



Surname \_\_\_\_\_

Other Names \_\_\_\_\_

Centre Number \_\_\_\_\_

Candidate Number \_\_\_\_\_

Candidate Signature \_\_\_\_\_

# GCSE MATHEMATICS

# F

Foundation Tier Paper 3 Calculator

## 8300/3F

Tuesday 13 June 2017 Morning

Time allowed: 1 hour 30 minutes

For this paper you must have:

- a calculator
- mathematical instruments.

At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.

[Turn over]



JUN178300/3F01

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## 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 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.

**DO NOT TURN OVER UNTIL TOLD TO DO SO**



Answer ALL questions in the spaces provided

- 1 Circle the lowest of these temperatures.  
[1 mark]

$-4.9^{\circ}\text{C}$

$0^{\circ}\text{C}$

$-7^{\circ}\text{C}$

$0.1^{\circ}\text{C}$

- 2 Circle the expression that is four times bigger than  $n$ . [1 mark]

$n + 4$

$4n$

$\frac{n}{4}$

$n^4$

- 3 Circle the fraction GREATER than  $\frac{3}{10}$  [1 mark]

$\frac{1}{3}$

$\frac{3}{11}$

$\frac{4}{15}$

$\frac{29}{100}$

- 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]

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Answer \_\_\_\_\_

5 (b) Simplify  $5(x + 3) - x + 2$  [3 marks]

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Answer \_\_\_\_\_

9
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[Turn over]



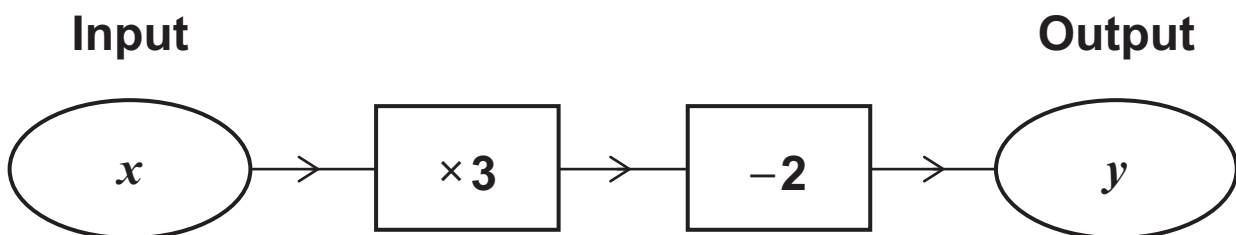
6 Twelve cards numbered 1 to 12 are put into six pairs.

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.



- 7 (a) Work out the output when the input is 4  
[1 mark]

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Answer \_\_\_\_\_

- 7 (b) Work out the output when the input is -4  
[1 mark]

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Answer \_\_\_\_\_

6
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[Turn over]



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

Each game has four quarters.

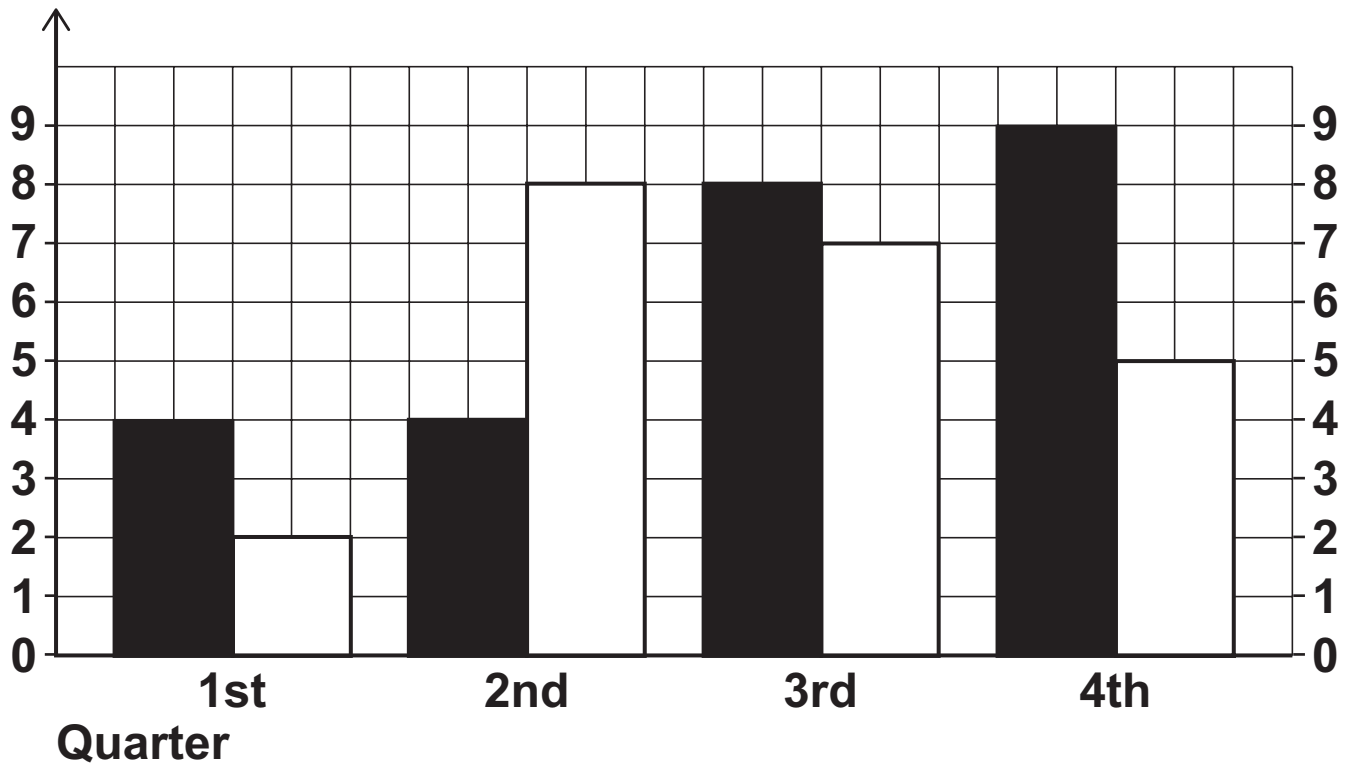
### Goals in hockey games

#### KEY

■ Home goals

□ Away goals

Number  
of goals



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]

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Answer \_\_\_\_\_

8 (c) In total, how many MORE home goals were scored than away goals? [2 marks]

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[Turn over]



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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]

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9 (a) List ALL the factors of 30 [2 marks]

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Answer \_\_\_\_\_

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

What is the probability that it is a 2-digit number? [1 mark]

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Answer \_\_\_\_\_

[Turn over]

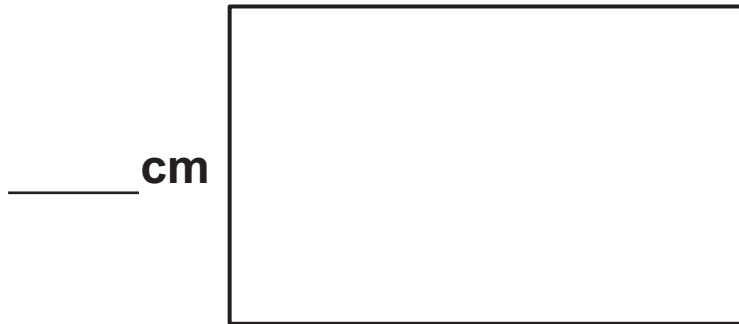


- 10 Each shape below has an area of  $24 \text{ cm}^2$   
Complete the missing lengths. [3 marks]

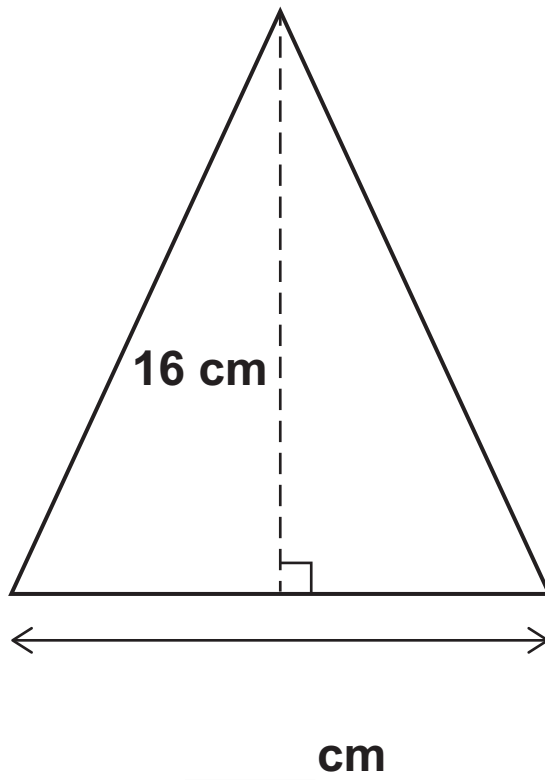
Not drawn accurately

Rectangle

6 cm



Triangle



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]

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Answer \_\_\_\_\_ minutes

[Turn over]



- 12 Put these probabilities in order, starting with the least likely. [2 marks]

44%

 $\frac{1}{4}$ 

0.404

 $\frac{4}{10}$ 

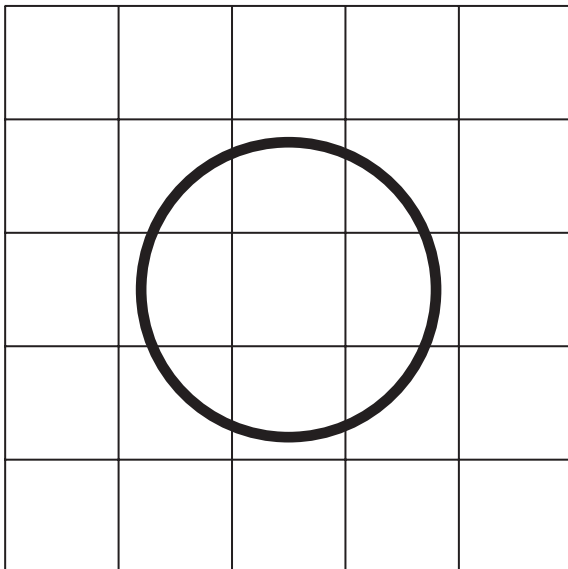
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Answer \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

- 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  $9 \text{ cm}^2$

Why must this be wrong? [1 mark]

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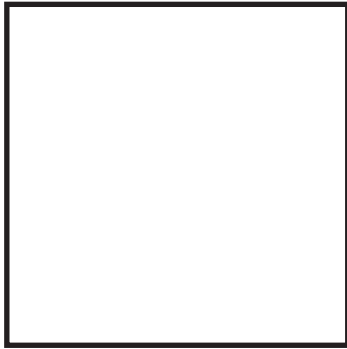
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[Turn over]



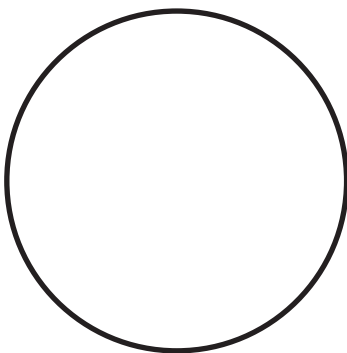
- 14 (a) The front elevation, side elevation and plan of a solid are all the same, as shown.



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 \_\_\_\_\_

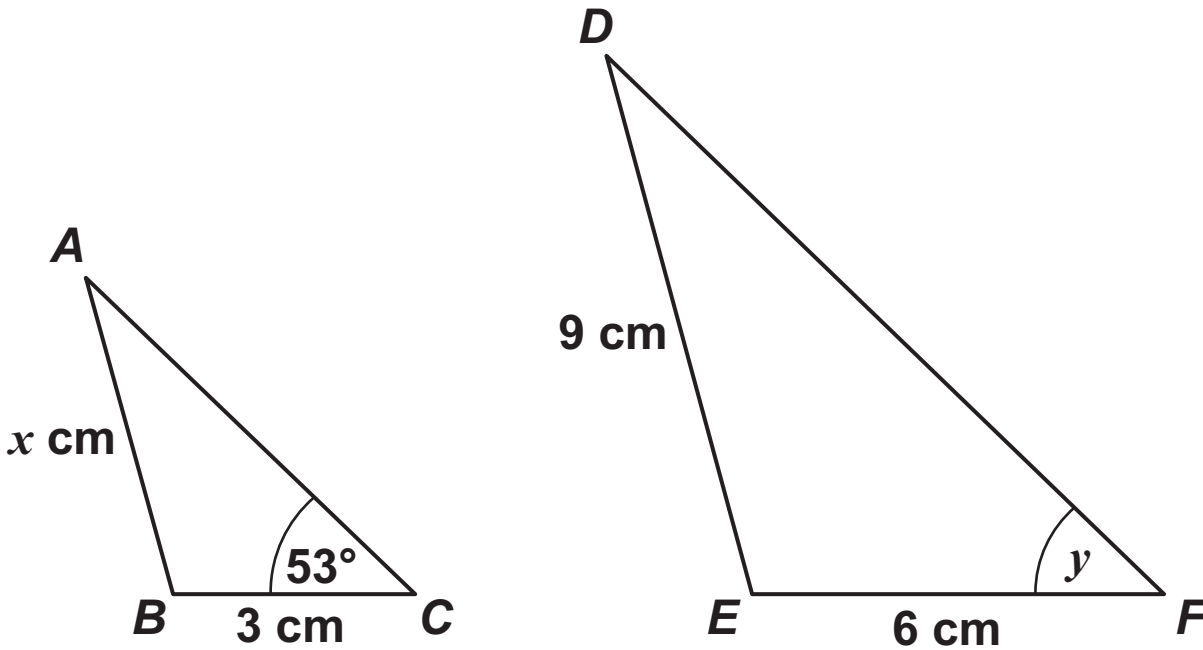






16 Triangles  $ABC$  and  $DEF$  are similar.

Not drawn accurately



16(a) Work out the value of  $x$ . [2 marks]

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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]



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

Mark point  $R$  on the line with a cross. [1 mark]



[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]

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**Answer** \_\_\_\_\_

**[Turn over]**



- 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]

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Answer \_\_\_\_\_

19(b) Work out the LEAST possible value of  $\frac{x - y}{x}$

You MUST show your working. [2 marks]

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Answer \_\_\_\_\_





24

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Answer \_\_\_\_\_ %

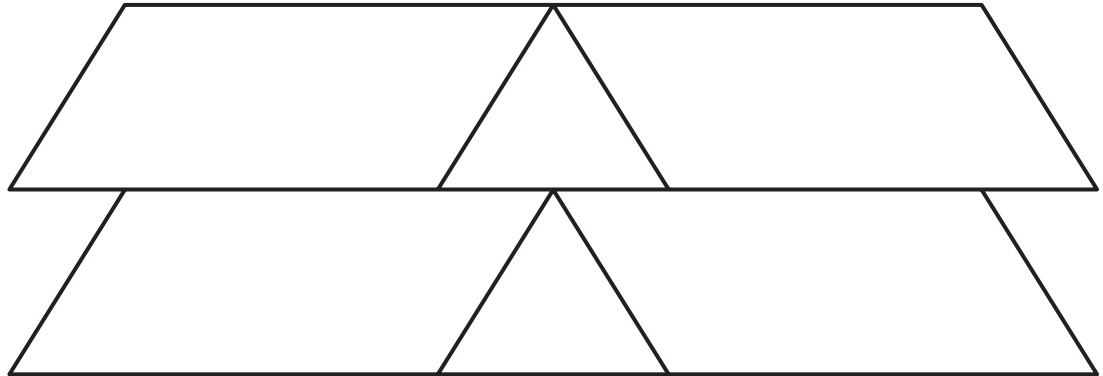






- 22 This shape is made from two triangles and four congruent parallelograms.

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  $\leq$  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]

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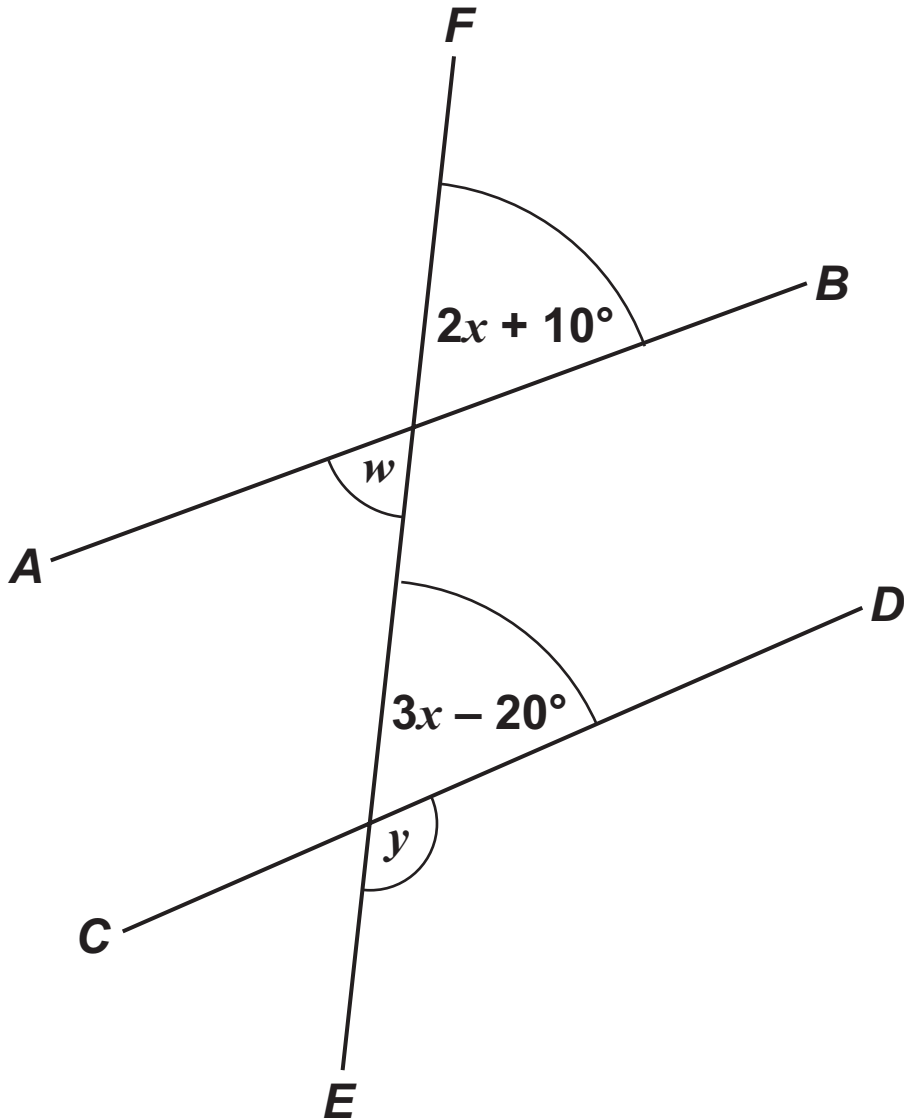
6
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[Turn over]



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

Not drawn accurately



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

What answer should she get for the size of angle  $y$ ? [4 marks]

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

[Turn over]



24 (b)

In fact,

 $AB$  and  $CD$  are NOT parallelangle  $w$  is  $60^\circ$ What effect does this have on the size of angle  $y$ ?

Tick a box.

 $y$  is bigger $y$  is the same $y$  is smallerShow working to support your answer.  
[3 marks]

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

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

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

25(a) Work out the number of students in the school who study French. [3 marks]

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Answer \_\_\_\_\_

[Turn over]



- 25 (b) Work out the probability that a student chosen at random from the whole school does NOT study French. [2 marks]

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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         $3 \leq 3x < 18$

B            Solve         $3 < 3x \leq 18$

[2 marks]

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8
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END OF QUESTIONS



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For Examiner's Use	
Pages	Mark
4 – 5	
6 – 7	
8 – 10	
11 – 12	
13 – 15	
16 – 17	
18 – 19	
20 – 22	
23 – 25	
26 – 27	
28 – 31	
31 – 33	
<b>TOTAL</b>	

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