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Total Mark

NATIONAL QUALIFICATIONS 2014

MATHEMATICS
INTERMEDIATE 1
Units 1, 2 and
Applications of Mathematics
Paper 1 (Non-calculator)

TUESDAY, 6 MAY 9.00 AM – 9.35 AM

X1011001

X101/10/01

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.

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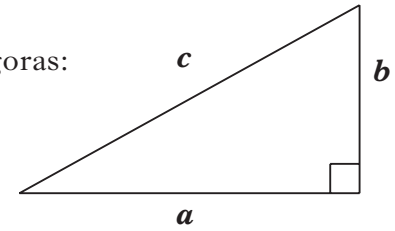
FORMULAE LIST

Circumference of a circle: $C = \pi d$
Area of a circle: $A = \pi r^2$
Curved surface area of a cylinder: $A = 2\pi rh$

Theorem of Pythagoras:



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

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Marks

All questions should be attempted.

1. (*a*) Find 4·8 – 0·17.

1

(*b*) Find 9·632 ÷ 8.

1

(*c*) Find 5% of 60.

1

[Turn over

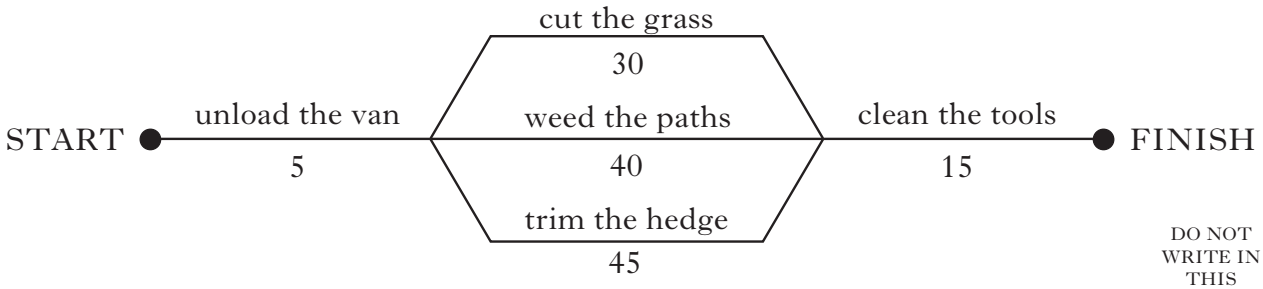
DO NOT WRITE IN THIS MARGIN

Marks

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

3. The network diagram shows the time it took a squad of gardeners to do the garden of one of their customers. All times are in minutes.



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(*a*) How long did it take to cut the grass? **1**

(*b*) How long did it take altogether to do the garden from start to finish? **1**

4. (*a*) Find 8 – (–13) **1**

(*b*) Find –54 ÷ (–9) **1**

DO NOT WRITE IN THIS MARGIN

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

DO NOT WRITE IN THIS MARGIN

Marks

6. The heights (in metres) of nine rugby players are shown below.

1·89 1·85 1·91 2·01 1·93 1·78 1·81 2·03 1·88

(*a*) Find the lower quartile.

2

(*b*) Calculate the interquartile range.

2

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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

DO NOT WRITE IN THIS MARGIN

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

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

(*b*) Find the mean number of visits made by the members. **2**

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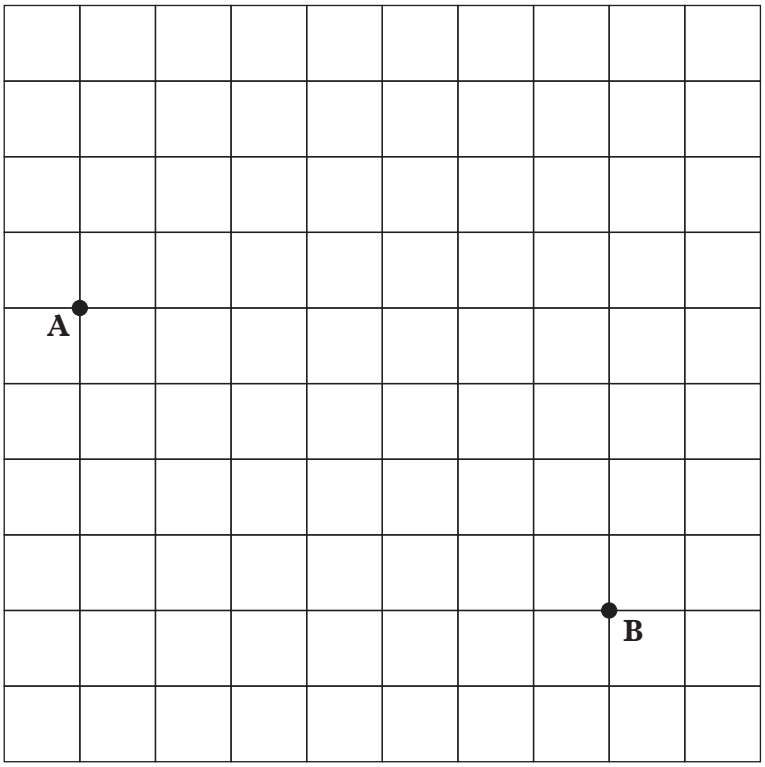
9. The scale drawing shows the positions of two wind turbines, A and B. The scale of the drawing is **1 centimetre represents 50 metres**.



(*a*) Use the scale drawing to find the distance in metres between A and B. **1**

(*b*) A third wind turbine, C, lies on a bearing of

- 065 ° from A
- 315 ° from B.

Complete the scale drawing to show the position of C. **3**

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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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MATHEMATICS
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TUESDAY, 6 MAY 9.55 AM – 10.50 AM

X1011002

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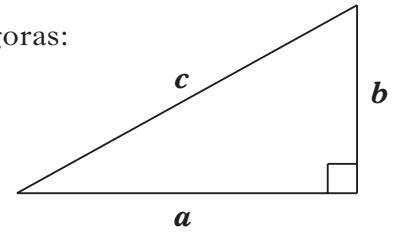

$a^2 + b^2 = c^2$

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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

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2. The table below shows the **monthly repayments** to be made when money is borrowed from a finance company.

	Monthly Repayments			
Amount borrowed	5 year term	10 year term	15 year term	25 year term
£50 000	£1000·76	£592·26	£462·15	£367·93
£30 000	£600·46	£355·35	£277·29	£220·76
£20 000	£411·22	£248·95	£198·03	£162·29
£10 000	£210·10	£129·48	£104·52	£87·49

Euan borrows £20 000. He repays the loan over 10 years.

(*a*) How much does he pay each month?

1

(*b*) How much does he pay altogether?

2

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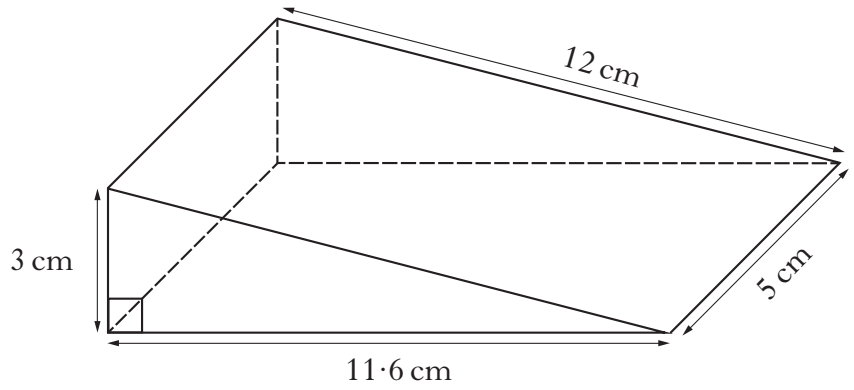
3. This door wedge is in the shape of a triangular prism.



Find the total surface area of the door wedge.

3

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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.

3

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

1

(*c*) Find the range.

1

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Marks

5. Fred uses the spreadsheet below to monitor his mobile phone usage during a four week period.

1	A	B	C	D	E
2		Calls (minutes)	Texts	Internet (minutes)	Total Cost (pence)
3	Week 1	43	50	17	616
4	Week 2	25	37	10	414
5	Week 3	36	25	25	430
6	Week 4	18	62	50	
7					

(*a*) The result of the formula =5*B6+7*C6+3*D6 is to be entered in cell E6.

What number would appear in cell E6?

1

(*b*) Fred wants to enter the average total cost per week in cell E7.

What **formula** should he use?

1

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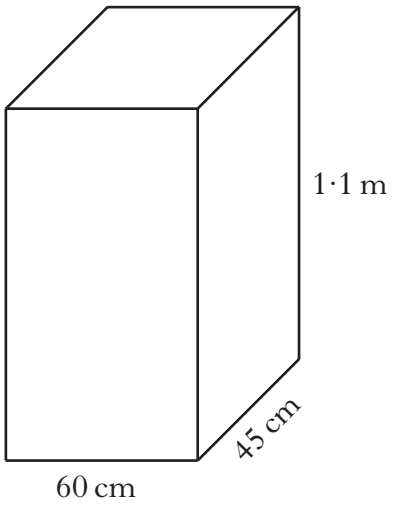
6. A water tank is in the shape of a cuboid with dimensions as shown.



Calculate the volume of the tank.

Give your answer in litres.

(1 litre = 1000 cubic centimetres.)

3

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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

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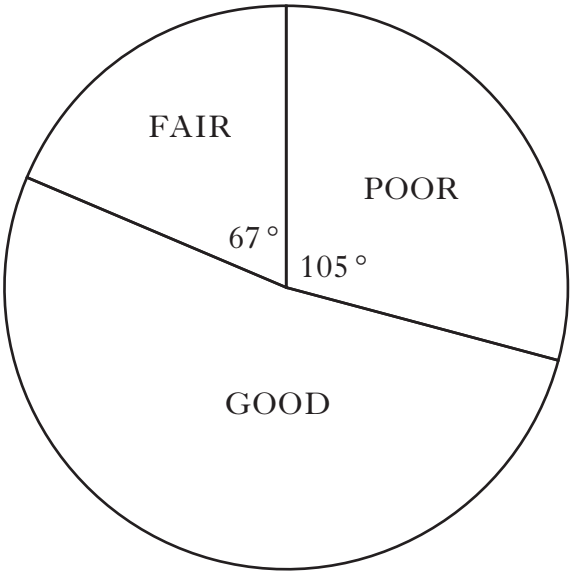
9. The pie chart shows the results of a customer satisfaction survey carried out by Red Talk Media, a broadband service provider, in 2012.



(*a*) A total of 3420 customers took part in the survey.

How many customers said that the service provided was good?

3

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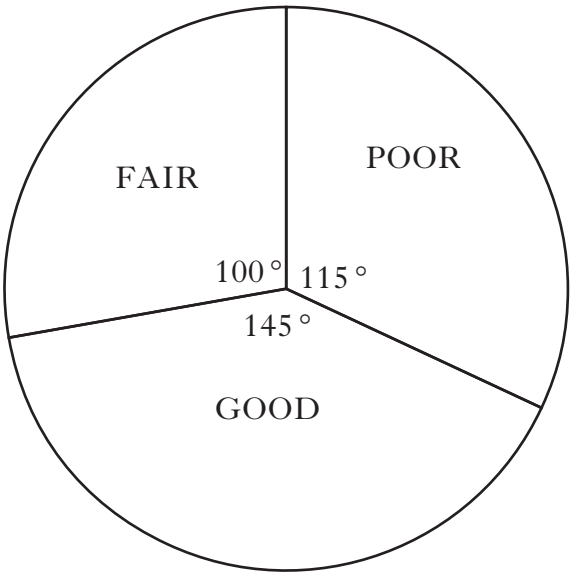
9. (continued)

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**

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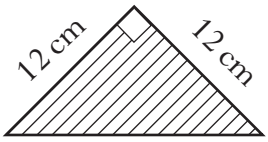
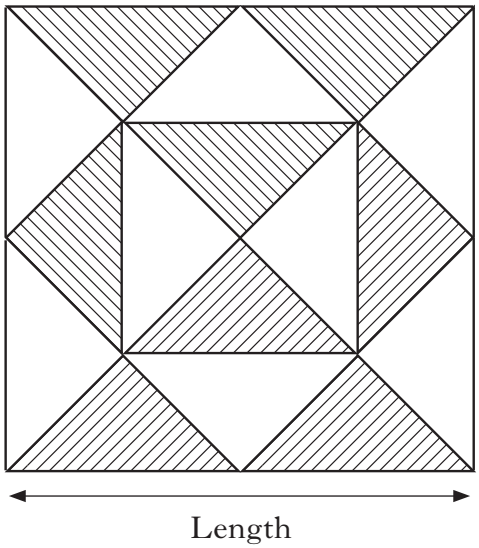
10. Jo is making a patchwork cushion.

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

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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

12. Helen works in a supermarket.

She is paid £7·50 per hour for a basic week of 24 hours.

She is paid at double time for any overtime that she works.

One week she earned £285.

How many hours of overtime did she work that week?

4

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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

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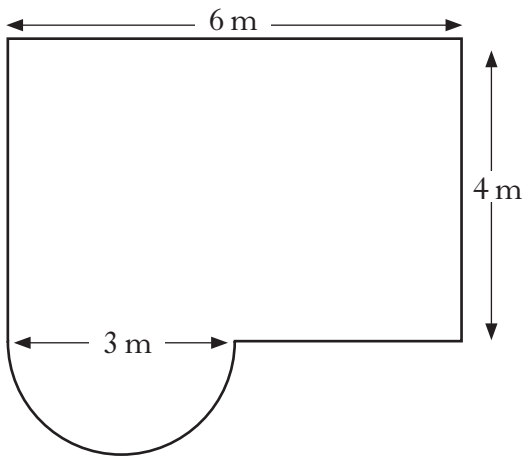
14. The plan of a patio is shown below.



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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