



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

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°C 0°C -7°C 0.1°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

5 (a) Simplify
[2 marks]

$$a \times a \times a + b + b$$

Answer _____

5 (b) Simplify
[3 marks]

$$5(x + 3) - x + 2$$

Answer _____

[Turn over]



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

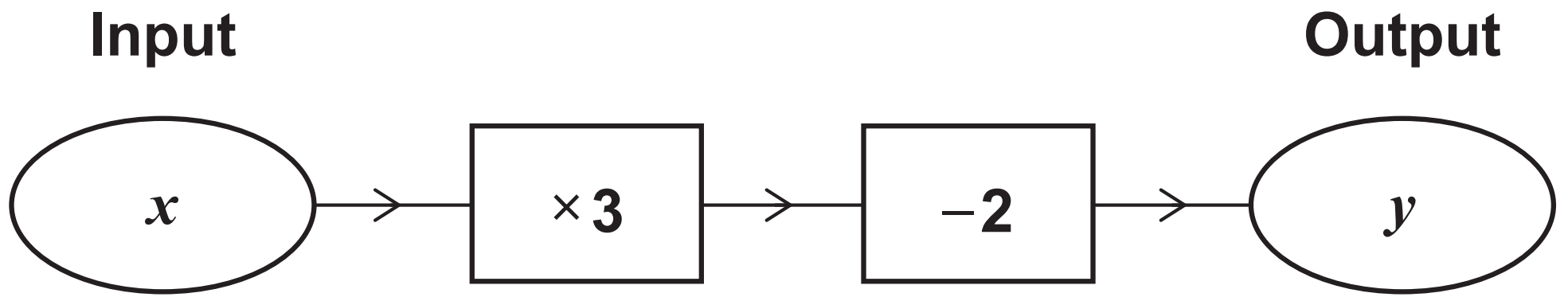
Each pair has a total.

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]

Answer _____

[Turn over]



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

Answer _____

6

8 On page 9 is information about the goals scored in some hockey games.

Each game has four quarters.



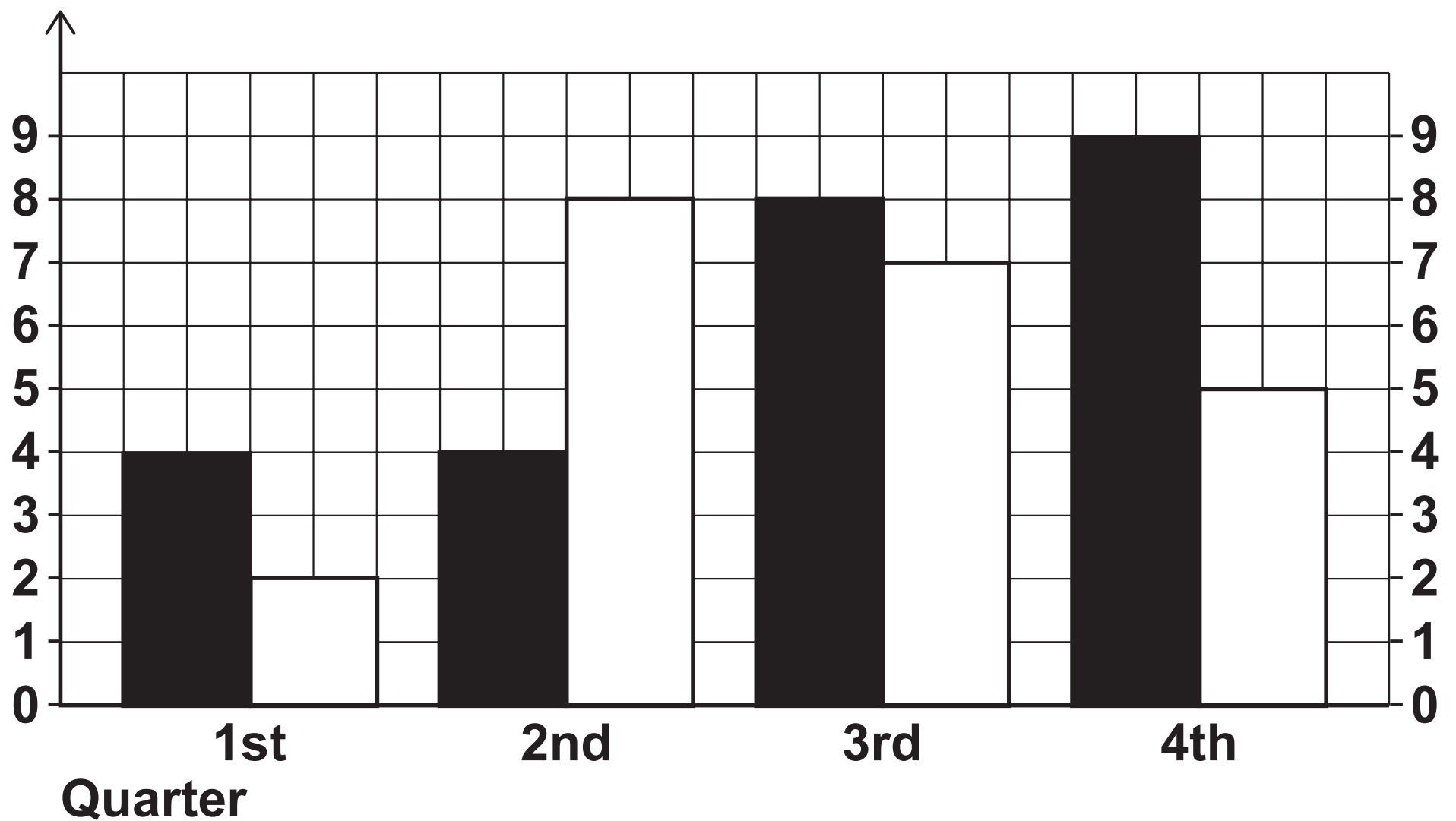
Goals in hockey games

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

[Turn over]



10

8 (b) There were 10 games.

Work out the mean number of goals per game. [2 marks]

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]**

6



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

Answer _____

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

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

Answer _____

[Turn over]



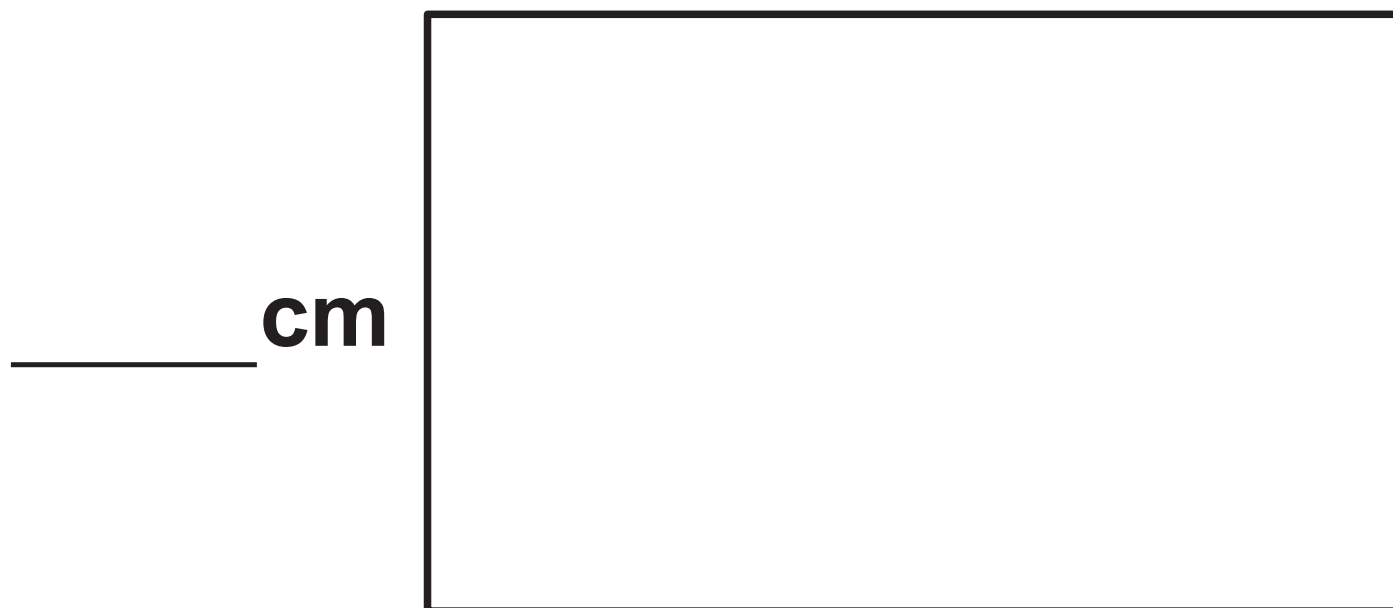
10 Each shape below and opposite has an area of 24 cm^2

**Complete the missing lengths.
[3 marks]**

Not drawn accurately

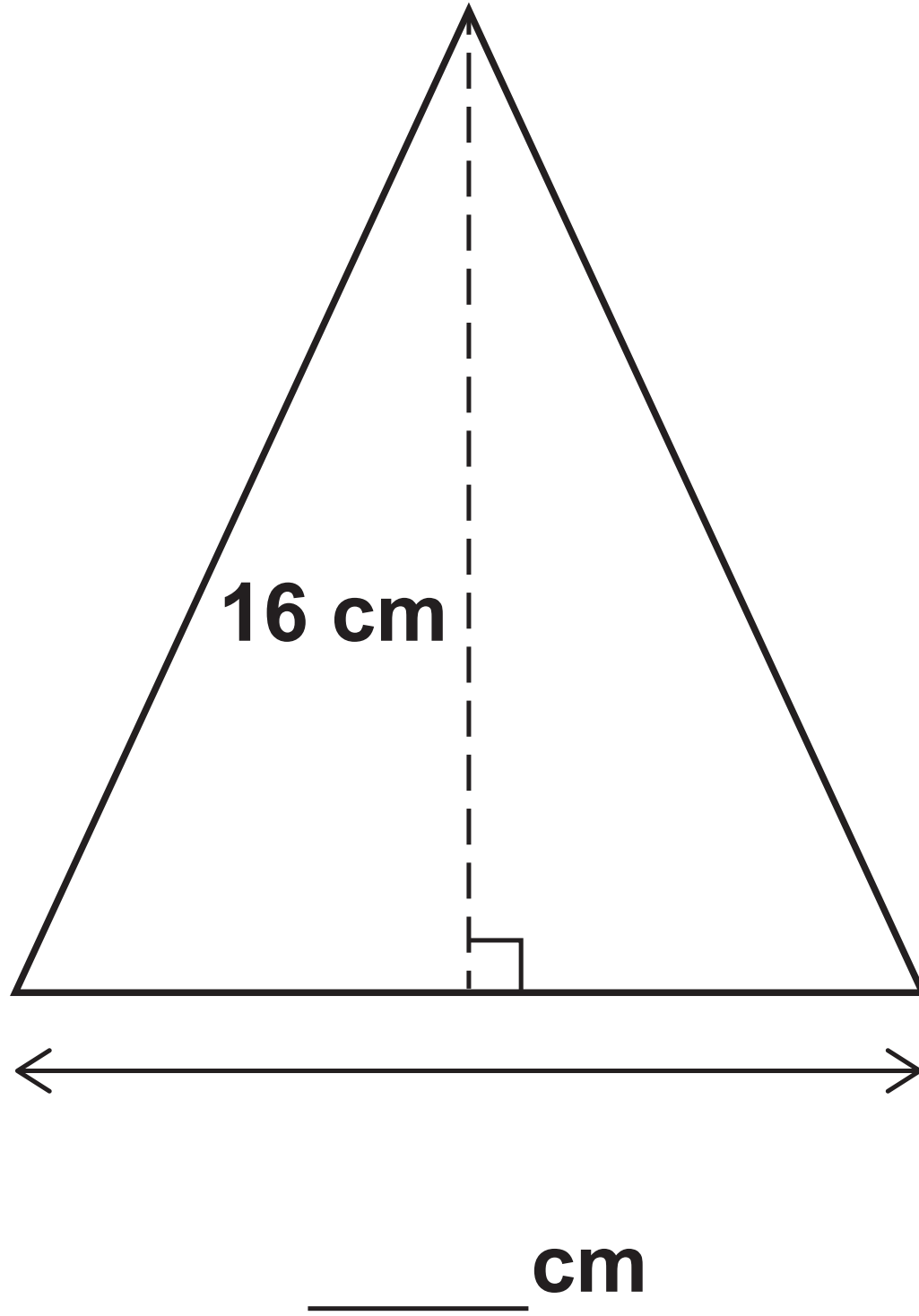
Rectangle

6 cm



15

Triangle



[Turn over]



11

A television channel shows 12 minutes of adverts in each half hour.

How many MINUTES of adverts does it show from 5am to 11pm?
[3 marks]

Answer _____minutes





12

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

44%

$\frac{1}{4}$

0.404

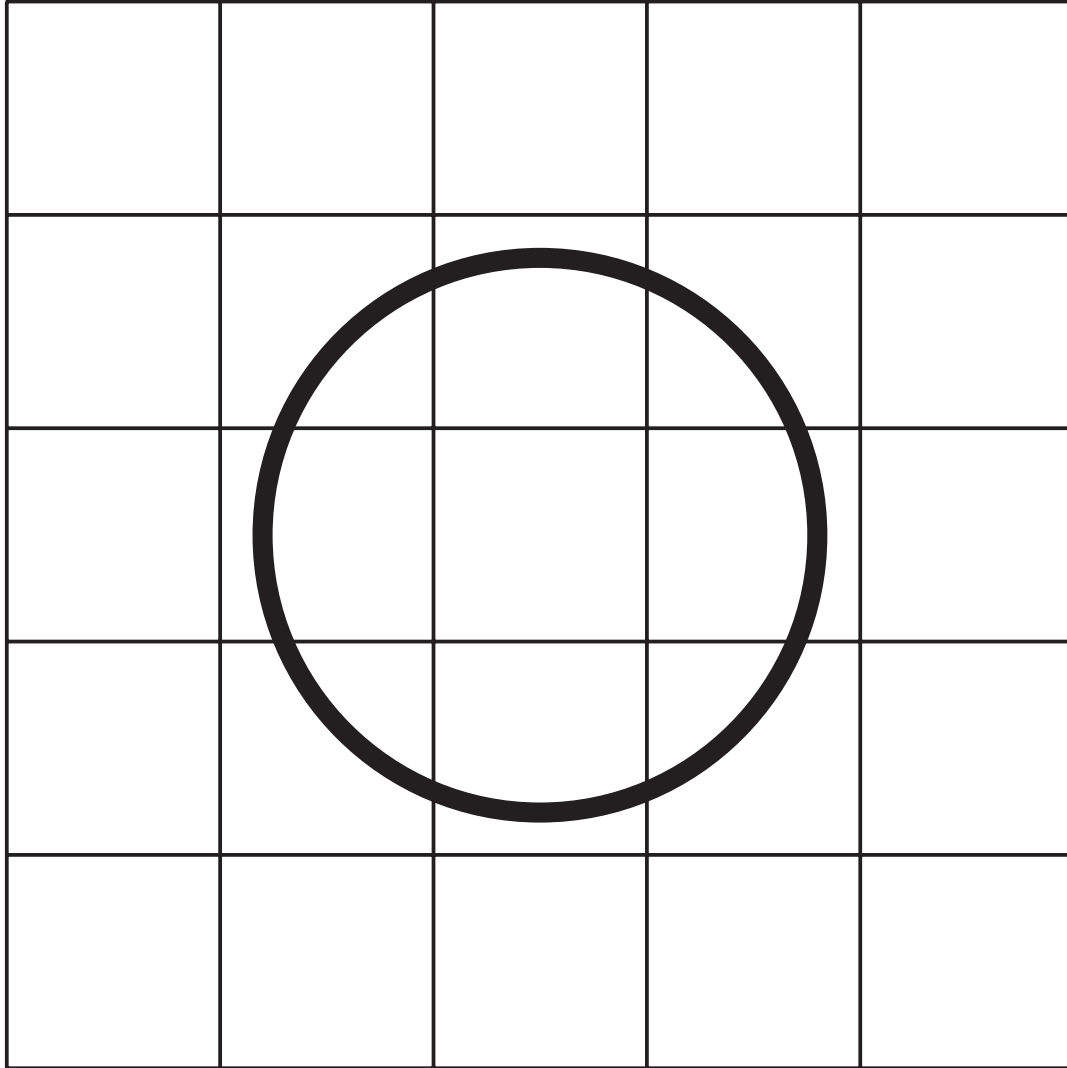
$\frac{4}{10}$

17

Answer _____, _____, _____,

[Turn over]

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 cm^2

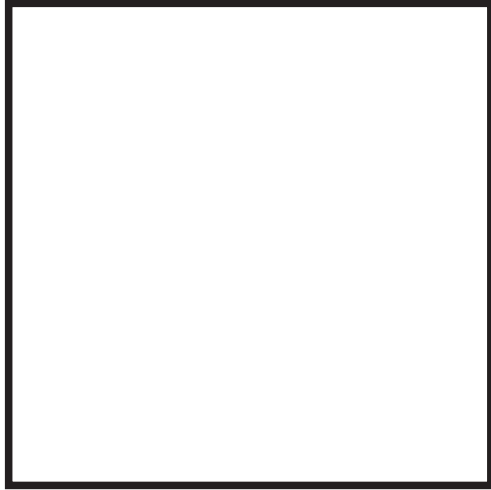
**Why must this be wrong?
[1 mark]**

7

[Turn over]



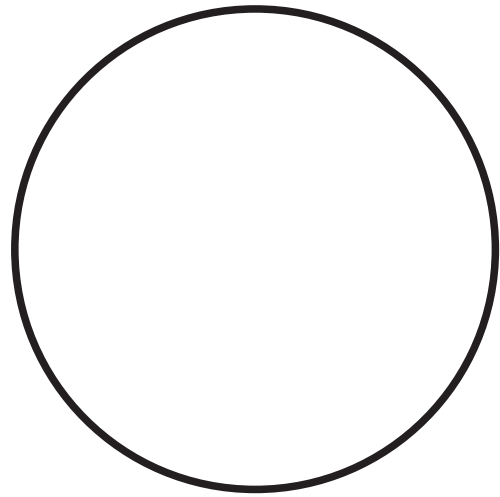
14 (a) The front elevation, side elevation and plan of a solid are all the same, as shown.



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 _____

[Turn over]





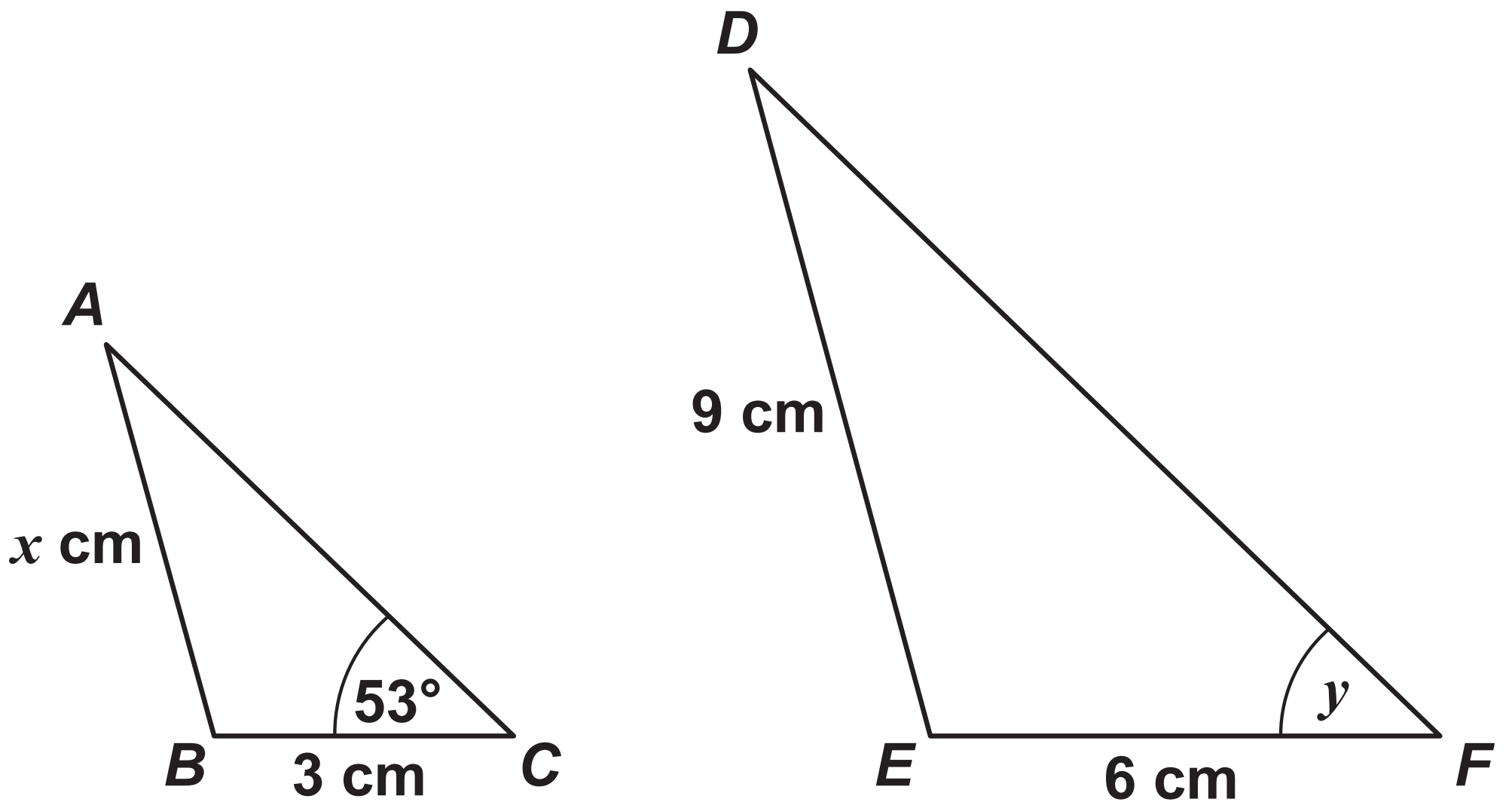
5

[Turn over]



16 Triangles ABC and DEF are similar.

Not drawn accurately



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



Answer _____

**16 (b) Write down the size of angle y .
[1 mark]**

Answer _____ **degrees**

[Turn over]



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]



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]

[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]

Answer _____

[Turn over]

30

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

You MUST show your working.
[2 marks]

Answer _____

9



20

An exam has two papers.

Anil scores

33 out of 60 on paper 1

and

75 out of 100 on paper 2

**Work out his percentage score
for the exam. [3 marks]**

[Turn over]



Answer _____ %

21

Purple paint is made by mixing red paint and blue paint in the ratio 5 : 2

Yan has 30 litres of red paint and 9 litres of blue paint.

**What is the MAXIMUM amount of purple paint he can make?
[3 marks]**



Answer _____ litres

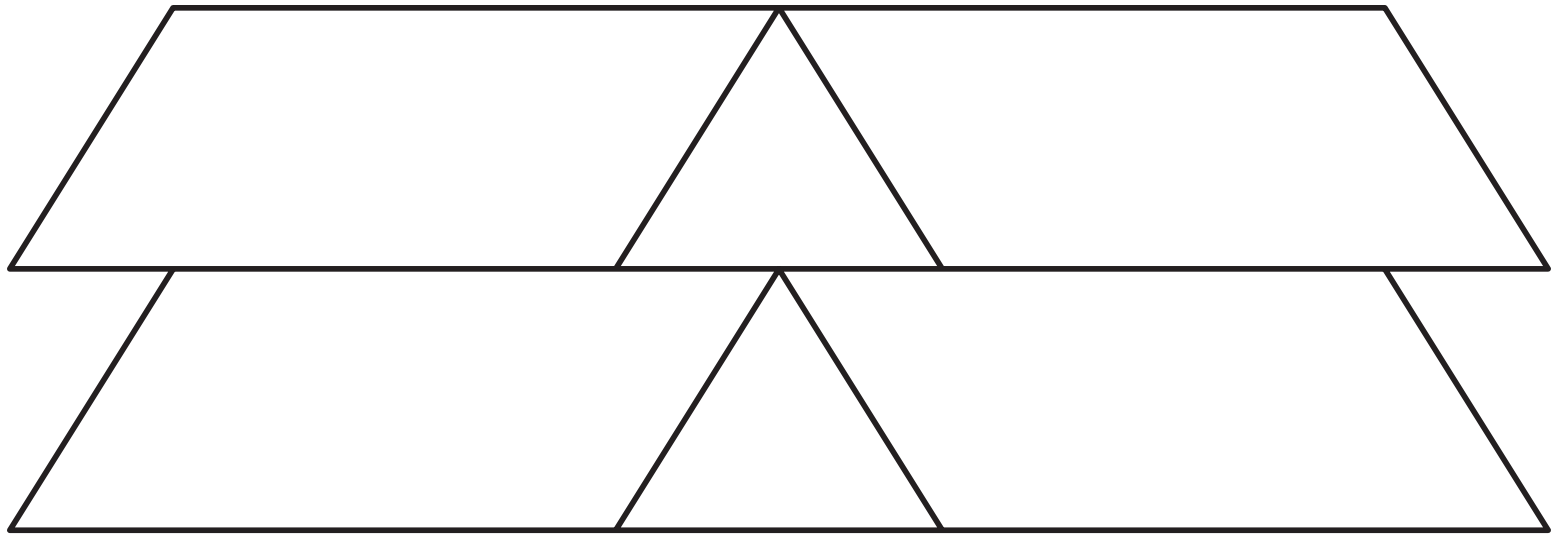
6

[Turn over]



- 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

[Turn over]



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]

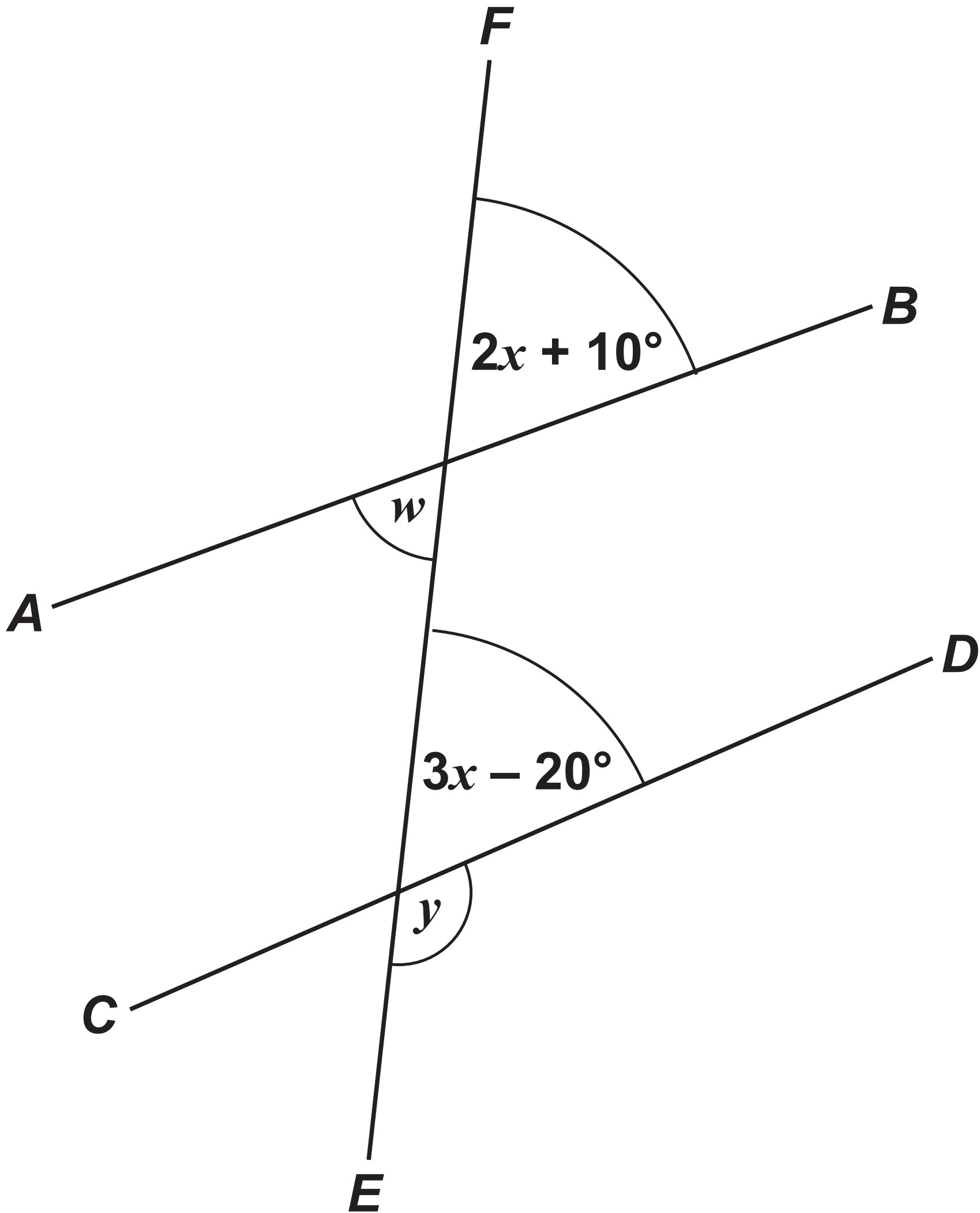
6

[Turn over]



24 AB , CD and EF are straight lines.

Not drawn accurately



24 (b) In fact,

AB and *CD* are NOT parallel
angle w is 60°

What effect does this have on
the size of angle y ?

Tick a box.

y is bigger

y is the same

y is smaller

Show working to support your
answer. [3 marks]



7

[Turn over]



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]

Answer _____



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

Answer _____

26 Circle the expression equivalent to $x^2 - 4x - 12$ [1 mark]

$(x - 4)(x - 8)$ $(x + 3)(x - 4)$

$(x - 12)(x + 1)$ $(x + 2)(x - 6)$

[Turn over]



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For Examiner's Use	
Pages	Mark
4 – 5	
6 – 8	
8 – 12	
13 – 15	
16 – 19	
20 – 23	
24 – 26	
27 – 30	
31 – 33	
34 – 37	
38 – 41	
42 – 44	
TOTAL	

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