Candidate forename		Candidate surname	

Centre number						Candidate number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

GCSE

J512/02

MATHEMATICS SYLLABUS A

Paper 2 (Foundation Tier)

MONDAY 16 JANUARY 2012: Morning
DURATION: 2 hours

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Question Paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Electronic calculator
Geometrical instruments
Tracing paper (optional)

This paper has been pre modified for carrier language

READ INSTRUCTIONS OVERLEAF

DC (NF/SW) 12MEP01063 55721

INSTRUCTIONS TO CANDIDATES

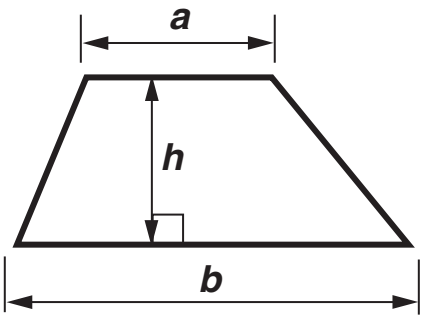
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. HB pencil may be used for graphs and diagrams only.**
- **Answer ALL the questions.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).**

INFORMATION FOR CANDIDATES

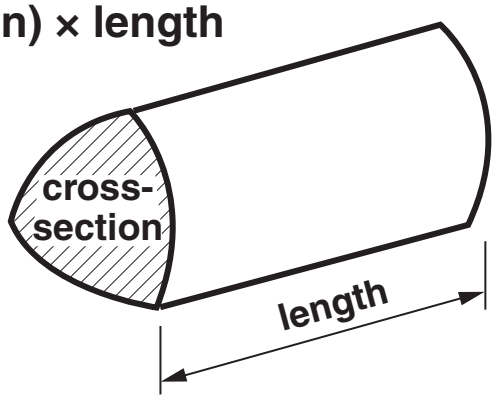
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **You are expected to use an electronic calculator for this paper.**
- **Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.**
- **The total number of marks for this paper is 100.**

FORMULAE SHEET: FOUNDATION TIER

Area of trapezium $= \frac{1}{2}(a + b)h$



Volume of prism = (area of cross-section) × length



1 (a) What fraction of this diagram has been shaded?

(a) _____ **[1]**

(b) Write $\frac{3}{4}$ as a decimal.

_____

_____

(b) _____ **[1]**

(c) Write these decimals in order of size, smallest first.

0.34 0.28 0.09 0.5

_____

_____

(c) _____ _____ _____ _____ **[2]**
smallest

(d) All the tickets for a music concert cost the same amount.
Three tickets cost £58.80.

How much does one ticket cost?

_____

_____

_____

(d) £_____ [2]

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2 (a) The Eiffel Tower is one thousand and sixty three feet tall.

Write one thousand and sixty three in figures.

(a) _____ **[1]**

(b) The CN Tower is 1815 feet tall.
The Dubai Tower is 2258 feet tall.

How much taller is the Dubai Tower than the CN Tower?

_____

_____

_____

(b) _____ **feet [2]**

3 (a) A mobile phone company charges 15p a minute for calls.
Text messages cost 8p each.

In December, Lily spoke to her friends on her mobile phone for a total of 53 minutes.
She also sent 32 text messages.

How much was Lily charged for calls and texts in December?

_____

_____

_____

_____

(a) £_____ [3]

(b) Tommy uses a different mobile phone company. This company charges 20p a minute for the first five minutes of calls in each day and then 5p for each minute after that.

On Thursday Tommy spoke for a total of 19 minutes on his mobile phone.

How much was Tommy charged for calls on Thursday?

_____

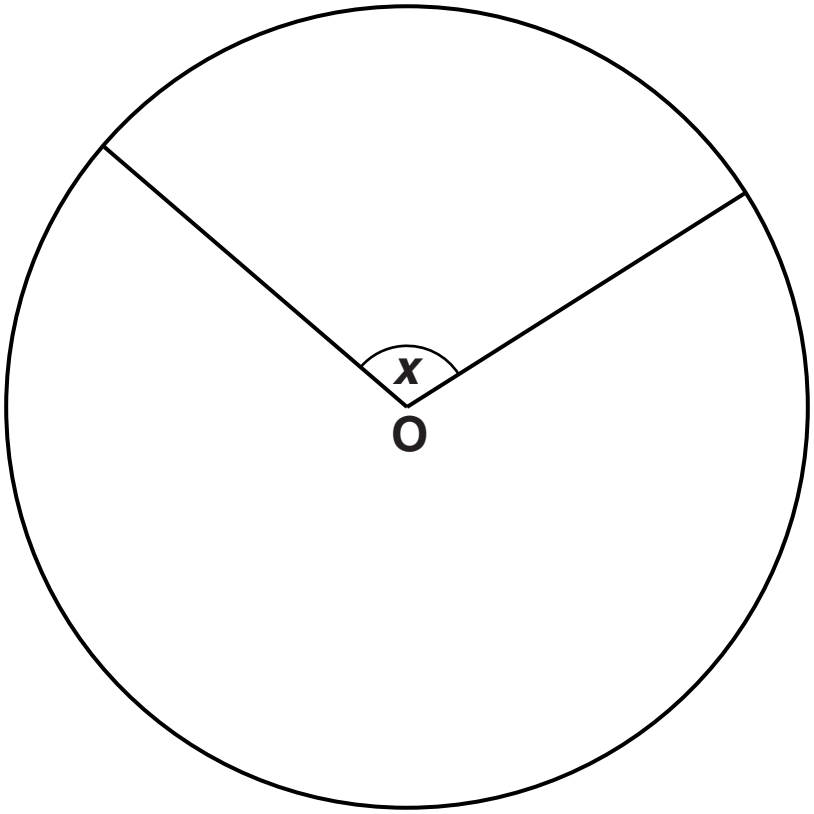
_____

_____

_____

(b) £_____ [3]

4 This is a circle with centre O.



(a) Measure the radius of the circle.

(a) _____ **cm [1]**

(b) Measure angle *x*.

(b) _____ **° [1]**

(c) Use one of these to describe angle *x*.

ACUTE	**RIGHT ANGLE**
REFLEX	**OBTUSE**

(c) _____ **[1]**

5 Claudia, Kalyan and Rhys are collecting one penny, two pence and five pence coins.

(a) (i) Claudia has collected 72 one penny coins, 53 two pence coins and 35 five pence coins.

How much has Claudia collected altogether? Give your answer in pounds and pence.

_____

_____

_____

(a)(i) £_____ [2]

(ii) Kalyan has collected £3.62 altogether. He has collected 53 one penny coins and 47 two pence coins.

How many five pence coins has he collected?

_____

_____

_____

(ii) _____ [2]

(b) Rhys has 87 coins in a jar.

(i) He has 25 one penny coins.
He takes a coin from the jar without looking.

What is the probability that he takes a one penny coin from the jar?

(b)(i) _____ **[1]**

(ii) The probability that Rhys takes a two pence coin from the jar is $\frac{1}{3}$.

How many two pence coins are there in the jar?

_____

_____

(ii) _____ **[2]**

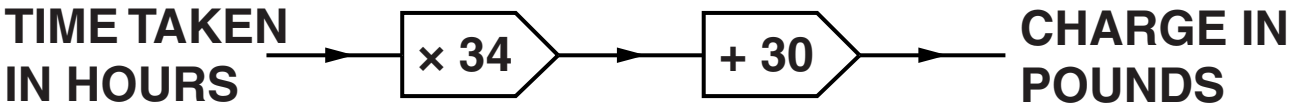
(iii) How many five pence coins are in the jar?

_____

_____

(iii) _____ **[2]**

6 Jack, a plumber, uses this rule to work out how much he charges for a job.



(a) Jack does a job for Mr Chan that takes 3 hours.

How much does he charge?

_____

_____

_____

(a) £_____ [2]

(b) Jack charges Mrs Pryce £285.

How long did it take him to do this job?

_____

_____

_____

(b)_____ hours [2]

7 Use your calculator to work these out.

(a) 25% of 147.6

_____

_____

(a) _____ **[2]**

(b) $\frac{3}{7}$ **of 50.4**

_____

_____

_____

(b) _____ **[2]**

(c) 4% of 64.5

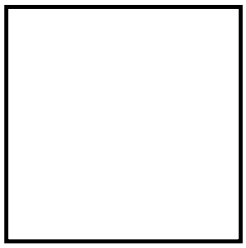
_____

_____

_____

(c) _____ **[2]**

8 (a) This regular hexagon and this square have the same perimeter.
The length of one side of the hexagon is 4.6 cm.



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Work out the length of one side of the square.

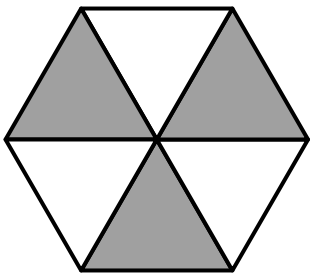
_____

_____

_____

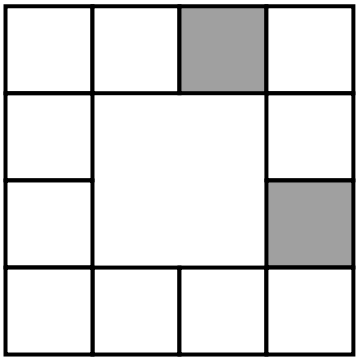
(a) _____ cm [3]

(b) (i) Find the order of rotation symmetry of this shape.



(b)(i) _____ [1]

(ii) Shade 2 more small squares on this shape so that it has rotation symmetry of order 4.



[1]

9 (a) These are the prices, in pence, of a 'Choco' chocolate bar in six supermarkets.

44 48 53 56 44 41

Work out

(i) the mode,

_____

(a)(i)_____ p [1]

(ii) the median,

_____

_____

_____

(ii)_____ p [2]

(iii) the range.

_____

(iii) _____ p [1]

(b) Five positive whole numbers have a mode of 6 and a median of 3.

What are the five numbers?

_____

_____

_____

_____

(b) _____ **[2]**

10 (a) Lisa and David were collecting data to find the favourite meal of students in Year 10.
They gave this survey question to some of Year 10.

> What is your favourite meal?
>
> Fish and Chips
> Chicken Tikka Masala
> Spaghetti Bolognese
> Roast Beef
> Pizza

(i) Explain why students may find the question difficult to answer.

_____

_____

_____ **[1]**

(ii) How could the question be improved?

_____

_____

_____ **[1]**

(b) Lisa and David collected their data in this tally chart.

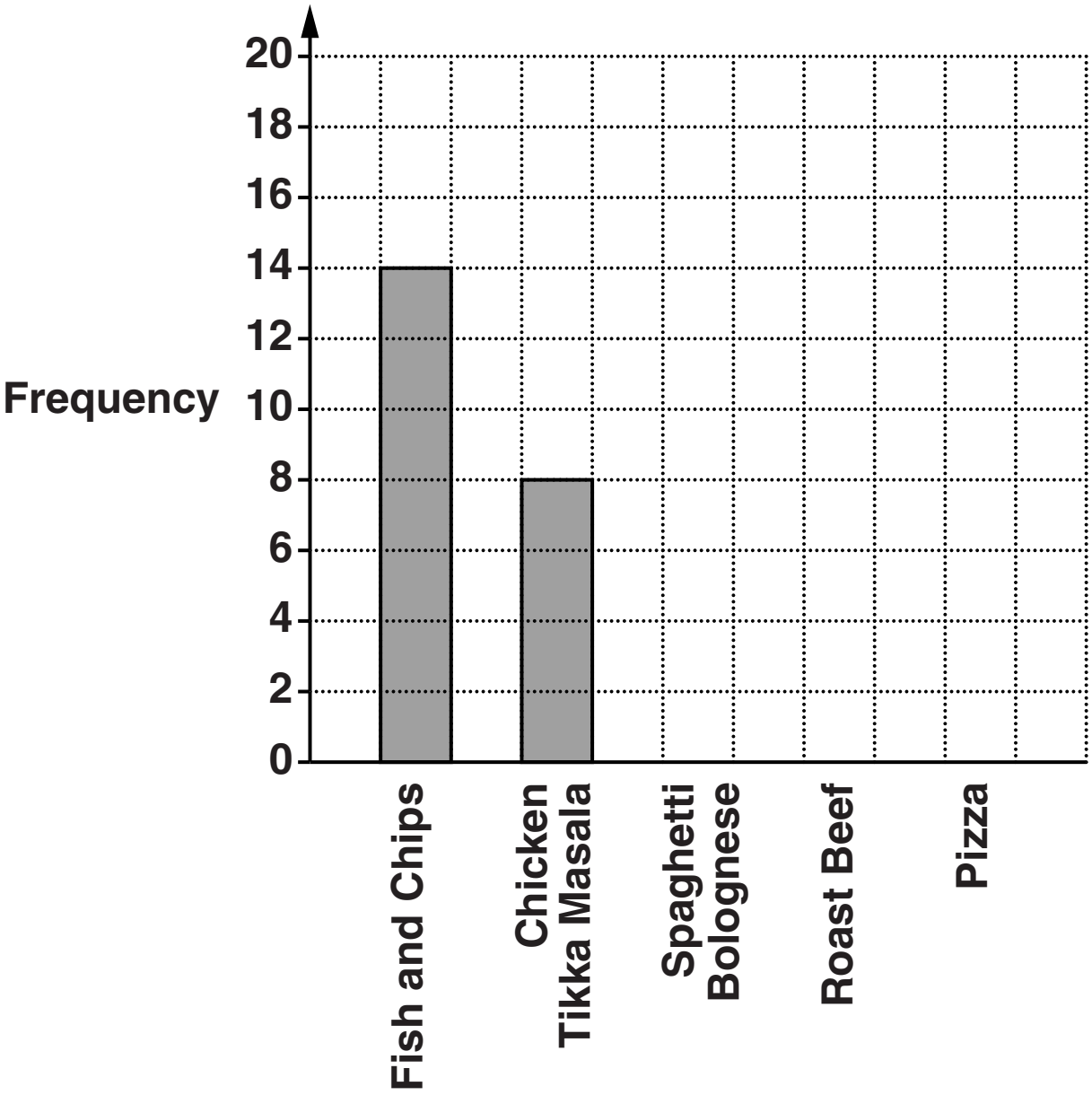
Complete the chart by filling in the three empty boxes.

	Tally	Frequency
Fish and Chips	𝍸 𝍸 IIII	14
Chicken Tikka Masala	𝍸 III	8
Spaghetti Bolognese	𝍸 𝍸 II	
Roast Beef	IIII	
Pizza		17

[2]

(c) Lisa and David present their results in this bar chart.

Complete the bar chart.



[2]

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11 (a) Here is a list of numbers.

6 8 15 19 39 49 56

From this list write down

(i) a square number,

(a)(i)_____ [1]

(ii) a prime number,

(ii)_____ [1]

(iii) a cube number.

(iii)_____ [1]

(b) Some square numbers can be written as the sum of two prime numbers.
For example, 36 = 17 + 19.

Find two prime numbers which have a sum of

(i) 16,

_____

_____

_____

(b)(i)_____ and _____ [1]

(ii) 25.

_____

_____

_____

(ii)_____ and _____ [1]

12 Tom has y songs in his music library.

(a) Lucy has fifteen more songs than Tom in her music library.

Write down an expression, in terms of y, for the number of songs Lucy has.

(a) _____ **[1]**

(b) Tesni has $y - 7$ songs in her music library.

Complete this sentence.

Tesni has 7 songs

_____ **than Tom. [1]**

(c) Jason has $3y$ songs in his music library.

Complete this sentence.

Jason has _____
times as many songs as Tom. [1]

(d) Write down and simplify an expression, in terms of *y*, for the TOTAL number of songs that TOM, TESNI AND JASON have altogether in their music libraries.

_____

_____

(d) _____ **[2]**

13 Fill in the boxes for this pattern.

$16^2 - 14^2 = 4 \times 15$

$14^2 - 12^2 = 4 \times 13$

$12^2 - 10^2 = 4 \times \square$

$10^2 - 8^2 = 4 \times 9$

$\square - \square = \square \times \square$

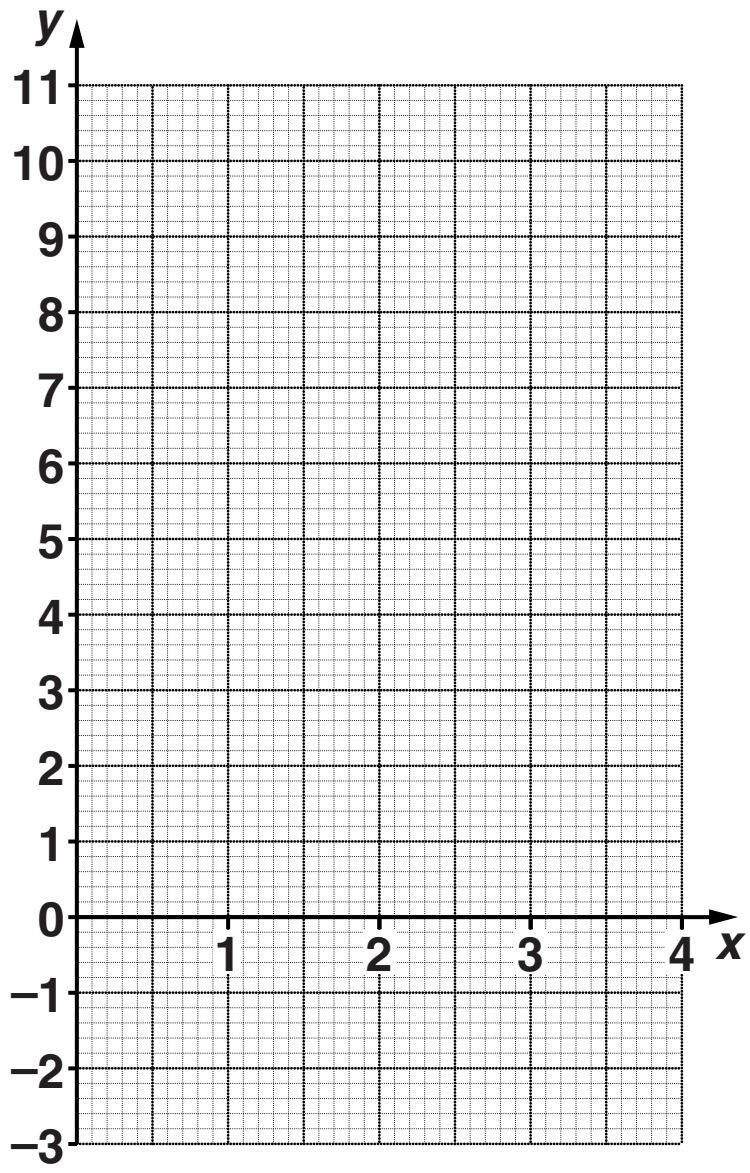
[3]

14 (a) Complete the table for $y = 3x - 2$.

x	0	1	2	3	4
y		1			10

[2]

(b) Draw the graph of $y = 3x - 2$.



[2]

(c) Use your graph to find the value of x when $y = 5.8$.

(c) _____ **[1]**

15 A band of four musicians has a mean age of 34 years.

(a) What is the total of all the ages of the four musicians?

_____

_____

(a) _____ **years [1]**

(b) Stella, who is 24 years old, joins the band.

What is the mean age of the five members of the band?

_____

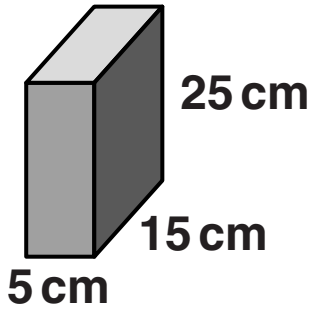
_____

_____

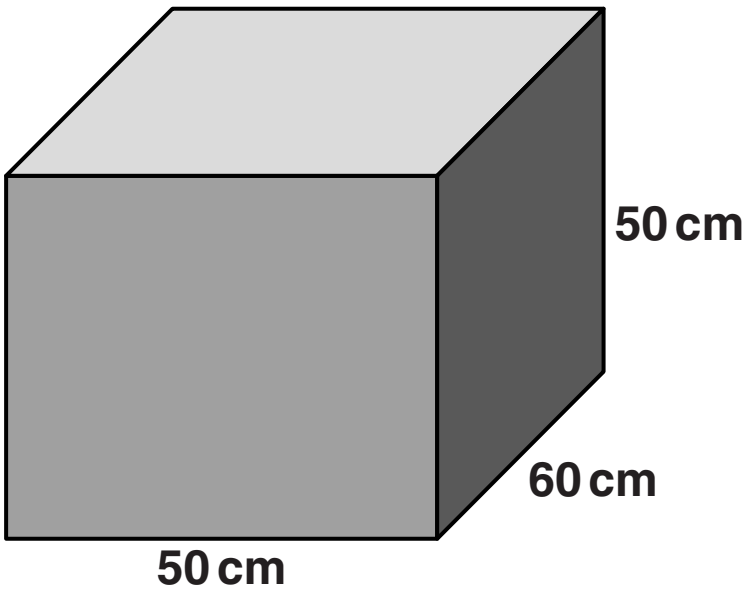
_____

(b) _____ **years [2]**

16 Dylon is putting cereal boxes into a packing case. Each cereal box is a cuboid of width 5 cm, length 15 cm and height 25 cm.



The packing case is a cuboid of width 50 cm, length 60 cm and height 50 cm.



Dylon fills the packing case with cereal boxes so that there are no gaps.

How many cereal boxes does Dylon put into the packing case?

_____

_____

_____

_____

_____

_____

_____

_____

_____ **[3]**

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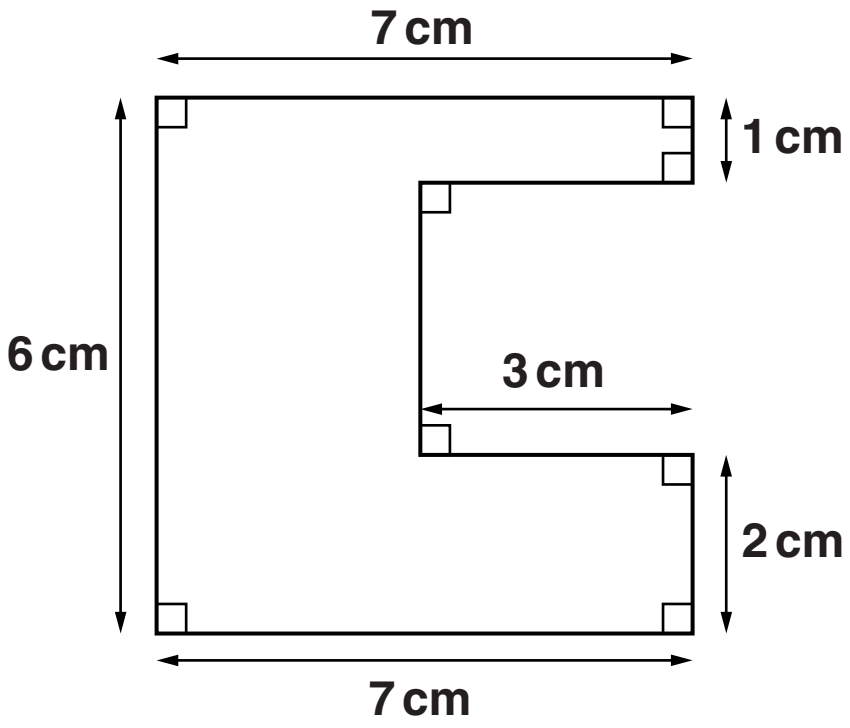
17 Find the perimeter and area of this shape.



NOT TO SCALE

Perimeter _____ **cm**

Area _____ **cm^2 [4]**

18 A lifeboat, B, is 9 km from a lighthouse, L, on a bearing of 320°.
A dinghy, D, is 5 km from the lighthouse, L, on a bearing of 075°.

(a) Make a scale drawing to show the positions of the lifeboat and the dinghy.
Use a scale of 1 cm represents 1 km.

[4]

(b) How far, and on what bearing, is the dinghy from the lifeboat?

_____

_____

(b) _____ km and _____° [2]

19 Here is a sequence of diagrams.

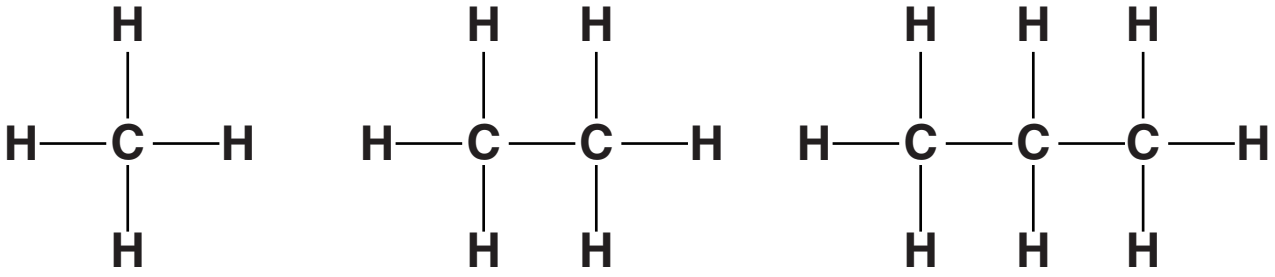


Diagram 1 **Diagram 2** **Diagram 3**

(a) Draw Diagram 4. **[1]**

(b) How many Cs and how many Hs will be in Diagram 7?

_____

_____

_____

(b) C _____

H _____ **[2]**

(c) Write down expressions in terms of *n* for the number of Cs and Hs in Diagram *n*.

_____

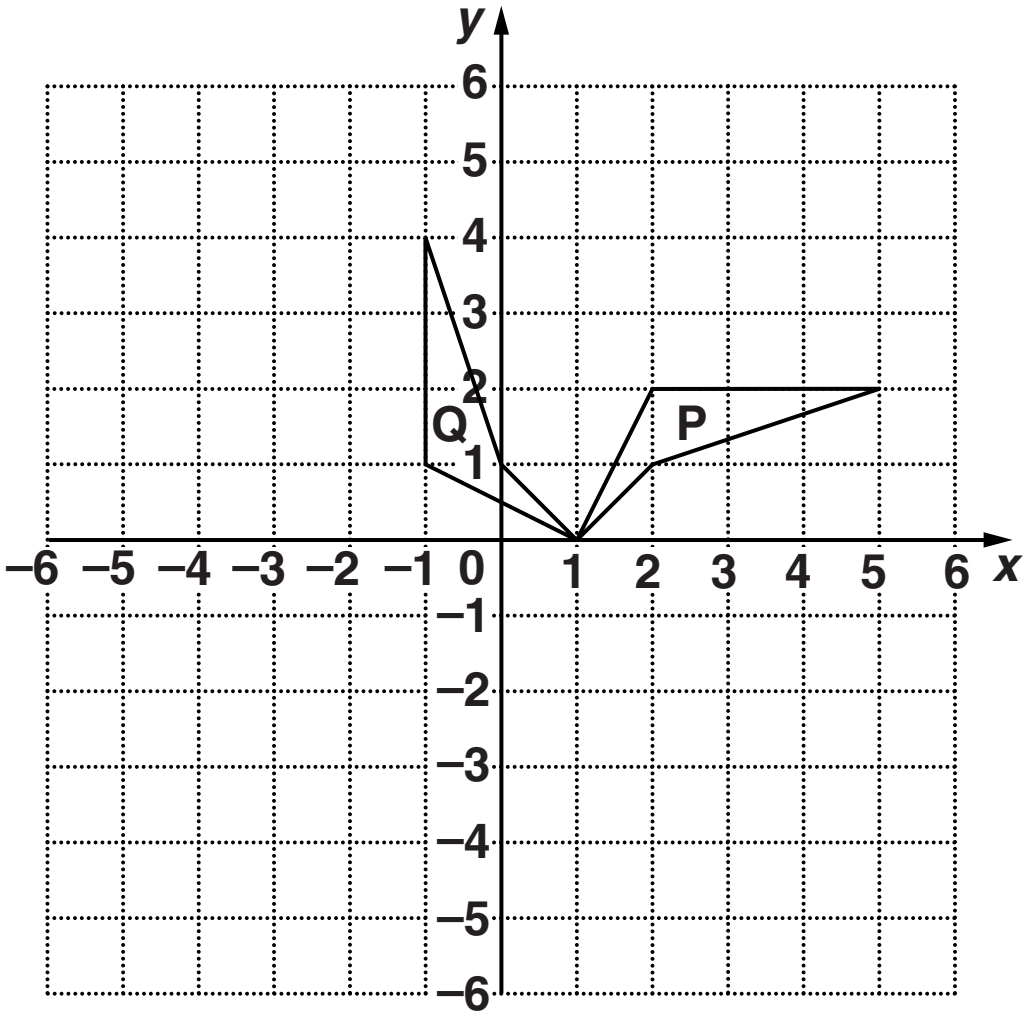
_____

_____

(c) C _____

H _____ **[3]**

20 Jonah drew shape P on a square grid.
He then transformed shape P to shape Q.



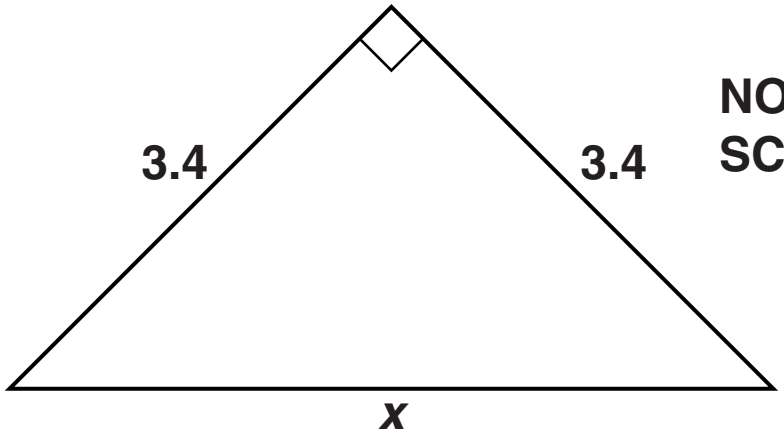
Describe fully the SINGLE transformation that maps shape P onto shape Q.

_____

_____

_____ **[3]**

21 In the diagram below, calculate *x*.



NOT TO SCALE

_____

_____

_____

_____

_____

_____ **[3]**