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Centre number

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Candidate number

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# GCSE MATHEMATICS

# F

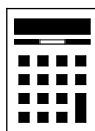
Foundation Tier      Paper 3      Calculator

Wednesday 8 November 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.

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	
<b>TOTAL</b>	

## Advice

- In all calculations, show clearly how you work out your answer.



Answer **all** questions in the spaces provided

**1** Circle the cube number.

[1 mark]

100

1000

10 000

100 000

**2** A fair ordinary dice is thrown once.

Circle the probability of getting a 2 or a 3

[1 mark]

$\frac{1}{6}$

$\frac{2}{6}$

$\frac{3}{6}$

$\frac{5}{6}$

**3** Circle the decimal that is greater than  $\frac{1}{5}$  and less than  $\frac{1}{4}$

[1 mark]

0.152

0.200

0.215

0.251



- 4** What is a **litre** a unit of?  
Circle your answer.

**[1 mark]**

area

density

mass

capacity

- 5** 2.5 kg of carrots cost £1.70  
Work out the cost of 3.25 kg of carrots.

**[3 marks]**

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Answer £ \_\_\_\_\_

**Turn over for the next question**



**6** Gina makes a sandwich using

bread (B) or a roll (R)

and

ham (H) or cheese (C)

and

salad (S) or pickle (P)

- 6 (a)** List **all** the possible types of sandwich Gina could make.  
One has been done for you.

**[2 marks]**

B H S

- 6 (b)** What **fraction** of the possible types of sandwich have cheese **and** pickle?

**[1 mark]**

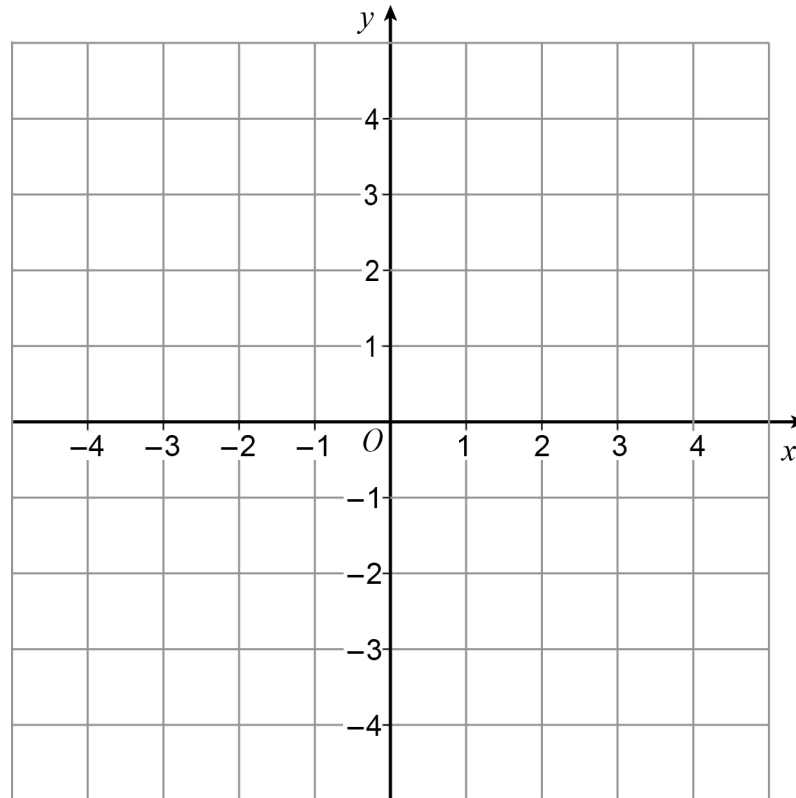
Answer \_\_\_\_\_



- 7**  $ABC$  is a right-angled triangle.  
 $A$  is the point  $(-3, -2)$   
 $B$  is the point  $(1, -2)$   
 $C$  is a point on the line  $y = 4$

- 7 (a)** Draw triangle  $ABC$  on the centimetre grid below.

**[3 marks]**



- 7 (b)** Work out the area of triangle  $ABC$ .

**[2 marks]**

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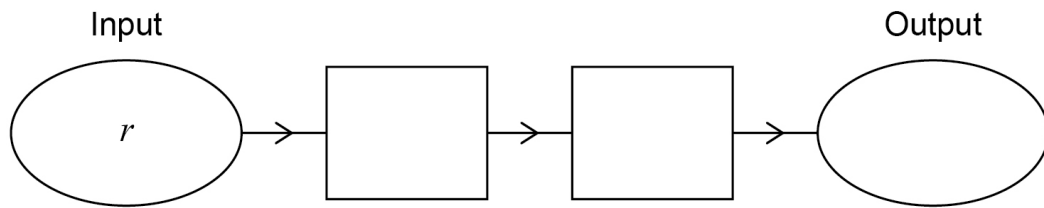


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Answer \_\_\_\_\_  $\text{cm}^2$

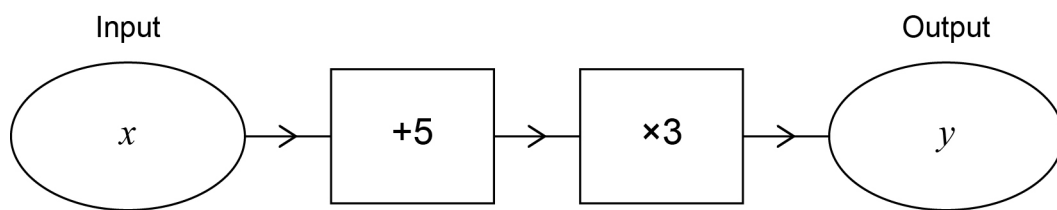


- 8 (a)** Complete the number machine so that  $q = 7r - 2$



[2 marks]

- 8 (b)** Write down the output  $y$  in terms of  $x$ .

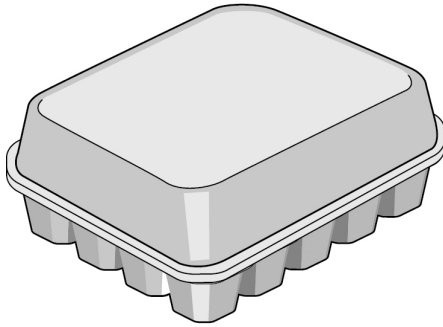


[1 mark]

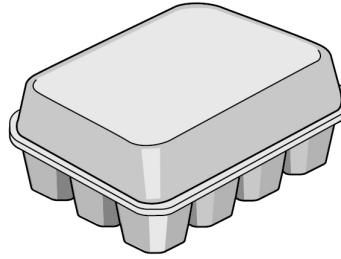
Answer \_\_\_\_\_



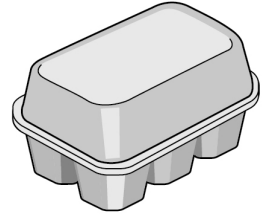
- 9** A farmer has 580 eggs to put into boxes.  
The boxes come in three sizes.



20 eggs



12 eggs



6 eggs

He wants

at least 10 boxes of 20 eggs

at least 15 boxes of 12 eggs

at least 25 boxes of 6 eggs.

The farmer fills 54 boxes with the 580 eggs.

Show how he does this.

**[5 marks]**

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Answer \_\_\_\_\_ boxes of 20 eggs

\_\_\_\_\_ boxes of 12 eggs

\_\_\_\_\_ boxes of 6 eggs



10

Megan says,

"If you add any three multiples of 10 the total must be  
a multiple of 10

**and**

a multiple of 3"

Is she correct?

You **must** show your working.**[2 marks]**

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Answer \_\_\_\_\_





11 A fair spinner has 12 equal sections.

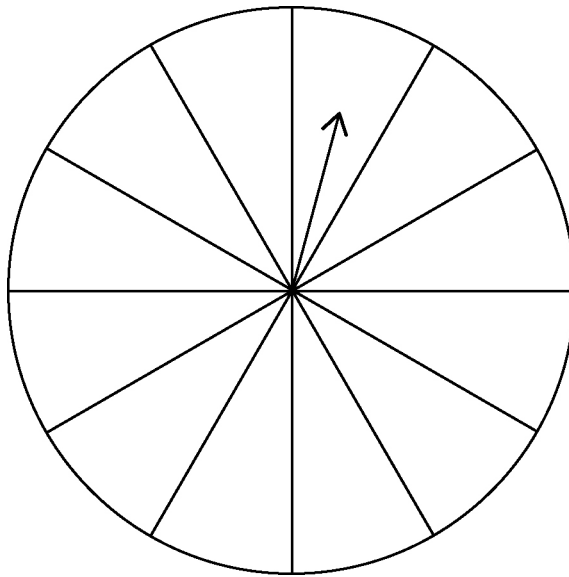
Label each section A, B, C or D so that when the arrow is spun,

the probability it lands on A is  $\frac{1}{6}$

the probability it lands on B is **equal** to the probability it lands on C

the probability it lands on D is **double** the probability it lands on A.

[3 marks]



Turn over for the next question



**12**       $a - b = 5$

**12 (a)**      Work out the value of       $2(a - b)$

**[1 mark]**

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Answer \_\_\_\_\_

**12 (b)**      Work out the value of       $7a - 7b$

**[1 mark]**

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Answer \_\_\_\_\_

**12 (c)**      Work out the value of       $b - a$

**[1 mark]**

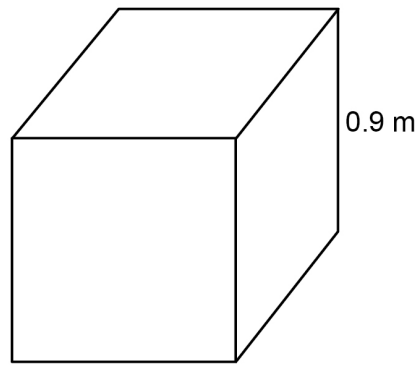
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Answer \_\_\_\_\_



- 13 A cube has edge length 0.9 metres.



Work out the **total** surface area of the cube.

Give your answer in **square centimetres**.

[3 marks]

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Answer \_\_\_\_\_  $\text{cm}^2$

Turn over for the next question



**14** £1700 is invested for 3 years at 4% per year **simple** interest.

Work out the total interest.

**[3 marks]**

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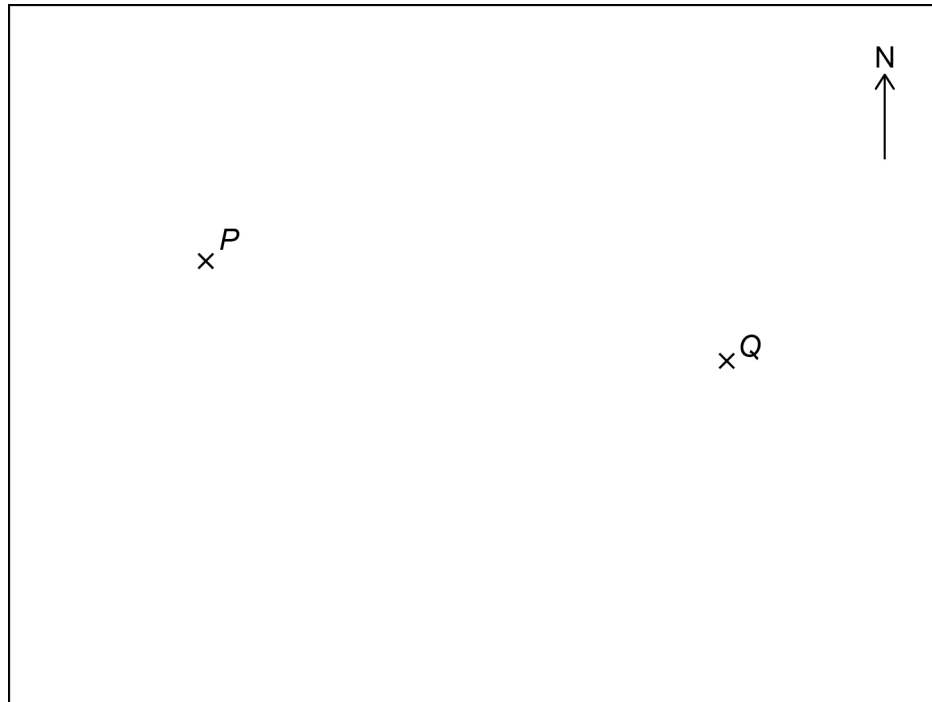
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Answer £ \_\_\_\_\_



- 15** Here is a map showing two towns, *P* and *Q*.

Scale: 1 cm represents 50 km



- 15 (a)** Work out the **actual** distance between towns *P* and *Q*.

**[2 marks]**

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Answer \_\_\_\_\_ km

- 15 (b)** Town *R* is 200 km due South of town *P*.

Mark *R* on the map.

**[2 marks]**

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Turn over ►



**16** A train has 1 first-class carriage and 6 standard carriages.

The first-class carriage has 64 seats.

$\frac{3}{8}$  are being used.

Each standard carriage has 78 seats.

$\frac{7}{13}$  in each carriage are being used.

Are **more than** half the seats on the train being used?

You **must** show your working.

**[5 marks]**

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Answer \_\_\_\_\_



17 Circle the equation which has the solution  $x = 6$

[1 mark]

$$x - 3 = \frac{x}{2}$$

$$x = \frac{3 + x}{2}$$

$$3x = 36$$

$$\frac{x}{6} = 0$$

18  $x$  is greater than 5 **and** less than or equal to 9  
Circle the inequality that shows this.

[1 mark]

$$5 \leq x < 9$$

$$5 > x \geq 9$$

$$5 \leq x > 9$$

$$5 < x \leq 9$$

Turn over for the next question

Turn over ►



19

The following data comes from a large sample survey of the audience at a concert.

	Percentage	Mean age (years)	Age range (years)
<b>Male</b>	17%	20.3	6
<b>Female</b>	83%	25.7	28

Make **three** comparisons of males and females at the concert.  
Use the headings given.

**[3 marks]**

Proportion of the audience \_\_\_\_\_

\_\_\_\_\_

Average age \_\_\_\_\_

\_\_\_\_\_

Spread of ages \_\_\_\_\_

\_\_\_\_\_





20

In a tennis tournament,

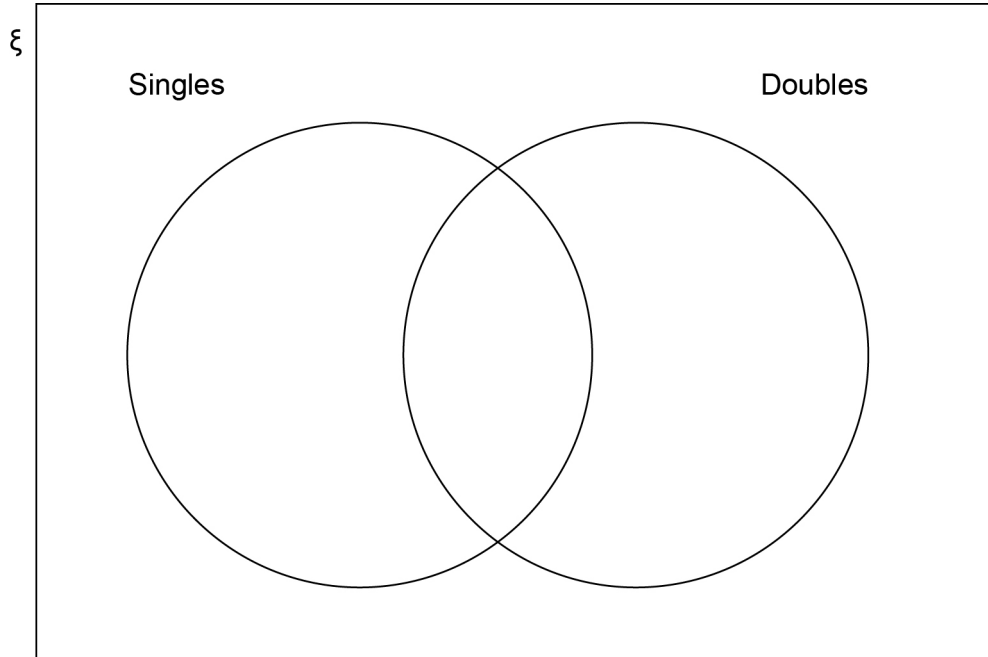
98 players took part in the singles only

34 players took part in the doubles only

twice as many players took part in the singles as took part in the doubles.

How many players took part in both the singles **and** the doubles?

You may use the Venn diagram to help you.

**[4 marks]**

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Answer \_\_\_\_\_



**21** The distance by road from Newport to London is 140 miles.

Tom travels by coach from Newport to London.

The coach leaves Newport at 1.30 pm

**21 (a)** He assumes the coach will travel at an average speed of 50 mph

Use his assumption to work out the arrival time in London.

**[3 marks]**

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Answer \_\_\_\_\_

**21 (b)** In fact, the coach has a lower average speed.

How does this affect the arrival time?

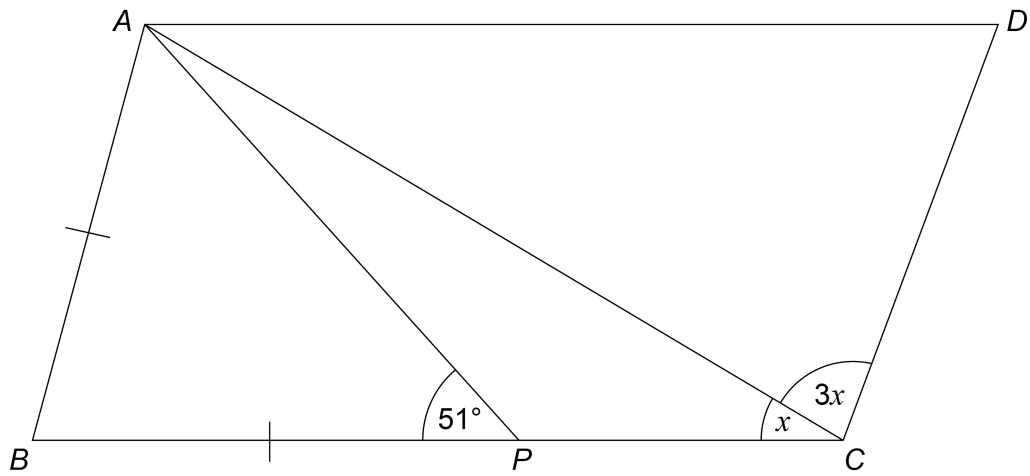
**[1 mark]**

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22

 $ABCD$  is a parallelogram. $AB = BP$ Not drawn  
accuratelyWork out the size of angle  $x$ .**[4 marks]**


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Answer \_\_\_\_\_ degrees

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

**23**

Show that 268 can be written as the sum of a power of 3 and a square number.

**[2 marks]**

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Answer \_\_\_\_\_



**24**  $y$  is inversely proportional to  $x$  and  $k$  is a constant.

Circle the correct equation.

[1 mark]

$$y = \frac{k}{x}$$

$$y = kx$$

$$y = \frac{x}{k}$$

$$y = x - k$$

**25**

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Work out the **force** when the pressure is  $24 \text{ N/m}^2$  and the area is  $3 \text{ m}^2$   
Circle your answer.

[1 mark]

0.125 N

8 N

27 N

72 N

Turn over for the next question

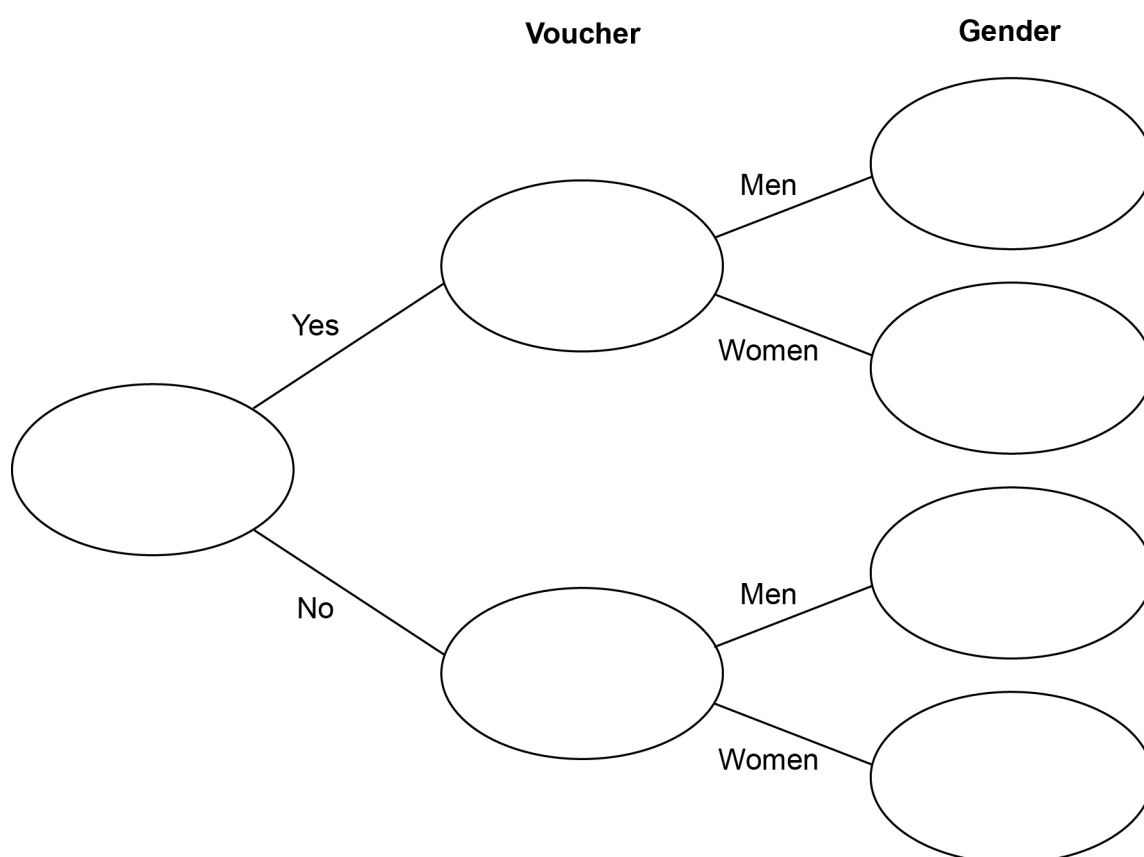
Turn over ►



- 26** 42 men and 38 women visit a restaurant.  
44 of these people have a voucher.  
Three times as many men as women do **not** have a voucher.

**26 (a)** Complete the frequency tree.

**[4 marks]**



- 26 (b)** A voucher takes **15% off** the bill.  
After using the voucher, the bill for a meal is £27.20  
How much was the bill before using the voucher?

**[3 marks]**

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Answer £ \_\_\_\_\_

**Turn over for the next question**

7

**Turn over ►**



**27 (a)** Rearrange  $v = u + at$  to make  $t$  the subject of the formula.

**[2 marks]**

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Answer \_\_\_\_\_

**27 (b)** Complete this table with consistent metric units.

**[2 marks]**

Distance	Time	Speed	Acceleration
m	s		





28

Multiply out and simplify  $(x - 8)^2$ **[2 marks]**

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Answer \_\_\_\_\_

**END OF QUESTIONS**

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