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Total Mark

NATIONAL QUALIFICATIONS 2013

MATHEMATICS
INTERMEDIATE 1
Units 1, 2 and 3
Paper 1 (Non-calculator)

X1001001

X100/10/01

WEDNESDAY, 22 MAY 9.00 AM – 9.35 AM

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Number of seat

Date of birth
Day Month Year

Scottish candidate number

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.

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

SQA ©

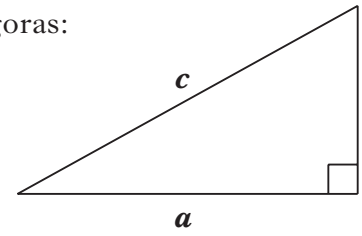
X1001001

FORMULAE LIST

Circumference of a circle: $C = \pi d$

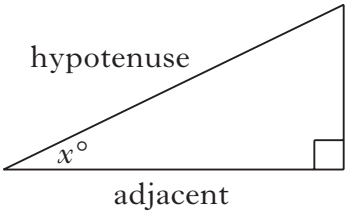
Area of a circle: $A = \pi r^2$

Theorem of Pythagoras:



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

Trigonometric ratios in a right angled triangle:



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

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

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

DO NOT WRITE IN THIS MARGIN

Marks

All questions should be attempted.

1. (*a*) Find 16·7 + 5·83.

1

(*b*) Find 9 × 2·13.

1

(*c*) Find 70% of 340.

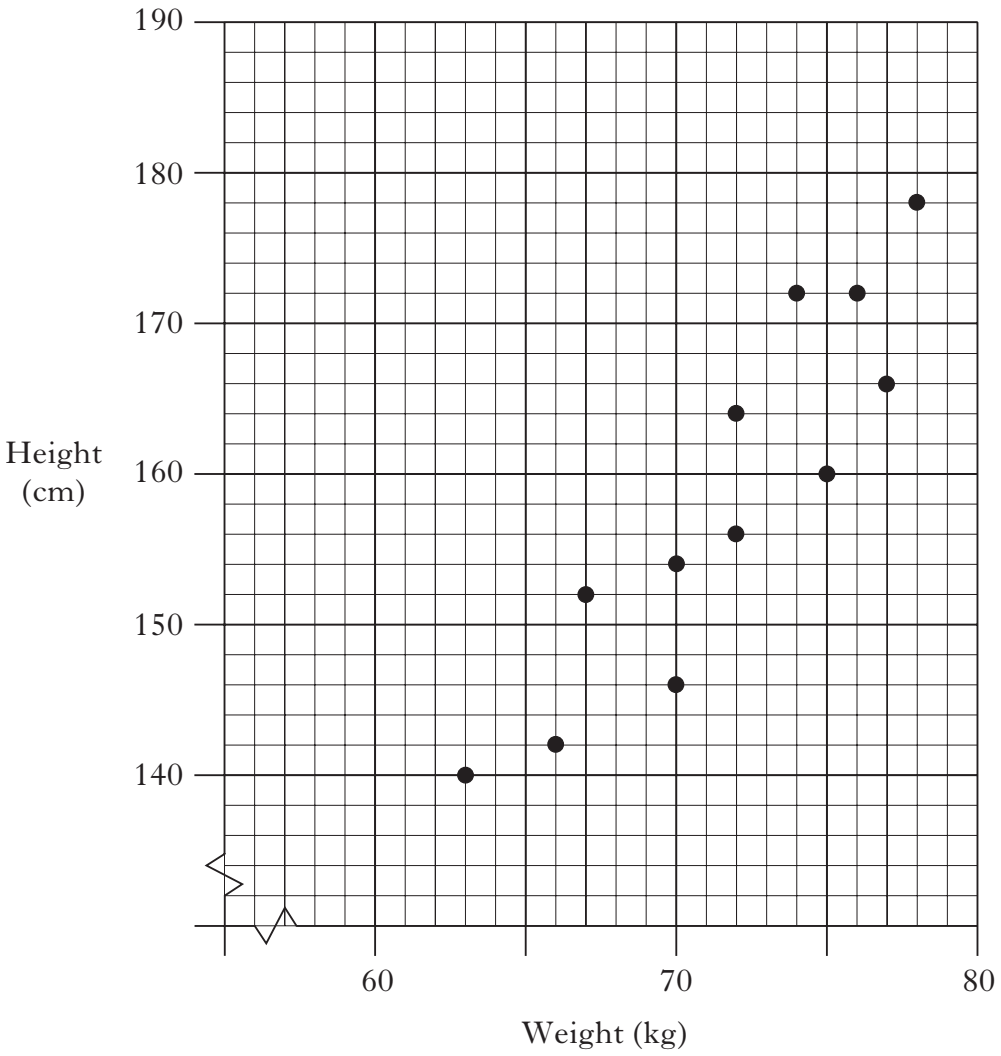
1

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks

2. The scattergraph shows the weights and heights of a group of teenagers.



(*a*) Draw a line of best fit through the points on the graph. **1**

(*b*) Use your line of best fit to estimate the height of a teenager whose weight is 80 kilograms. **1**

DO NOT WRITE IN THIS MARGIN

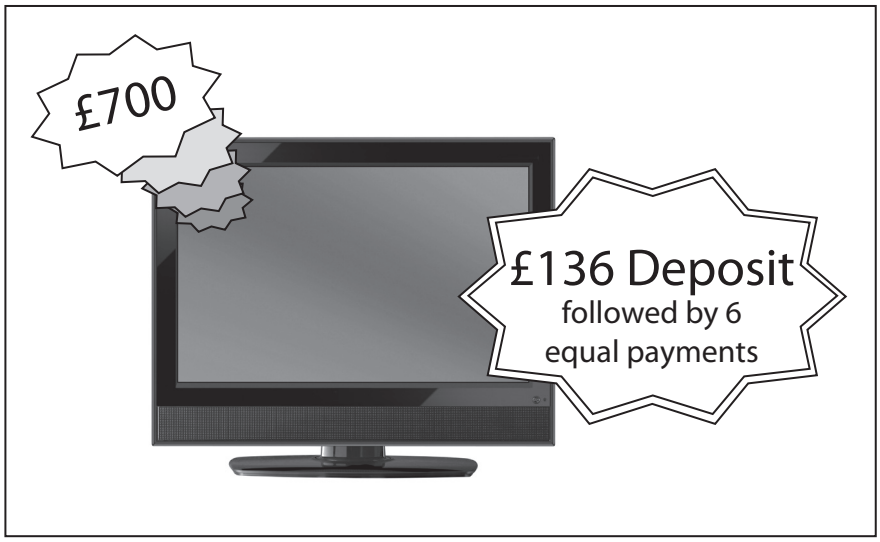
Marks

3. Solve algebraically the inequality

$$8x - 5 > 67.$$

2

4. The hire purchase price of this television is £700.



How much will each payment be?

3

DO NOT WRITE IN THIS MARGIN

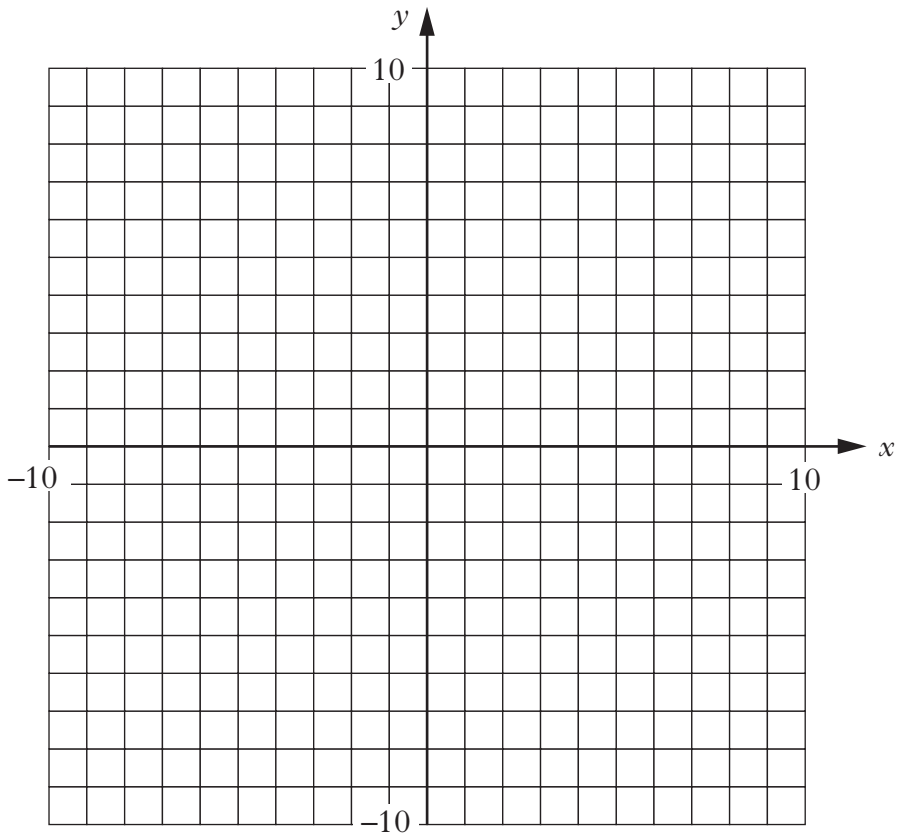
Marks

5. (*a*) Complete the table below for y = 2*x* – 3.

x	–2	0	4
y			

2

(*b*) Draw the line *y* = 2*x* – 3 on the grid.



2

DO NOT WRITE IN THIS MARGIN

Marks

6. Fifty students completed a fitness test known as a "Beep Test".

The fitness levels they achieved are shown in the frequency table below.

Fitness Level	**Number of Students**	**Fitness Level × Number of Students**
5	4	20
6	5	30
7	9	63
8	21	
9	6	
10	5	
	Total = 50	Total =

(*a*) Complete the table above. **1**

(*b*) Find the mean fitness level achieved by these students. **2**

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks

7. A bag contains 8 blue marbles, 5 red marbles and 2 yellow marbles.

(*a*) A marble is taken from the bag.

What is the probability that the marble is yellow?

1

(*b*) This marble is put back in the bag.

One red marble and one blue marble are then removed.

What is the probability that the next marble taken from the bag is blue?

2

DO NOT WRITE IN THIS MARGIN

Marks

8. Two trains run from Glasgow to London.

They both have the same journey time.

	1st Train	2nd Train
Glasgow depart	1650	2215
London arrive	2125	

What time does the 2nd train arrive in London?

3

9. Evaluate $2gh - w$ when $g = -10$, $h = 4$ and $w = -30$.

3

[Turn over for Question 10 on *Page ten*

DO NOT WRITE IN THIS MARGIN

Marks

10. (*a*) Before he went on holiday to Australia, Jack changed £2000 into Australian dollars.

The exchange rate was £1 = AU$1·58.

How many Australian dollars did Jack receive for £2000?

2

(*b*) While in Australia he changed a further £400 into Australian dollars.

He received AU$620.

What was the new exchange rate?

2

[*END OF QUESTION PAPER*]

ADDITIONAL SPACE FOR ANSWERS

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NATIONAL QUALIFICATIONS 2013

MATHEMATICS
INTERMEDIATE 1
Units 1, 2 and 3
Paper 2

X1001002

X100/10/02

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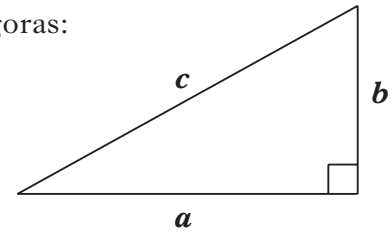

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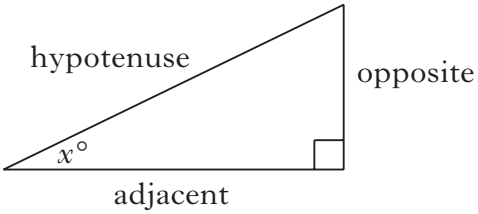

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1. On the "PayforGold" website, the price paid for gold is proportional to its weight.

Colleen sells a matching gold bracelet and necklace on this website.

She is paid £95 for the 20 gram bracelet.

How much is she paid for the 24 gram necklace?

2

2. (*a*) Multiply out the brackets and simplify

$$6(2n - 3) + 11.$$

2

(*b*) Factorise

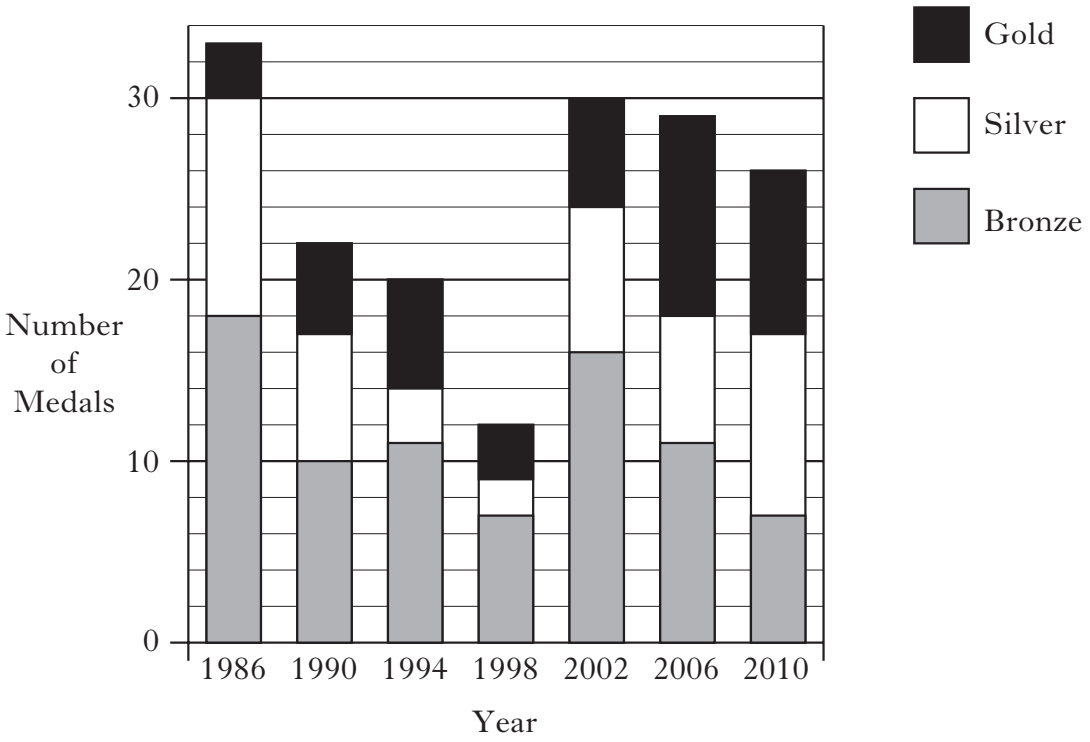
$$20s + 45.$$

2

DO NOT WRITE IN THIS MARGIN

Marks

3. The bar graph shows the number of medals won by Scotland at the Commonwealth Games since 1986.



(*a*) In which year were most **gold** medals won by Scotland?

1

(*b*) How many **silver** medals did Scotland win in 1990?

1

DO NOT WRITE IN THIS MARGIN

Marks

4. Solve algebraically the equation

$$8d + 7 = 5d + 58.$$

3

5. Chris took part in a track cycling competition.
He completed 6 laps of a 500 metre track.
This took him 4 minutes.
Find his average speed in **metres per second**.

3

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks

6. (*a*) The population of China is $1{\cdot}352 \times 10^9$.

Write this number in full.

1

(*b*) The population of Scotland is 5·2 million.

How many times bigger is the population of China than that of Scotland?

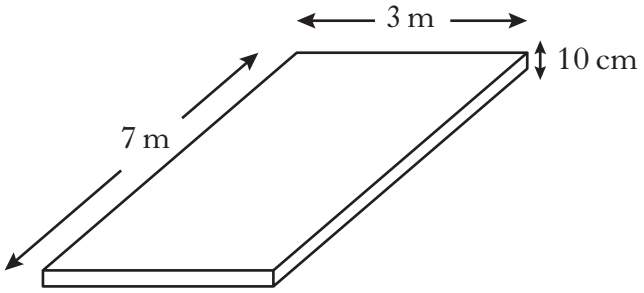
2

DO NOT WRITE IN THIS MARGIN

Marks

7. Bob is building a patio with a concrete base.

The base of the patio is 7 metres long, 3 metres wide and 10 centimetres deep.



Concrete costs £60 **per cubic metre**.

Find the total cost of the concrete for the base of Bob's patio.

3

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks

8. John and Steven are playing snooker. They play eight games.

Shown below are the number of points John scored in each game.

21 39 22 53 45 19 43 46

(*a*) Find the median.

2

(*b*) Find the range.

1

(*c*) The median number of points Steven scored is 23 and the range is 15.

Make **two** comparisons comparing the number of points scored by Steven and John.

2

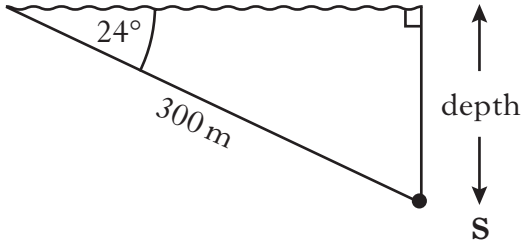
DO NOT WRITE IN THIS MARGIN

Marks

9. A submarine, **S**, dives for 300 metres at an angle of 24° to the surface.

Calculate the depth of the submarine as shown in the diagram.

Do not use a scale drawing.



3

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks

10. Use the formula below to find the value of S when $n = 25$, $a = 1{\cdot}5$, and $L = 6{\cdot}3$.

$$S = \frac{n(a+L)}{2}$$

3

11. £4750 was invested in a savings account.

The rate of interest was 2·4% per annum.

How much interest was due after eight months?

3

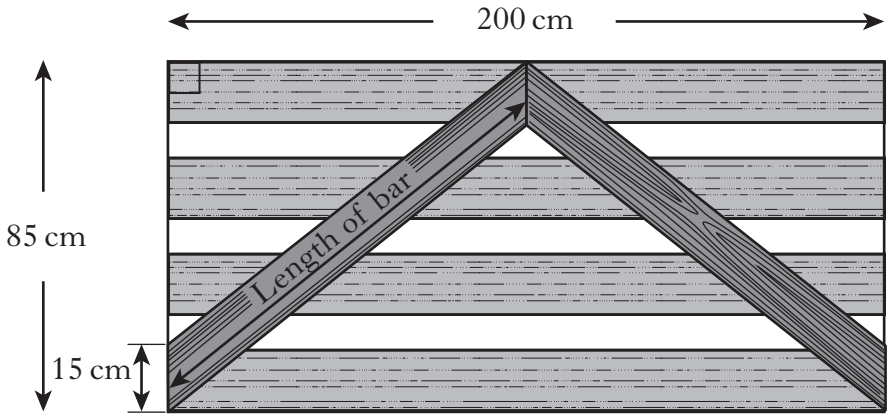
DO NOT WRITE IN THIS MARGIN

Marks

12. A wooden gate is 85 centimetres high and 200 centimetres wide.

The gate is strengthened by two bars which meet half-way across the gate as shown.

The ends of each bar measure 15 centimetres.



Calculate the length of **one** of the bars.

Do not use a scale drawing.

4

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks

13. Azra bought a washing machine priced £350.

Including the delivery charge she paid a total of £371.

Express the delivery charge as a percentage of the price of the washing machine.

4

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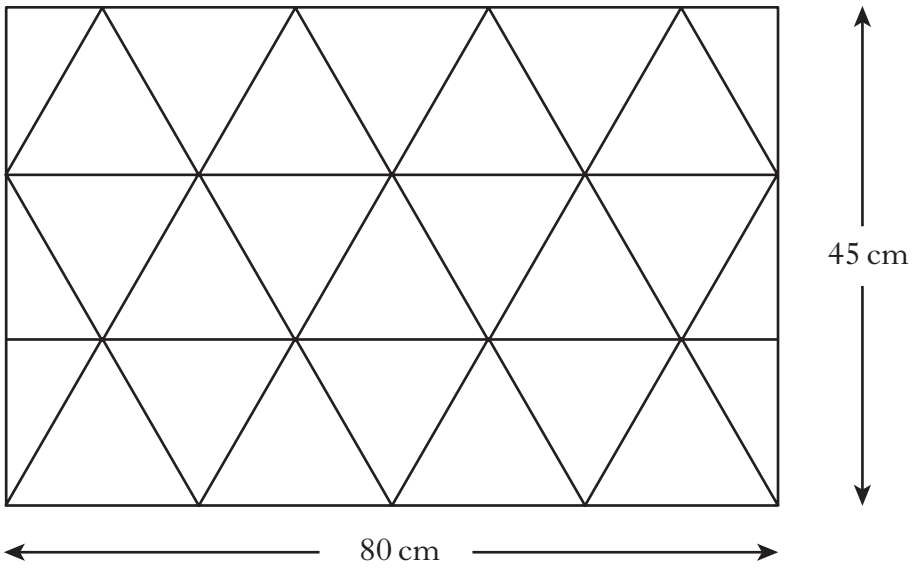
Marks

14. Part of a bathroom wall is covered with identical triangular tiles. Some tiles are cut in half.



Calculate the area of one complete triangular tile.

3

[Turn over

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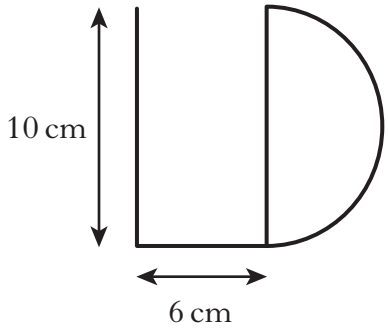
Marks

15. Lizzie Douglas bends a length of wire into the shape of her initials.



The letter D is a semi-circle.

Calculate the total length of the wire.

Give your answer correct to the **nearest centimetre**.

5

[*END OF QUESTION PAPER*]

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