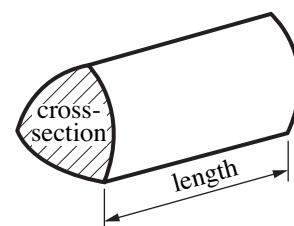


Formulae Sheet

Volume of prism = (area of cross-section) \times length

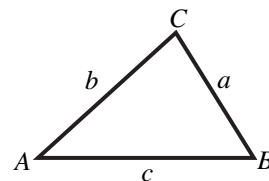


In any triangle ABC

Sine rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

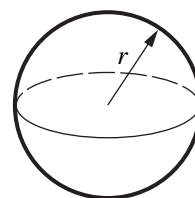
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2} ab \sin C$



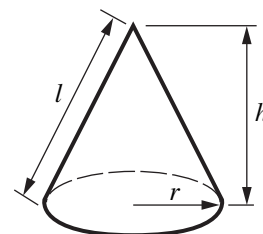
Volume of sphere = $\frac{4}{3} \pi r^3$

Surface area of sphere = $4 \pi r^2$



Volume of cone = $\frac{1}{3} \pi r^2 h$

Curved surface area of cone = $\pi r l$



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$, where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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- 1 Work out.

$$5\frac{1}{4} - 1\frac{2}{3}$$

Give your answer as a mixed number.

..... [3]

3

- 2 (a) At the beginning of each year, *Seetravel* increases the previous year's prices by 5%.
In 2005, the price of one coach holiday with *Seetravel* was £400.

What is the price of this holiday in **2007**?

(a) £..... [3]

- (b) The number of passengers using Gatwick Airport in January was 2.1×10^6 .
For the same month, the number of passengers using Glasgow Airport was 5.0×10^5 .

How many more passengers used Gatwick Airport than Glasgow Airport?
Give your answer in standard form.

(b) [2]

5

- 3 In the following expressions, a , b and c represent lengths.

State whether each expression represents a length, an area, a volume or none of these.

$$3a - b$$

$$b^2(a + c)$$

$$\frac{b^2c}{a}$$

.....

.....

.....

[3]

3	

- 4 The volume of a sphere is given by this formula.

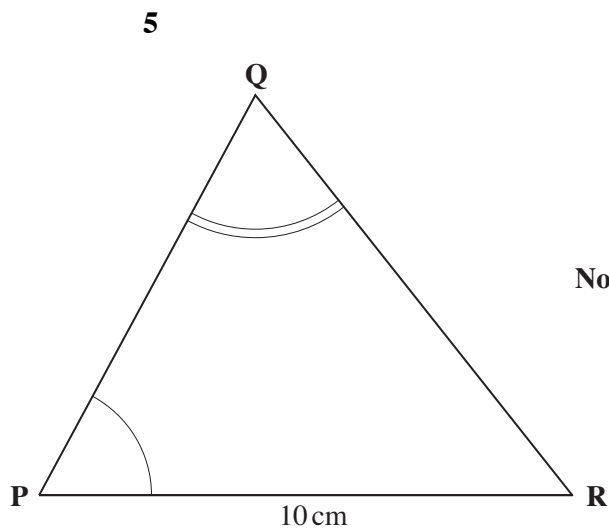
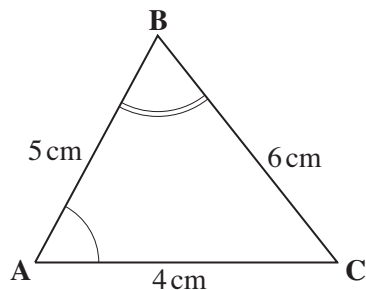
$$V = \frac{4\pi r^3}{3}$$

Rearrange the formula to make r the subject.

..... [3]

3	

5



Not to scale

Triangles ABC and PQR are similar.

Calculate PQ.

..... cm [3]

3

6 Solve algebraically these simultaneous equations.

$$2x + 5y = 8$$

$$4x - 3y = 3$$

$x =$

$y =$ [3]

3

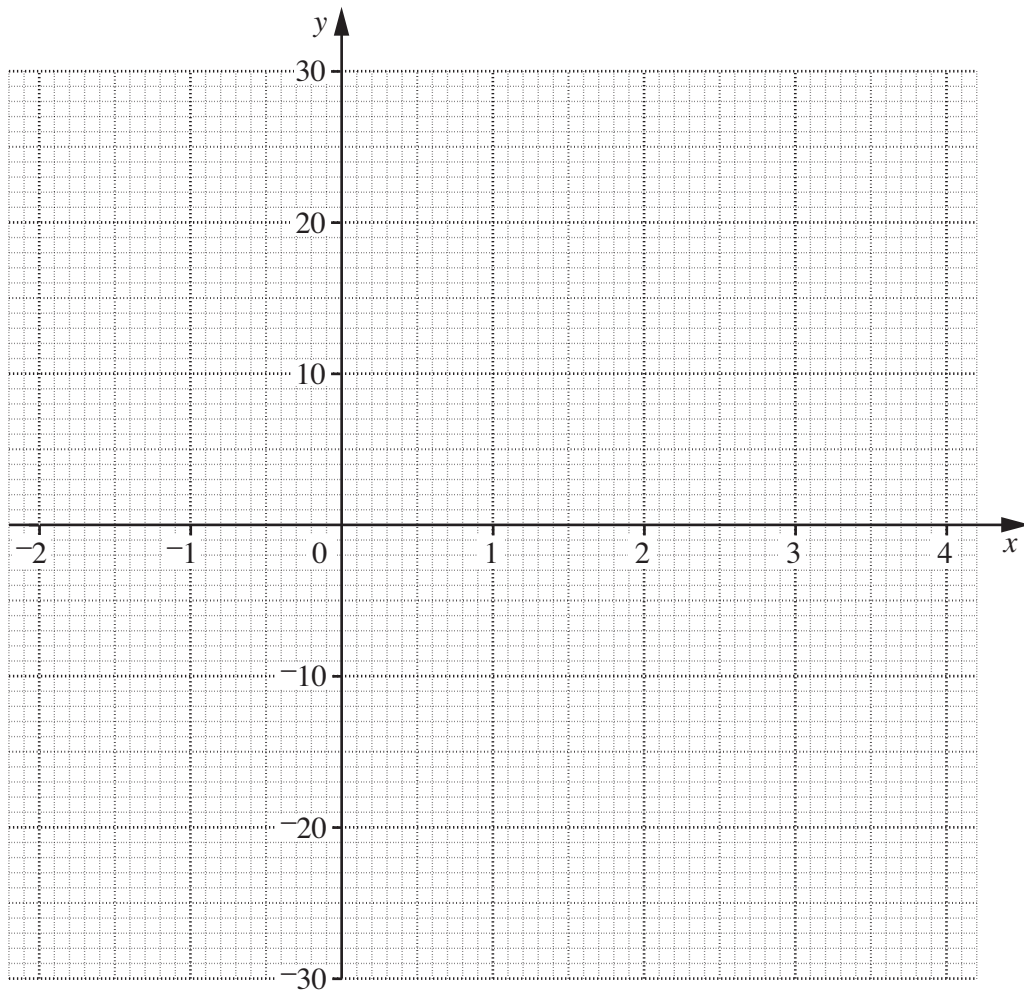
- 7 The table shows some values of x and y for the equation $y = (x - 1)^3$.

x	-2	-1	0	1	2	3	4
y	-27		-1	0	1	8	

(a) Complete the table.

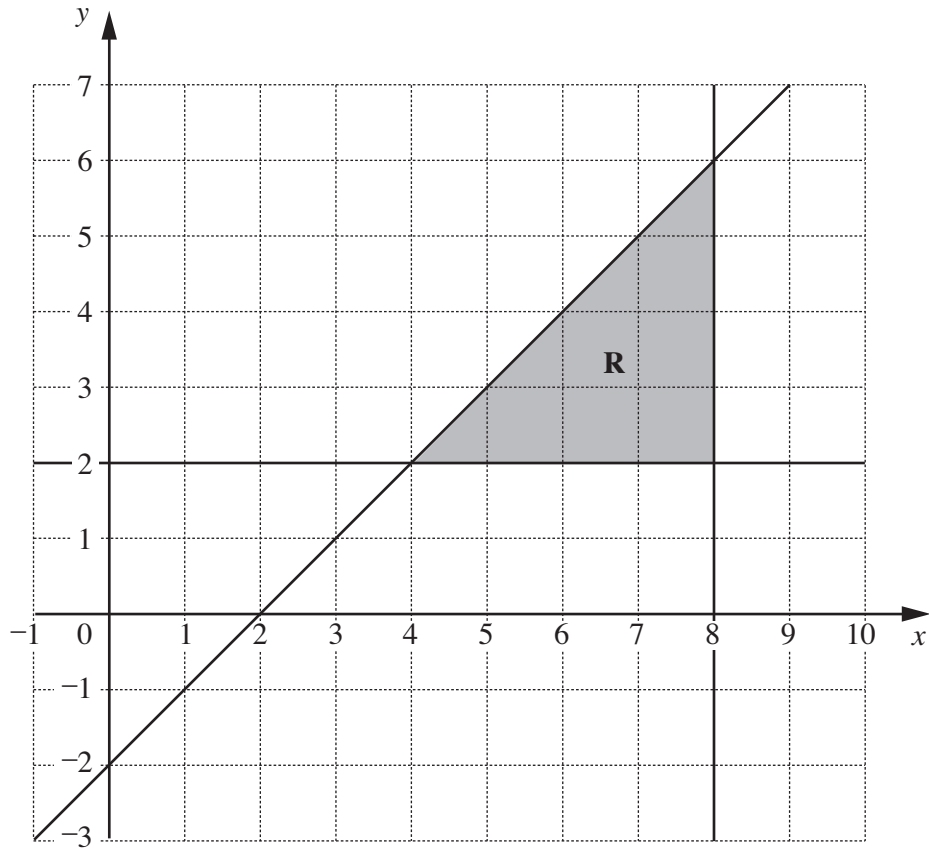
[1]

(b) Draw the graph of $y = (x - 1)^3$ for values of x from -2 to 4.



[2]

3	
---	--



Points in the shaded region, **R**, satisfy three inequalities.

One of the inequalities is $x \leq 8$.

Write down the other two inequalities.

.....

..... [2]

2

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**GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)**

MODULE M8 – SECTION B

WEDNESDAY 27 JUNE 2007

M8 B248B

Morning

Time: 30 minutes

Candidates answer on the question paper.

Additional materials: Geometrical instruments
Tracing paper (optional)
Scientific or graphical calculator



Candidate
Name

--

Centre
Number

--	--	--	--	--

Candidate
Number

--	--	--	--

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre Number and Candidate Number in the boxes above.
- Answer **all** the questions.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- In many questions marks will be given for a correct method even if the answer is incorrect.
- Do **not** write in the bar code.
- Do **not** write outside the box bordering each page.
- WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED. ANSWERS WRITTEN ELSEWHERE WILL NOT BE MARKED.

INFORMATION FOR CANDIDATES

- You are expected to use a calculator in Section B of this paper.
- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this Section is 25.
- Section B starts with question 9.
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.

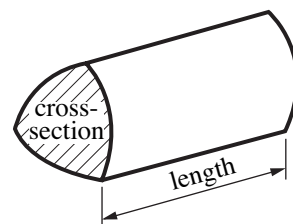
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Section B

This document consists of **8** printed pages.

Formulae Sheet

Volume of prism = (area of cross-section) \times length

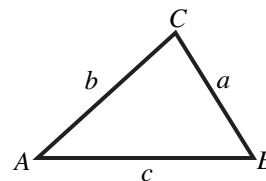


In any triangle ABC

Sine rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

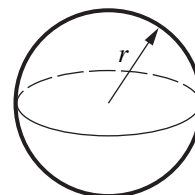
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Area of triangle = $\frac{1}{2} ab \sin C$



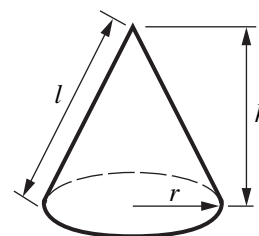
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- 9 (a) Expand and simplify.

$$(x + 3)(x + 8)$$

(a) [2]

- (b) Factorise.

(i) $2ax - 6bx$

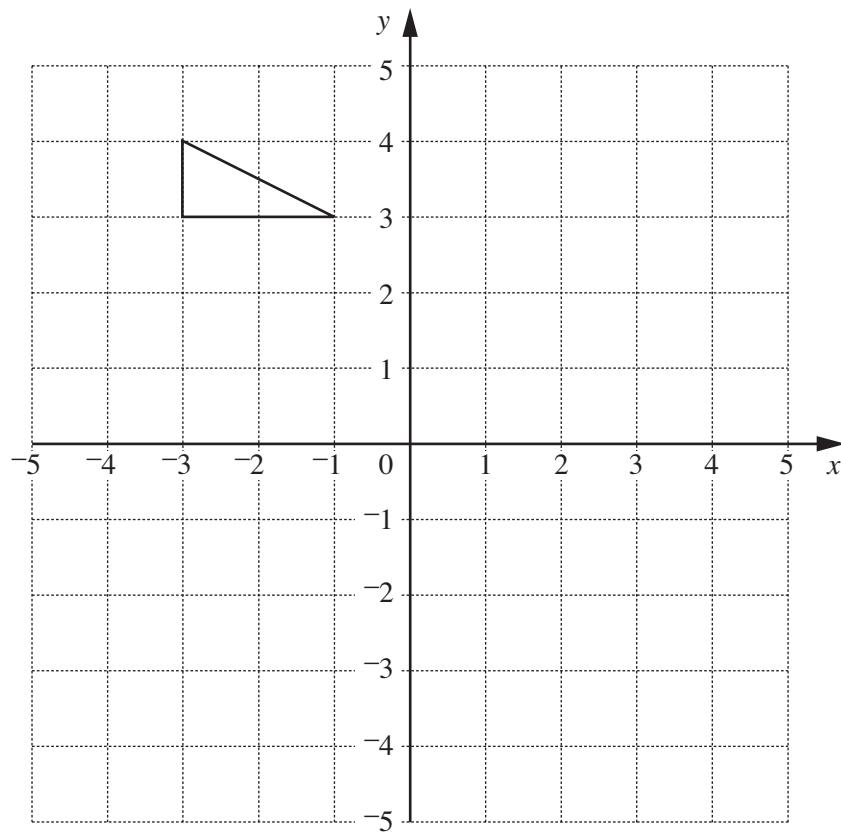
(b)(i) [2]

(ii) $x^2 - 8x - 20$

(ii) [2]

6	
---	--

- 10 Describe fully the **single** transformation that is equivalent to a reflection in the y -axis followed by a reflection in the x -axis. You may use the diagram to help you.



.....

.....

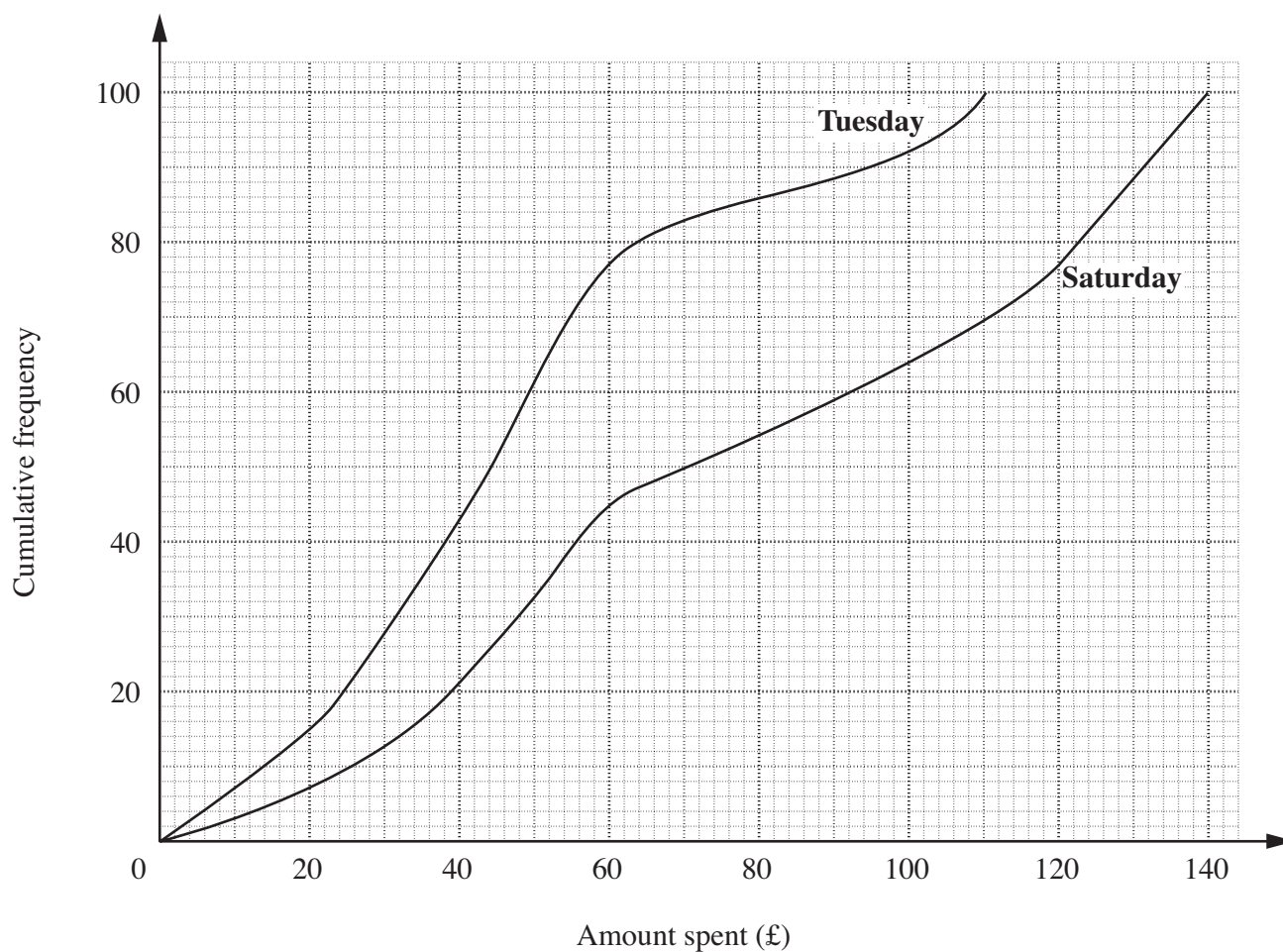
.....

..... [3]

3	
---	--

- 11 Sandra is comparing the amounts spent by shoppers in a supermarket. She asked 100 shoppers on Tuesday and 100 shoppers on Saturday.

She has drawn cumulative frequency graphs for the two sets of data.



- (a) Find the inter-quartile range for the amounts spent on Tuesday.

(a) £..... [2]

- (b) Make two comparisons of the amounts spent on the two days.

1.

2.

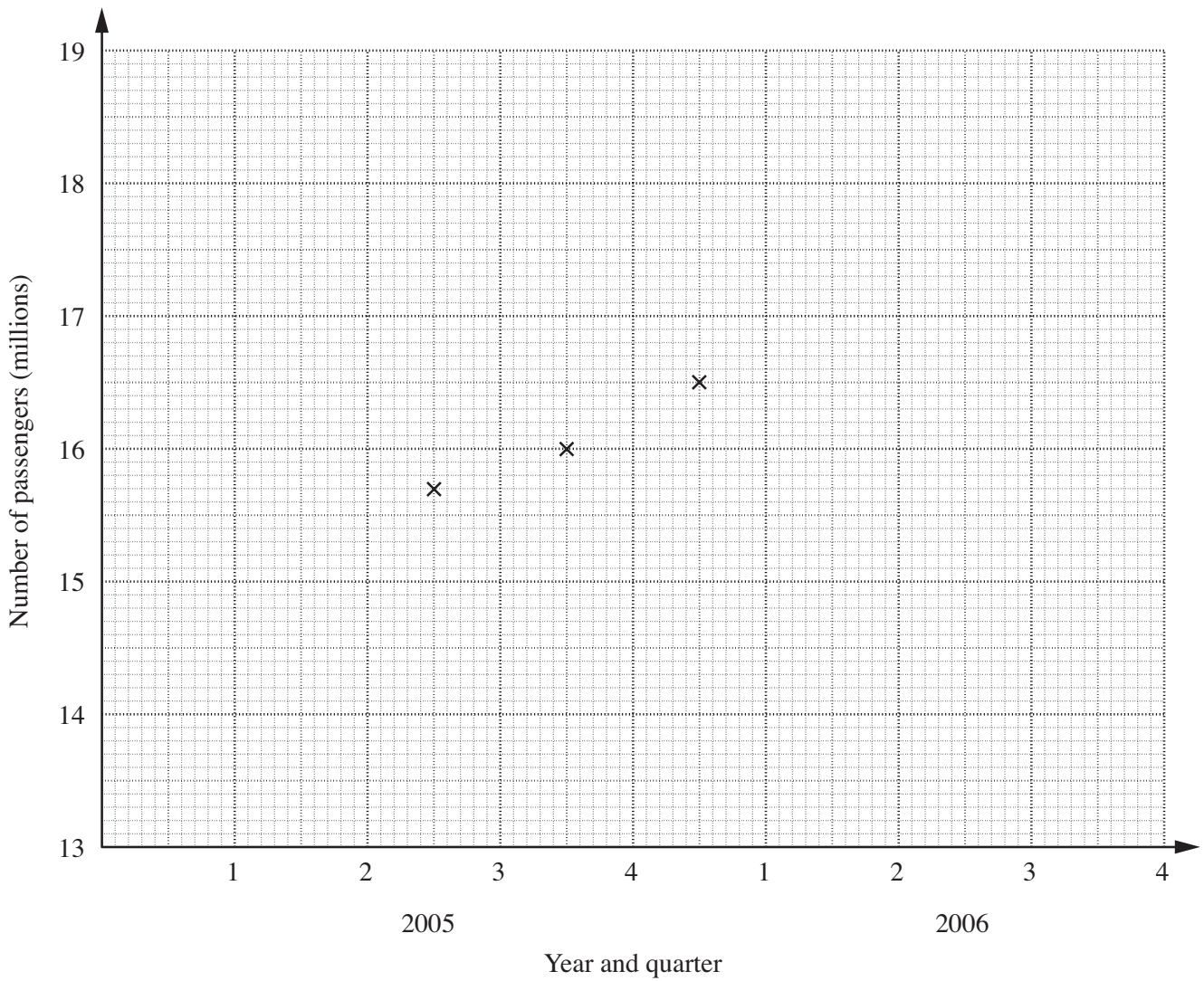
 [2]

- 12 This table shows the numbers of passengers using an airport over a period of two years.

Year	2005				2006			
Quarter	1	2	3	4	1	2	3	4
Number of passengers (millions)	13.9	15.2	17.8	15.9	15.1	17.2	18.6	16.3

- (a) The first 3 four-quarter moving averages are plotted on the diagram below.

Calculate and plot the last 2 four-quarter moving averages.



[3]

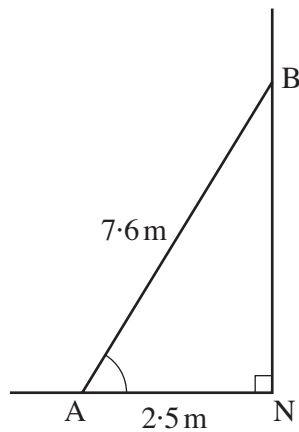
- (b) In 2005, the number of passengers using another airport was 26.8 million.
In 2006, the number of passengers increased to 28.1 million.

Calculate the percentage increase in the number of passengers.

(b) [3]

6

13



Not to scale

A ladder, AB, is 7.6 m long and rests against a vertical wall.
The base of the ladder is 2.5 m from the wall.

- (a) Calculate BN.

(a) m [3]

- (b) Calculate the angle between the ladder and the ground.

(b)° [3]

6

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