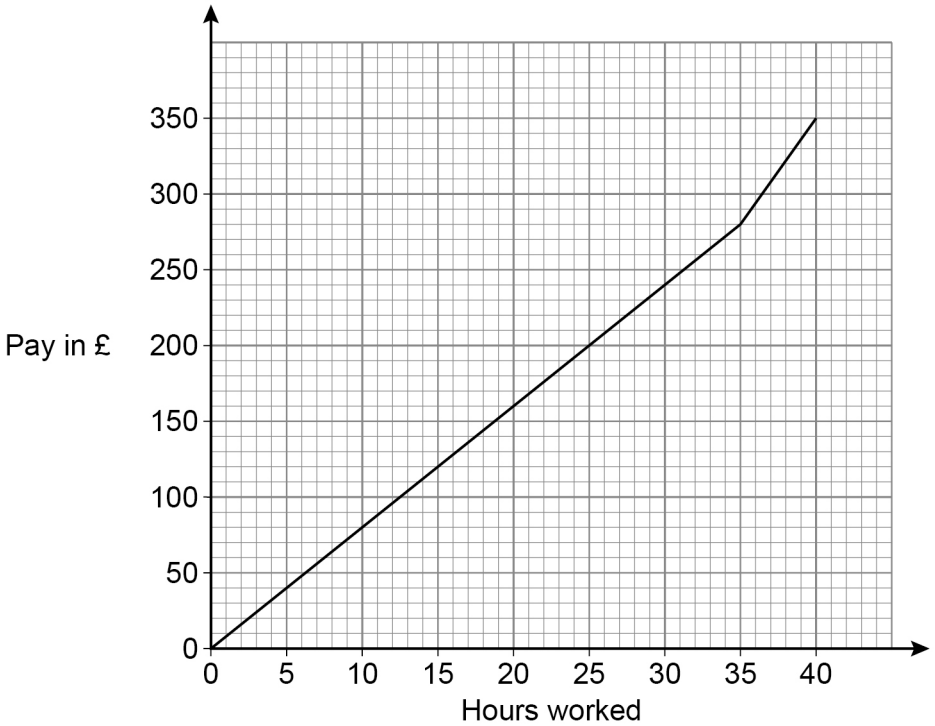
Do not write outside the box

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.



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

Give your answer in £ per hour.

[3 marks]

Answer £_____ per hour

Do not write outside the box

30 Work out

cube root of 512 : reciprocal of 0.4

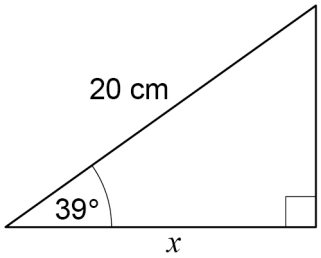
Give your answer in the form n : 1

[3 marks]

Answer _____ : _____

31 Use trigonometry to work out the value of x.

Not drawn accurately



[2 marks]

Answer _____ cm

END OF QUESTIONS

8

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There are no questions printed on this page

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