

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

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Forename(s)

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Candidate signature

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# GCSE MATHEMATICS

# F

Foundation Tier      Paper 1 Non-Calculator

Thursday 25 May 2017

Morning

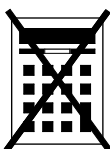
Time allowed: 1 hour 30 minutes

## 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.
- 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	
<b>TOTAL</b>	



J U N 1 7 8 3 0 0 1 F 0 1

Answer **all** questions in the spaces provided

**1** How many minutes are there in  $3\frac{1}{2}$  hours?

Circle your answer.

[1 mark]

180.5

210

330

350

**2** Work out  $\frac{1}{4} + 0.5$

Circle your answer.

[1 mark]

0.30

0.6

0.75

0.9

**3** Which of these shapes has the most sides?

Circle your answer.

[1 mark]

Hexagon

Octagon

Rhombus

Trapezium



4 Solve  $x - 3 = 0$

Circle your answer.

[1 mark]

$x = -3$

$x = 0$

$x = \frac{1}{3}$

$x = 3$

5 Work out  $58 \times 73$

[3 marks]

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Answer \_\_\_\_\_

7

Turn over ►



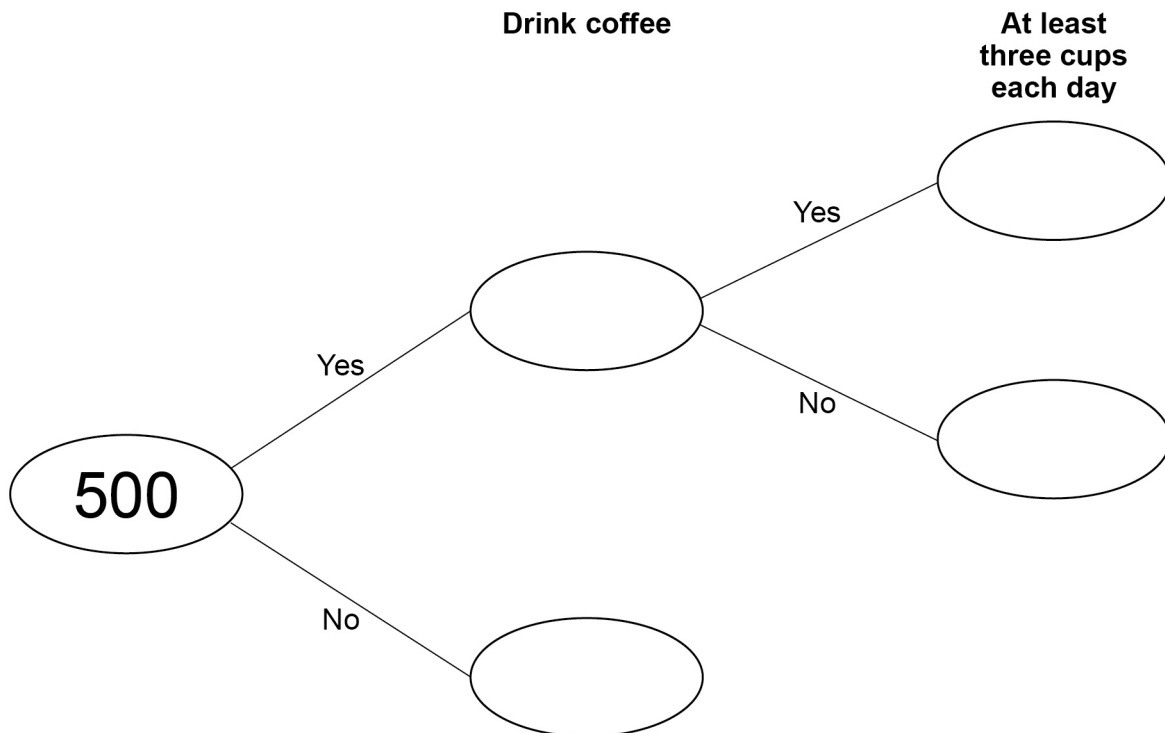
6 500 people are asked if they drink coffee.

$\frac{9}{10}$  say Yes.

20% of the people who say Yes drink at least three cups each day.

6 (a) Complete the frequency tree.

[4 marks]



- 6 (b)** What fraction of the 500 people drink at least three cups of coffee each day?  
Give your answer in its simplest form.

**[2 marks]**

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Answer \_\_\_\_\_

- 7** By rounding each number to the nearest 10,

estimate the answer to  $\frac{61 \times 47}{102}$

You **must** show your working.

**[2 marks]**

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Answer \_\_\_\_\_

**Turn over for the next question**





9 Work out  $25.68 \div 12$

[2 marks]

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Answer \_\_\_\_\_

10 Work out  $\frac{3}{8} \times 11$

Give your answer as a mixed number.

[2 marks]

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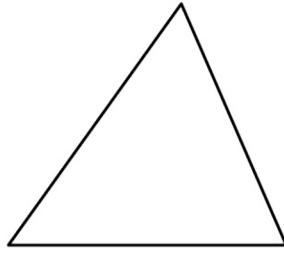
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Answer \_\_\_\_\_

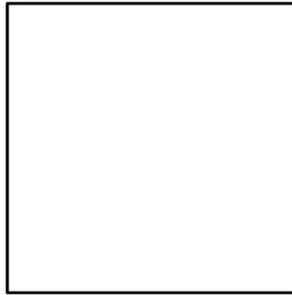


11 A triangle has perimeter 32 cm



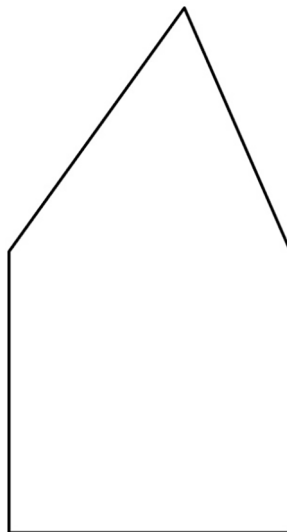
Not drawn  
accurately

A square has perimeter 40 cm



Two sides of the shapes are put together to make a pentagon.

Not drawn  
accurately





Work out the perimeter of the pentagon.

**[4 marks]**

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Answer \_\_\_\_\_ cm

**Turn over for the next question**

4

**Turn over ►**



**12** A football team has  $P$  points.

$$P = 3W + D$$

$W$  is the number of wins

$D$  is the number of draws

**12 (a)** A team has 6 wins and 2 draws.

How many points does the team have?

[1 mark]

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Answer \_\_\_\_\_

**12 (b)** After 33 games a different team has 53 points.  
11 games were draws.

How many games has this team **lost**?

[4 marks]

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Answer \_\_\_\_\_



13

$$2 + 0 + 1 + 7 = 10$$

Make the following calculations correct.

Use only the symbols  $+$ ,  $-$ ,  $\times$ ,  $\div$  and  $( )$

**[3 marks]**

$$2 \quad 0 \quad 1 \quad 7 = -4$$

$$2 \quad 0 \quad 1 \quad 7 = 0$$

$$2 \quad 0 \quad 1 \quad 7 = 2^4$$

**Turn over for the next question**

**Turn over ►**

- 14** A number is picked at random from the first four **prime** numbers.  
A number is picked at random from the first four **square** numbers.  
The two numbers are added to get a score.

- 14 (a)** Complete the table.

**[4 marks]**

		Square numbers				
		+	1	4	9	
Prime numbers	2					
	3			12		
	7					

- 14 (b)** What is the probability that the score is a **prime** number?

**[1 mark]**

Answer \_\_\_\_\_



15

In a school show,

girls : boys = 1 : 1

girls who sing : girls who do not sing = 1 : 2

8 girls **sing** in the show.

How many students are in the show altogether?

**[3 marks]**

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Answer \_\_\_\_\_

**Turn over for the next question****Turn over ►**

**16**  $P$  and  $Q$  are points on the line  $3x + 2y = 6$

**16 (a)** Complete the coordinates of  $P$  and  $Q$ .

**[2 marks]**

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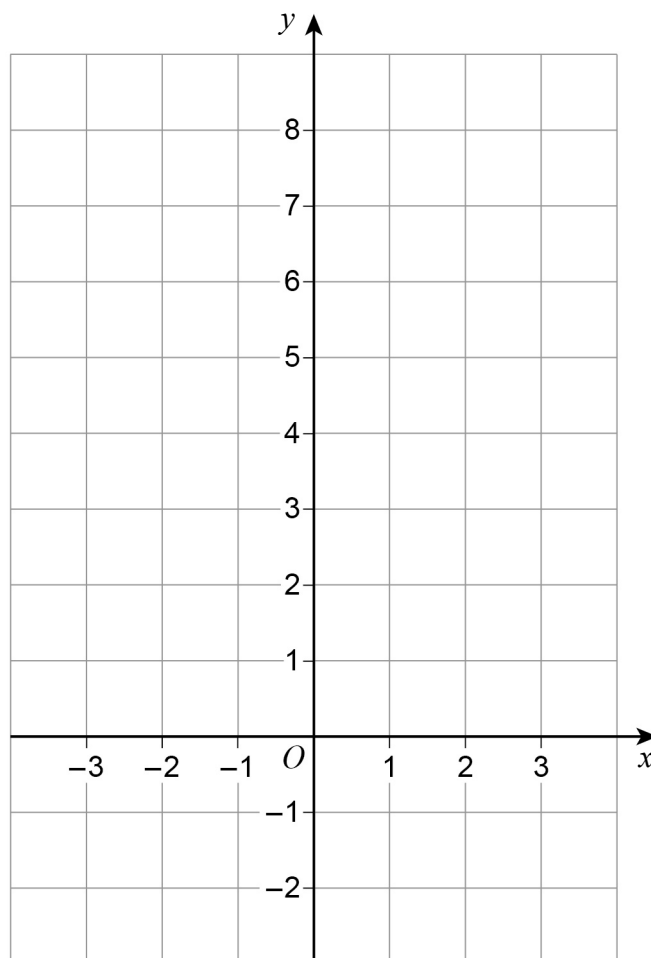
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$P ( 0 , \underline{\hspace{1cm}} )$        $Q ( \underline{\hspace{1cm}} , 0 )$

**16 (b)** Draw the line  $3x + 2y = 6$  for values of  $x$  from  $-3$  to  $3$

**[2 marks]**



17 Circle the expression which does **not** simplify to  $y^3$

[1 mark]

$y \times y \times y$

$y^4 \div y$

$y^2 \times y$

$y^6 \div y^2$

18 Write the number six million five thousand two hundred in standard form.

[2 marks]

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Answer \_\_\_\_\_

**Turn over for the next question**

7

**Turn over ►**



**19 (a)** Use  $8 \text{ km/h} = 5 \text{ mph}$  to convert  $96 \text{ km/h}$  to  $\text{mph}$

**[2 marks]**

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Answer \_\_\_\_\_  $\text{mph}$

**19 (b)**  $x \text{ km/h} = y \text{ mph}$

Use  $8 \text{ km/h} = 5 \text{ mph}$  to write a formula for  $y$  in terms of  $x$ .

**[2 marks]**

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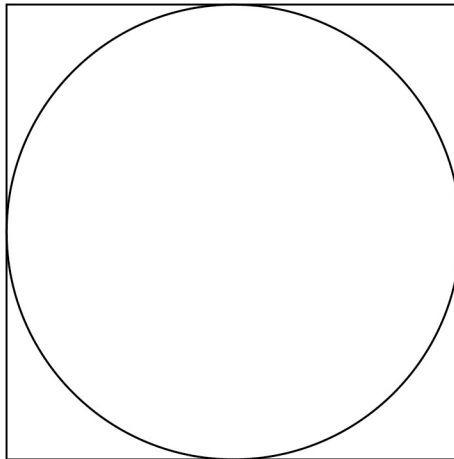
Answer \_\_\_\_\_





20

Here is a circle touching a square.

Not drawn  
accuratelyThe area of the square is  $64 \text{ cm}^2$ 

Work out the area of the circle.

Give your answer in terms of  $\pi$ .**[3 marks]**

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Answer \_\_\_\_\_  $\text{cm}^2$ **Turn over for the next question****Turn over ►**



**22 (a)** Density =  $\frac{\text{mass}}{\text{volume}}$

The mass of solid A is 6 times the mass of solid B.

The volume of solid A is 3 times the volume of solid B.

Complete the sentence.

[1 mark]

The density of solid A is \_\_\_\_\_ times the density of solid B.

**22 (b)** Average speed =  $\frac{\text{distance}}{\text{time}}$

If the distance is halved and the time is doubled, what happens to the average speed?

Circle your answer.

[1 mark]

$\times 2$        $\times 4$       no change       $\div 2$        $\div 4$

**Turn over for the next question**



**23** A regular polygon has an exterior angle of  $20^\circ$

Work out the number of sides of the polygon.

**[2 marks]**

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Answer \_\_\_\_\_

**24**  $\frac{1}{2} : \frac{2}{3} = x : 1$

Circle the value of  $x$ .

**[1 mark]**

$$\frac{1}{3}$$

$$\frac{3}{5}$$

$$\frac{3}{4}$$

$$\frac{4}{3}$$



25

The table shows information about the times for 10 people to complete a task.

Time, $t$ (minutes)	Frequency
$0 < t \leq 20$	1
$20 < t \leq 40$	6
$40 < t \leq 60$	3

These statements are about the mean and range of the actual times.

Tick the correct box for each statement.

[4 marks]

	True	False
The mean could be less than 20 minutes	<input type="checkbox"/>	<input type="checkbox"/>
The mean could be more than 40 minutes	<input type="checkbox"/>	<input type="checkbox"/>
The mean could be less than 40 minutes	<input type="checkbox"/>	<input type="checkbox"/>
The range could be more than 40 minutes	<input type="checkbox"/>	<input type="checkbox"/>
The range could be less than 40 minutes	<input type="checkbox"/>	<input type="checkbox"/>
The range could be more than 60 minutes	<input type="checkbox"/>	<input type="checkbox"/>

7

Turn over ►



- 26** Write 36 as a product of prime factors.  
Give your answer in index form.

**[3 marks]**

Answer \_\_\_\_\_

- 27** Circle the value of  $\cos 90^\circ$

**[1 mark]**

0

$\frac{1}{2}$

$\frac{\sqrt{3}}{2}$

1



**28** Solve the simultaneous equations.

$$2x + y = 18$$

$$x - y = 6$$

**[3 marks]**

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Answer \_\_\_\_\_

**END OF QUESTIONS**

7



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