

FOR OFFICIAL USE

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Total Mark

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NATIONAL QUALIFICATIONS 2012

# MATHEMATICS INTERMEDIATE 1

Units 1, 2 and 3

Paper 1 (Non-calculator)



\* X 1 0 0 1 0 0 1 \*

## X100/10/01

MONDAY, 21 MAY 9.00 AM – 9.35 AM

Fill in these boxes and read what is printed below.

Full name of centre

Town

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Forename(s)

Surname

Number of seat

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Date of birth

Day

Month

Year

Scottish candidate number

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1 You may **NOT** use a calculator.

2 Write your working and answers in the spaces provided. Additional space is provided at the end of this question-answer book for use if required. If you use this space, write clearly the number of the question involved.

3 Full credit will be given only where the solution contains appropriate working.

4 Before leaving the examination room you must give this book to the Invigilator. If you do not you may lose all the marks for this paper.

Use blue or black ink. Pencil may be used for graphs and diagrams only.



\* X 1 0 0 1 0 0 1 0 1 \*

## FORMULAE LIST

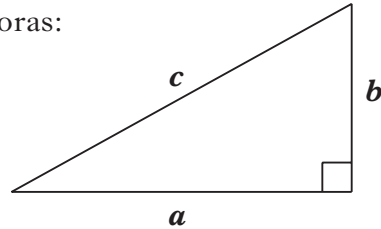
Circumference of a circle:

$$C = \pi d$$

Area of a circle:

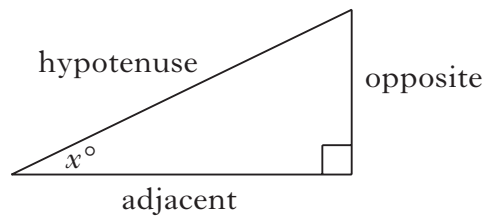
$$A = \pi r^2$$

Theorem of Pythagoras:



$$a^2 + b^2 = c^2$$

Trigonometric ratios  
in a right angled  
triangle:



$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

$$\sin x^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos x^\circ = \frac{\text{adjacent}}{\text{hypotenuse}}$$



Marks

All questions should be attempted.

1. (a) Find  $8 \cdot 31 - 5 \cdot 6$ .

1

(b) Find  $0 \cdot 029 \times 400$ .

1

(c) Find  $\frac{2}{7}$  of 434.

1

2. A college class consists of 8 male and 12 female students.

A student is chosen at random from the class.

What is the probability that the student is male?

Give your answer as a fraction in its simplest form.

2

[Turn over



Marks

3. The weight of a grain of salt is about 0.0000586 grams.  
Write this weight in standard form.

2

4. Linda sells make-up. Her basic pay is £50 per week.  
She is also paid 30% commission on all sales **over £200**.  
How much is she paid altogether in a week when she sells £620 worth  
of make-up?

3



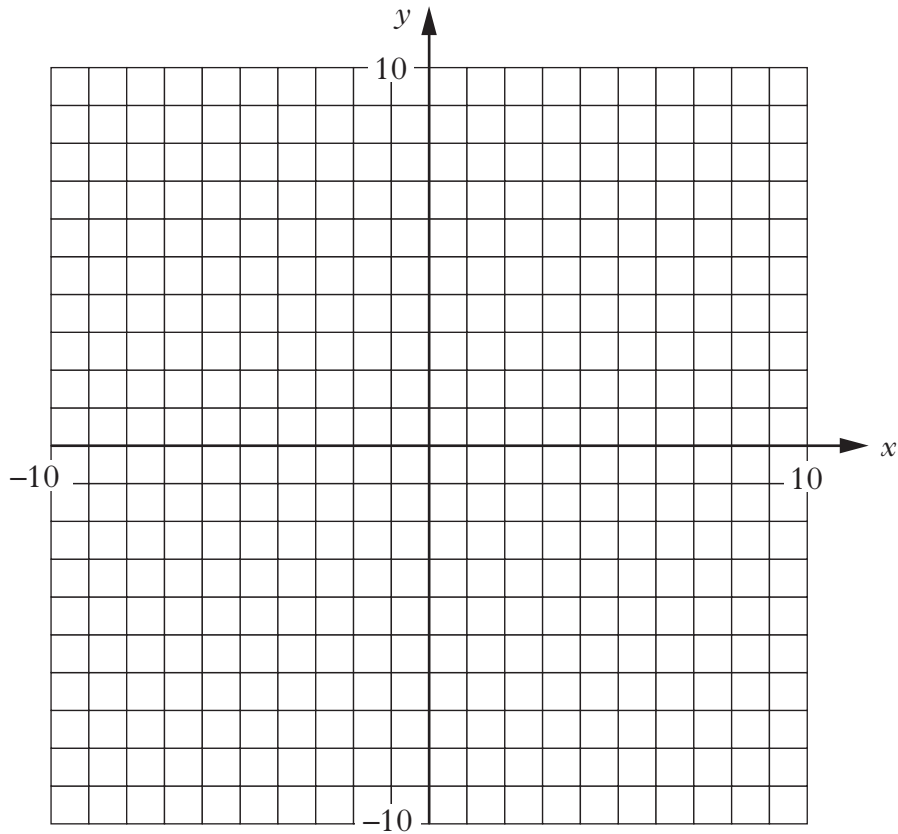
Marks

5. (a) Complete the table below for  $y = 0.5x + 3$ .

$x$	-8	0	4
$y$			

2

- (b) Draw the line  $y = 0.5x + 3$  on the grid.



2

[Turn over



Marks

6. Two hundred teenagers were asked how many songs they had downloaded during the previous week.

The frequency table below shows their responses.

Number of Songs	Frequency
5	38
6	72
7	53
8	30
9	7
	Total = 200

- (a) Write down the modal number of songs downloaded.

1

- (b) Find the range of the number of songs downloaded.

1



Marks

## 6. (continued)

- (c) Complete the table below **and** find the mean number of songs downloaded.

Number of Songs	Frequency	Number of Songs × Frequency
5	38	190
6	72	432
7	53	371
8	30	
9	7	
	Total = 200	Total =

3

[Turn over

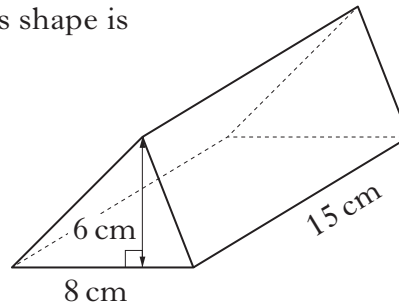


\* X 1 0 0 1 0 0 1 0 7 \*

Marks

7. (a) The formula for the volume of this shape is

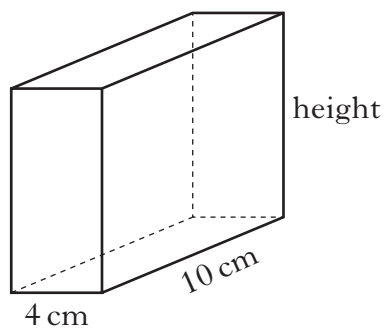
$$\text{Volume} = \text{area of end} \times \text{length}$$



The end of this shape is a triangle.

Use the formula to work out the volume of this shape.

(b) This cuboid has the same volume as the shape shown above.  
Find the height of the cuboid.



3

2

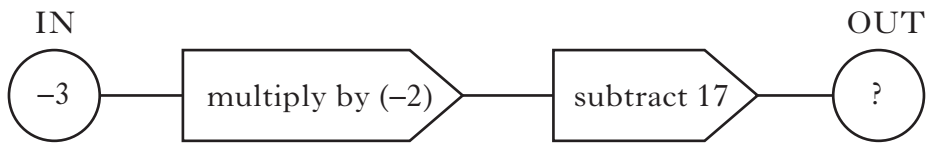




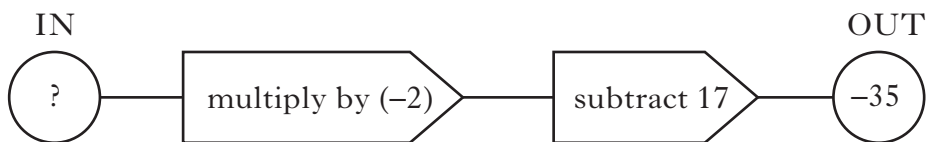
Marks

8. Find the missing number in each machine.

(a)



(b)



2

2

[Turn over for Question 9 on Page ten



*Marks*

9. Solve algebraically the inequality

$$\frac{1}{4}n - 2 < 10.$$

2

[END OF QUESTION PAPER]



ADDITIONAL SPACE FOR ANSWERS

DO NOT  
WRITE IN  
THIS  
MARGIN

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\* X 1 0 0 1 0 0 1 1 1 \*

ADDITIONAL SPACE FOR ANSWERS

DO NOT  
WRITE IN  
THIS  
MARGIN

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