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Total Mark

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NATIONAL QUALIFICATIONS 2014

MATHEMATICS INTERMEDIATE 1

Units 1, 2 and 3

Paper 1 (Non-calculator)



* X 1 0 0 1 0 0 1 *

X100/10/01

TUESDAY, 6 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.

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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

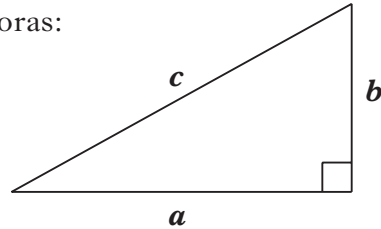
Circumference of a circle:

$$C = \pi d$$

Area of a circle:

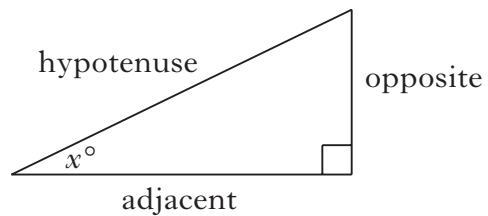
$$A = \pi r^2$$

Theorem of Pythagoras:



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

Trigonometric ratios
in a right angled
triangle:



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

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

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



* X 1 0 0 1 0 0 1 0 2 *

Marks

All questions should be attempted.

1. (a) Find $4.8 - 0.17$.

1

(b) Find $9.632 \div 8$.

1

(c) Find 5% of 60.

1

2. Jason is at college and lives in halls of residence.

He insures his belongings for £7000.

The annual premium is £9.42 for each £1000 insured.

Work out Jason's annual premium.

2

[Turn over



Marks

3. Solve algebraically the equation

$$8s - 3 = 2s + 81.$$

4. (a) Find $8 - (-13)$

(b) Find $-54 \div (-9)$

3

1

1



Marks

5. Emily is buying items for a packed lunch.
She can select from the items listed below.

Sandwich	90p
Juice	80p
Fruit	50p
Yoghurt	45p
Biscuit	35p

She will get a free toy if she spends £1.75 or more.

Emily wants to buy **three different** items.

She wants to spend £1.75 or more so that she gets a free toy.

One combination of **three different** items that Emily can buy is shown in the table below.

Sandwich 90p	Juice 80p	Fruit 50p	Yoghurt 45p	Biscuit 35p	Total Cost £
✓	✓	✓			2.20

Complete the table to show **all** the possible combinations of **three different** items that Emily can buy.

3

[Turn over



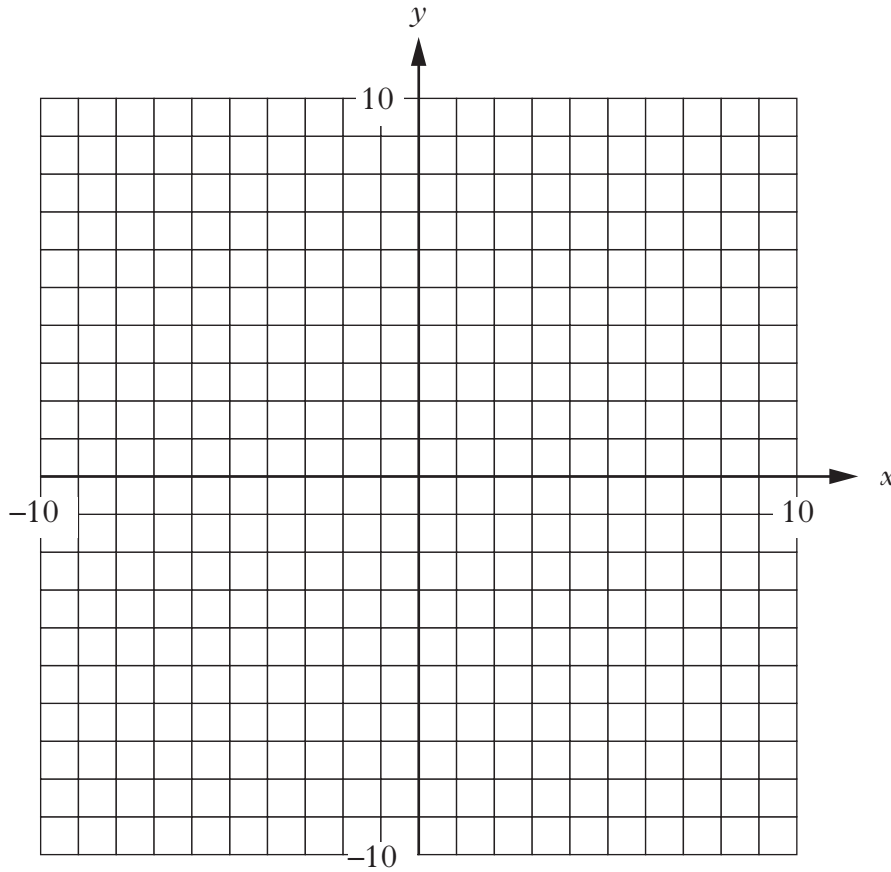
Marks

6. (a) Complete the table below for $y = 4x - 5$.

x	-1	0	3
y			

2

(b) Draw the line $y = 4x - 5$ on the grid.



2



Marks

7. Saimah has a part-time job delivering leaflets.

Each week she is paid £5 plus an extra £3 for every 40 leaflets that she delivers.

(a) One week she delivers 360 leaflets.

How much is she paid?

2

(b) The next week she is paid £50.

How many leaflets did she deliver?

2

[Turn over



Marks

8. Three hundred members of a gym were asked how often they had visited the gym during the last week.

The results are shown in the frequency table below.

Visits	Number of Members	Visits \times Number of Members
0	11	0
1	42	42
2	122	244
3	66	
4	59	
	Total = 300	Total =

- (a) Complete the table above.

- (b) Find the mean number of visits made by the members.

1

2



Marks

9. The formula for the volume of a cylinder is

$$V = \pi r^2 h.$$

Find V when $\pi = 3.14$, $r = 5$ and $h = 4$.

3

[Turn over for Question 10 on Page ten



Marks

10. Invermuir Academy is running two raffles to raise money. The table shows the number of tickets sold and the number of winning tickets for each raffle.

	Number of tickets sold	Number of winning tickets
Raffle A	600	24
Raffle B	1000	30

Robert buys one ticket for each raffle.

In which raffle does he have the greater probability of winning?

Explain your answer.

3

[END OF QUESTION PAPER]



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ADDITIONAL SPACE FOR ANSWERS

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NATIONAL QUALIFICATIONS 2014

MATHEMATICS INTERMEDIATE 1

Units 1, 2 and 3
Paper 2



* X 1 0 0 1 0 0 2 *

X100/10/02

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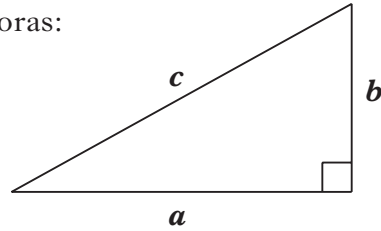
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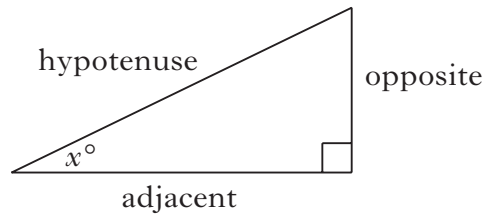
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* X 1 0 0 1 0 0 2 0 2 *

Marks

All questions should be attempted.

1. Peter makes his own orange juice.

The amount of juice he can make is proportional to the number of oranges he uses.

He uses 8 oranges to make 500 millilitres of juice.

How much juice can he make with 14 oranges?

2

2. The thickness of a sheet of gold leaf is 0.000013 centimetres.

Write this number in standard form.

2

3. Solve algebraically the inequality

$$5u + 21 < 86.$$

2



Marks

4. The fuel consumption, in miles per gallon, of twenty one cars is shown below.

62	36	54	31	45	27	46
29	39	33	50	42	53	28
36	32	30	44	38	34	41

- (a) Display the information in a stem and leaf diagram.

- (b) Find the median fuel consumption in miles per gallon.

- (c) Find the range.

3

1

1



Marks

5. (a) Multiply out the brackets and simplify

$$13x + 6(2y - x).$$

2

- (b) Factorise

$$14 - 63g.$$

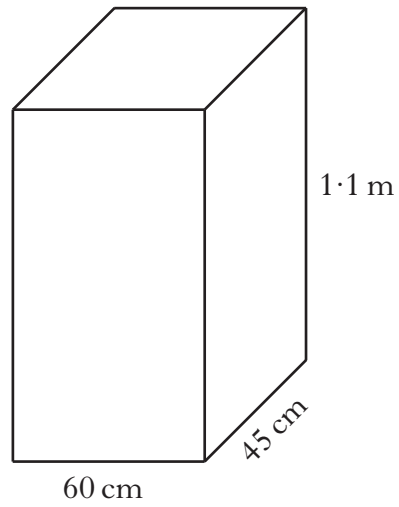
2

[Turn over



Marks

6. A water tank is in the shape of a cuboid with dimensions as shown.



Calculate the volume of the tank.
Give your answer in litres.
(1 litre = 1000 cubic centimetres.)

3



Marks

7. Katy drove 351 miles from Perth to Birmingham.
Her average driving speed was 52 miles per hour.
She also had two 40 minute stops during the journey.
She left Perth at 1730.
When did she arrive in Birmingham?

4

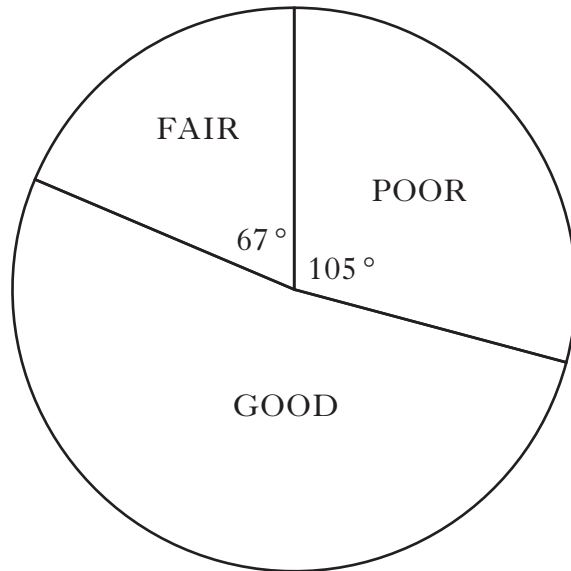
8. When booking a holiday to Canada, Anna paid £50 for a boat trip.
When she was in Canada she saw the same boat trip advertised for
85 Canadian dollars.
The exchange rate was £1 = 1.57 Canadian dollars.
How much did she save, **in pounds and pence**, by paying for the
boat trip before going to Canada?

3



Marks

9. The pie chart shows the results of a customer satisfaction survey carried out by Red Talk Media, a broadband service provider, in 2012.



- (a) A total of 3420 customers took part in the survey.
How many customers said that the service provided was good?

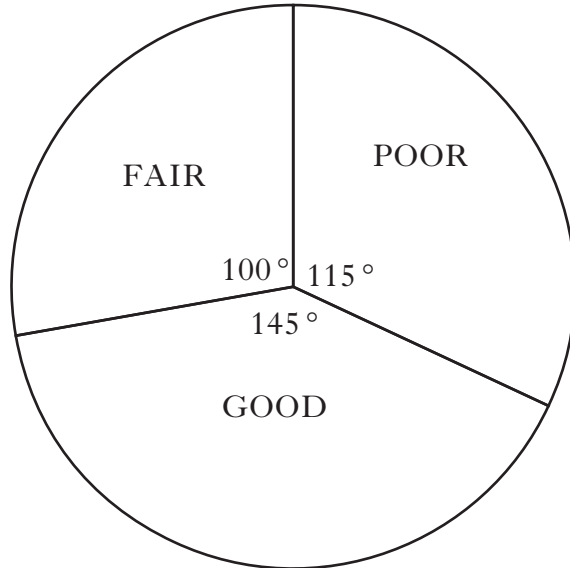
3



Marks

9. (continued)

Red Talk Media repeated the customer satisfaction survey in 2013. The results are shown in the pie chart below.



(b) Make **two** comments comparing the results in 2013 with those in 2012.

2

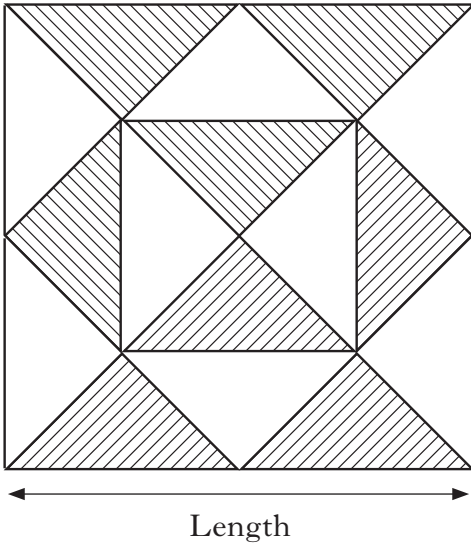
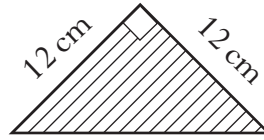
[Turn over



Marks

10. Jo is making a patchwork cushion.

Each patch is a right-angled triangle with both short sides 12 centimetres long.



She makes the cushion by arranging the patches as shown.

Calculate the length of the cushion.

Do not use a scale drawing.

4



Marks

11. Roy invested £980 in a bank account.
The rate of interest was 1·8% per annum.
How much interest was he due after five months?

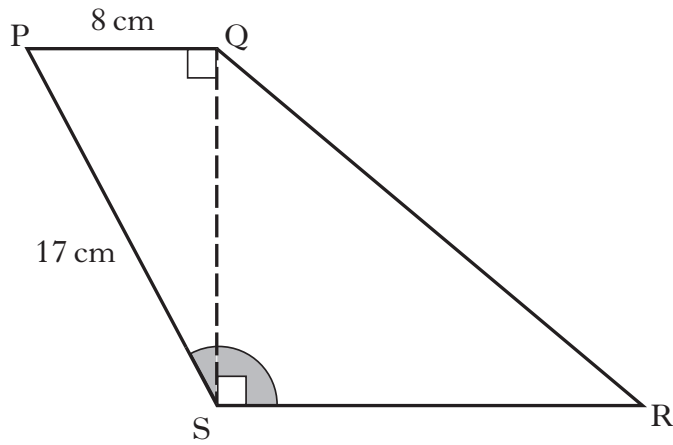
3

[Turn over



Marks

12. In shape PQRS, side PQ is 8 centimetres and side PS is 17 centimetres as shown.



Calculate the size of the shaded angle PSR.

Do not use a scale drawing.

4



Marks

13. Alan is growing a sunflower.
One week its height increased from 75 centimetres to 81 centimetres.
Calculate the percentage increase in the sunflower's height.



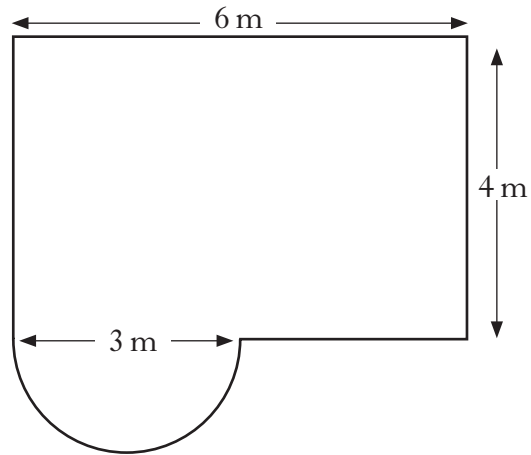
4

[Turn over for Question 14 on *Page fourteen*]



Marks

14. The plan of a patio is shown below.



The patio consists of a rectangle and a semi-circle.

Calculate the area of the patio.

Give your answer correct to the **nearest square metre**.

5

[END OF QUESTION PAPER]



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ACKNOWLEDGEMENT

Question 13 – 53598778 Shutterstock.com