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G

NATIONAL QUALIFICATIONS 2013

MATHEMATICS
STANDARD GRADE
General Level
Paper 1
Non-calculator

FRIDAY, 3 MAY 10.40 AM – 11.15 AM

	KU	RE
Paper 1		
Paper 2		
Total		

2500290 1

2500/29/01

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 <u>not</u> use a calculator.**

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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: $C = \pi d$
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Volume of a cylinder: $V = \pi r^2 h$
Volume of a triangular prism: $V = Ah$

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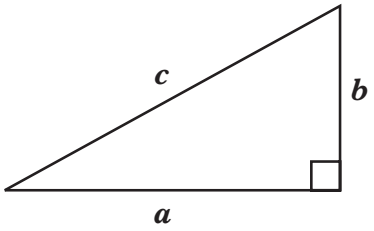
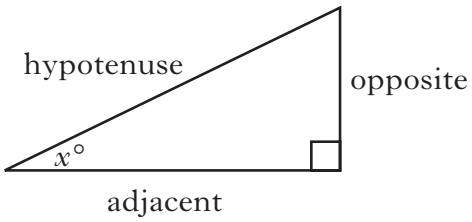


$a^2 + b^2 = c^2$

Trigonometric ratios in a right angled triangle:



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

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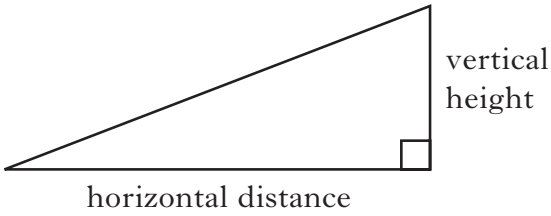
Gradient:



$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

1. Carry out the following calculations.

Marks	KU	RE

(*a*) 306·5 − 214·78

1		

(*b*) 9·53 × 300

1		

(*c*) 2·58 ÷ 4

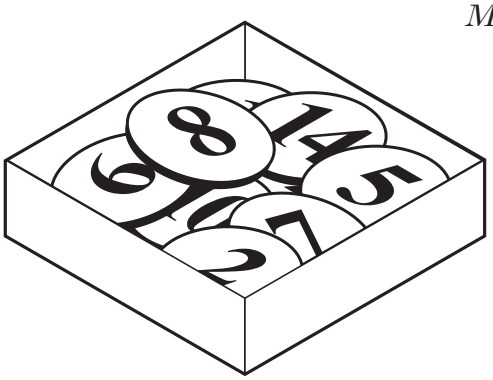
1		

(*d*) 70% of 26

2		

2. A box contains counters numbered from 1 to 14.

A counter is chosen at random.



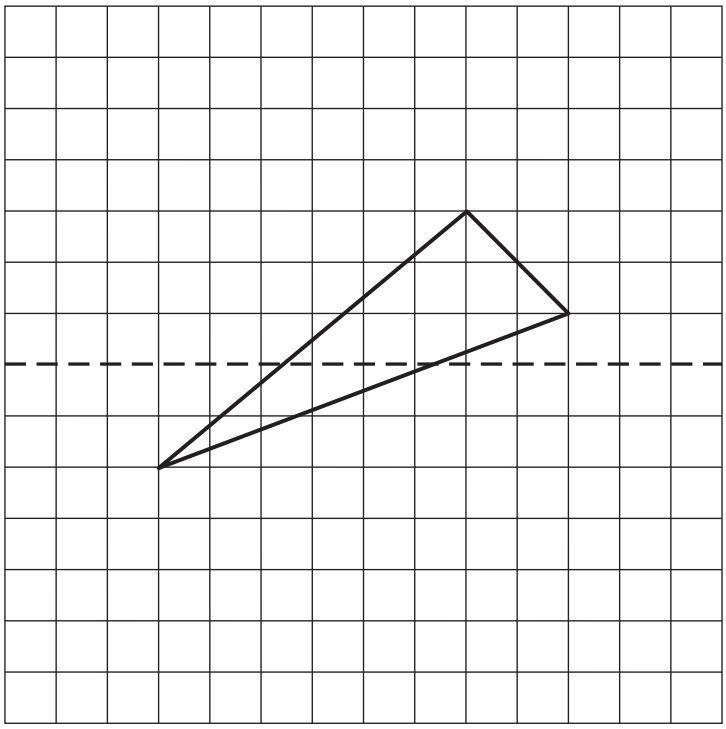
What is the probability that this counter has a number greater than 9?

Marks

KU	RE

2

	Marks	KU	RE
3. Complete the diagram so that the dotted line is an axis of symmetry.	**2**		



4. A bed shop is having a sale.

Marks | KU | RE

ALL BEDS
***ONE THIRD* OFF NORMAL PRICE**

The normal price of a bed is £768.

Find the sale price of this bed.

3

5. A new tram system is operating in Inverness.

The trams run between the four stations shown.

All trams have the same journey times.

Part of the timetable is shown below.

Station	Tram 1	Tram 2
Crown	0956	1002
Union	1011	
Telford	1018	
Ferry		1044

Complete this timetable. **3**

6. (*a*) At 6.00 am the temperature in Edinburgh was −13 °C.

At 10.00 am the temperature was −5 °C.

Marks | KU | RE

By how many degrees had the temperature risen?

1

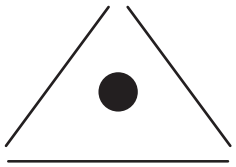
(*b*) At 3.00 pm the temperature had risen a further 7 degrees.

What was the temperature at 3.00 pm?

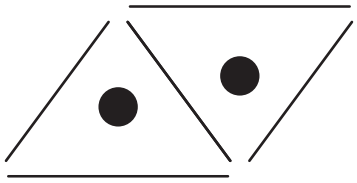
1

7. A wallpaper pattern consists of lines and dots.

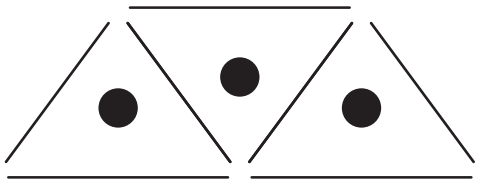
Marks | KU | RE



Shape 1



Shape 2



Shape 3

(*a*) Complete the table below.

Number of dots (D)	1	2	3	4	5		14
Number of lines (L)	3	5					

2

(*b*) Write down a formula for calculating the number of lines (L) when you know the number of dots (D).

2

(*c*) A pattern has been made using 77 lines.

How many dots are in the pattern?

2

Marks | KU | RE

8. (*a*) A pack of 500 sheets of paper is 5·25 cm thick.

Calculate the thickness of 1 sheet of paper.

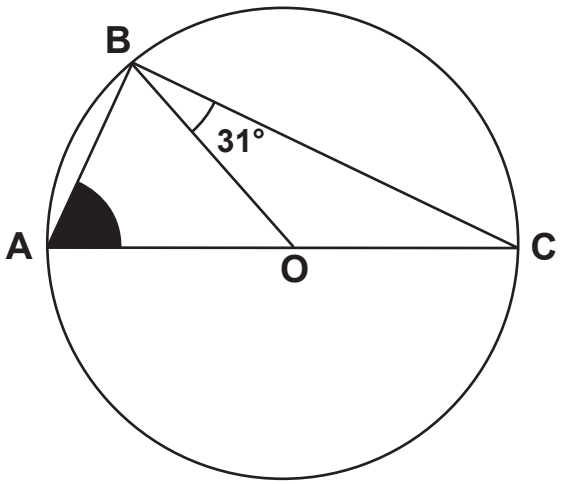
1

(*b*) Write this answer in scientific notation.

2

Marks | KU | RE

9.



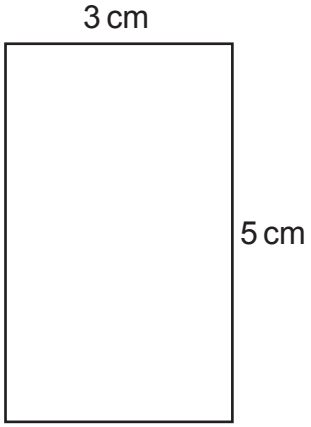
The diagram above shows:

- AC is a diameter of a circle with centre O
- B lies on the circumference
- angle OBC = 31°.

Calculate the size of the shaded angle BAO.

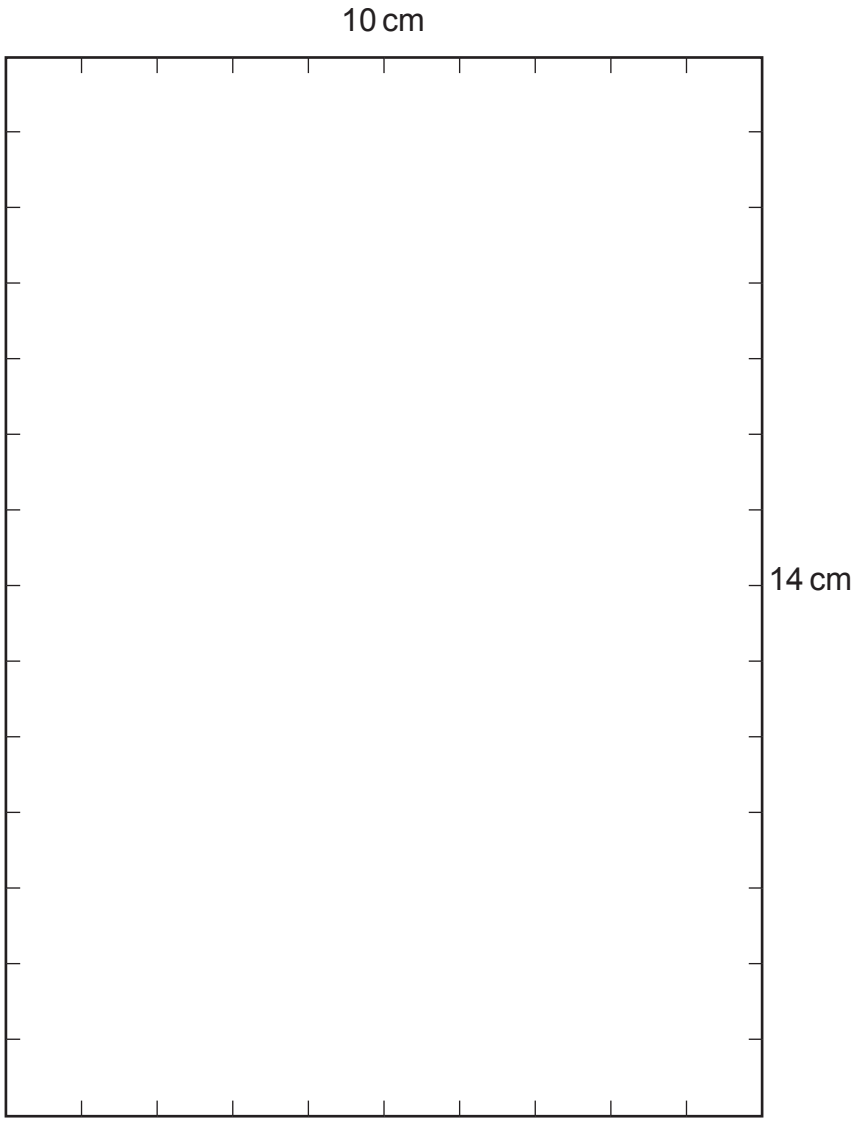
3

10. This rectangle measures 5 cm by 3 cm.



Rectangles measuring 5 cm by 3 cm are to be fitted, **without overlapping**, on the 14 cm by 10 cm box below.

Draw these rectangles on the box to show the **maximum** number which can be fitted.



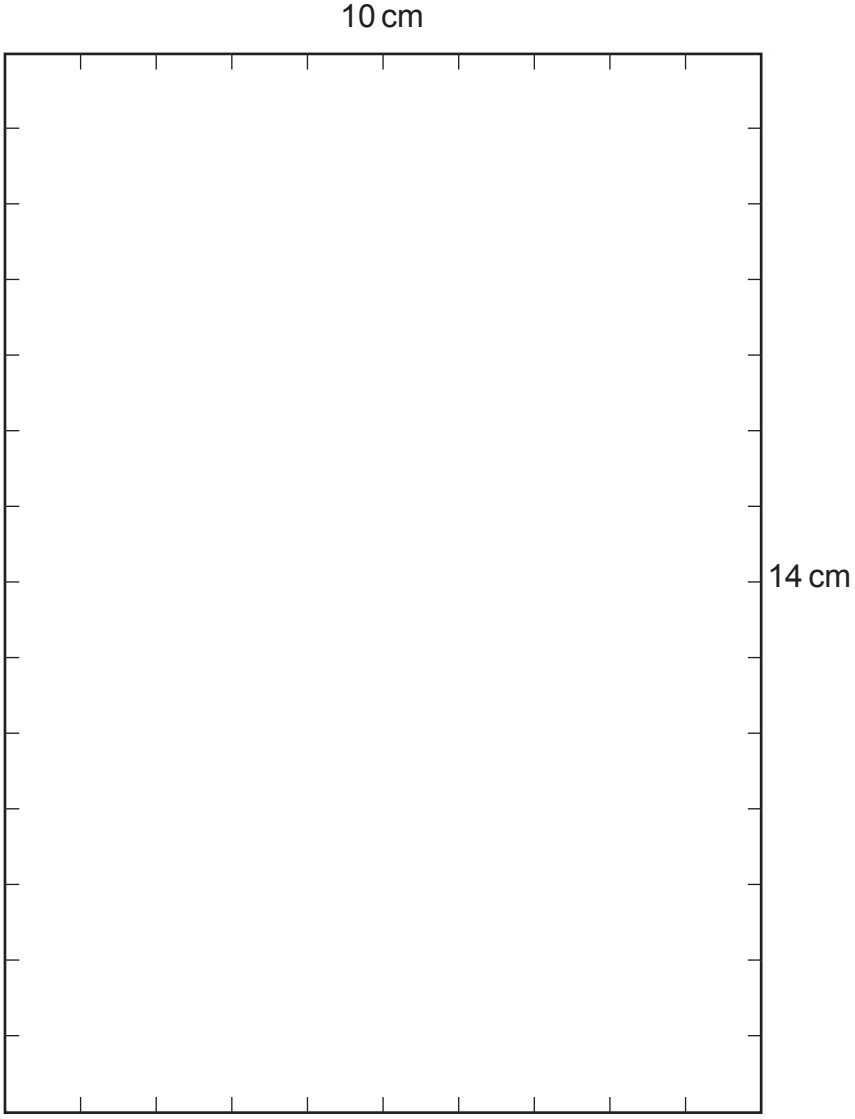
Marks | KU | RE

3

Spare boxes can be found on *Pages twelve* and *thirteen*.

[*END OF QUESTION PAPER*]

Spare box for Question 10



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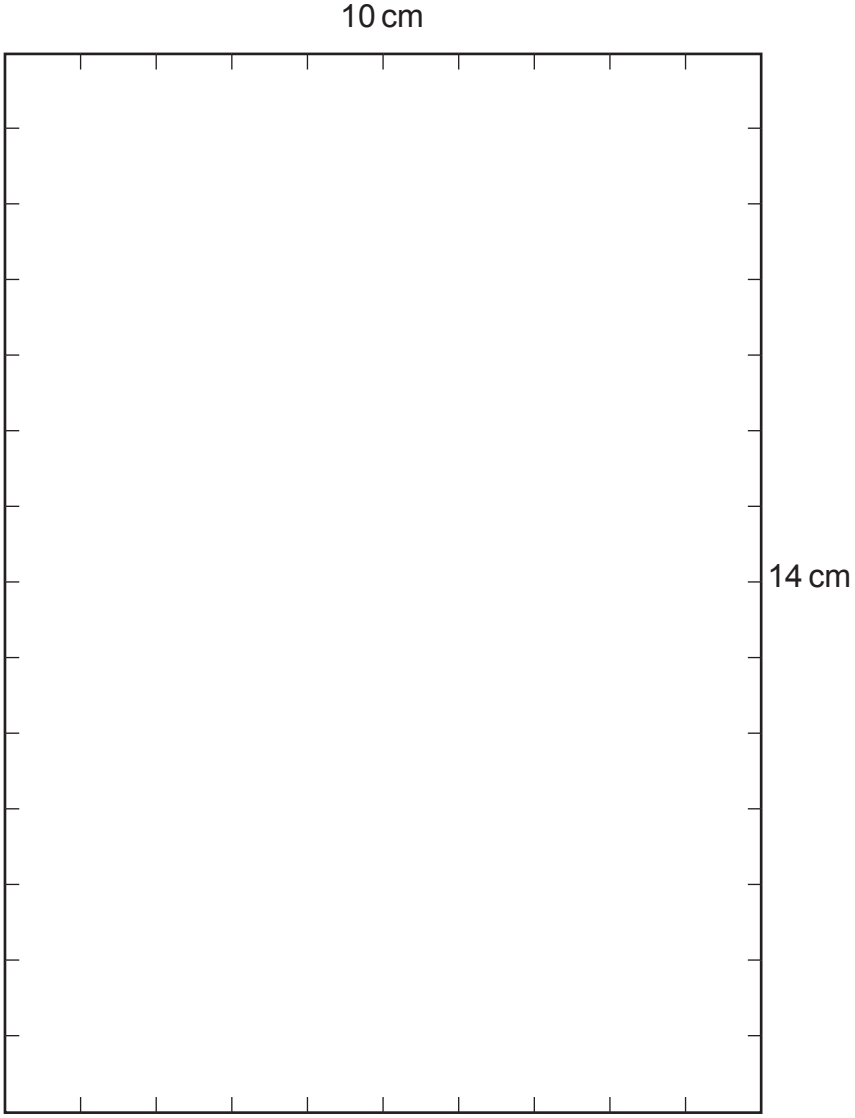

ADDITIONAL SPACE FOR ANSWERS

Marks	KU	RE

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KU	RE

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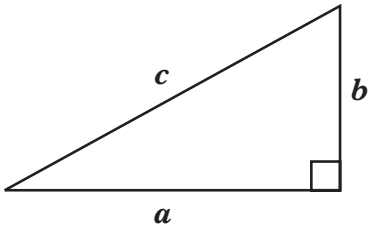

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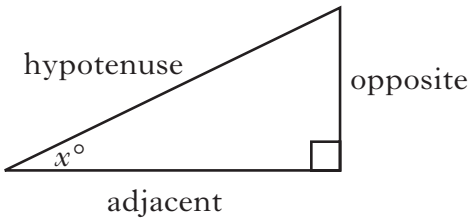

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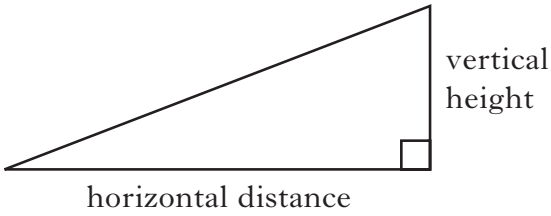


$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

Marks | KU | RE

1. Donna is a member of a fitness club.

Her membership fee is £450 per year.

Next year the membership fee will increase by 6·5%.

What will Donna's membership fee be next year?

3

Marks | KU | RE

2. David asked twenty of his classmates how many books they had downloaded.

His results are shown below.

8	6	11	15	12	12	9	32	16	17
24	33	41	26	37	35	16	17	5	32

Construct an ordered stem and leaf diagram to display the results.

3

Marks | KU | RE

3. In May, the rent for a flat is £795 per month.

In September, the rent is to be increased by £75 per month.

Ciara and her three friends share equally the cost of renting this flat.

How much rent will Ciara pay in September?

3

Marks | KU | RE

4. The Scouts have decided to sell locally sourced vegetables.

Maria wants to buy four different vegetables.

She has a choice of potatoes, carrots, onions, turnips and leeks.

The cost of each vegetable is shown in the table below.

Vegetable	*Cost* (£)
Potatoes	2·49
Carrots	1·73
Onions	0·95
Turnips	1·23
Leeks	1·42

One possible selection and its cost are shown in the table below.

(*a*) Complete the table to show the other selections and their costs.

SELECTION					
Potatoes	*Carrots*	*Onions*	*Turnips*	*Leeks*	**Cost (£)**
✓	✓		✓	✓	6·87

3

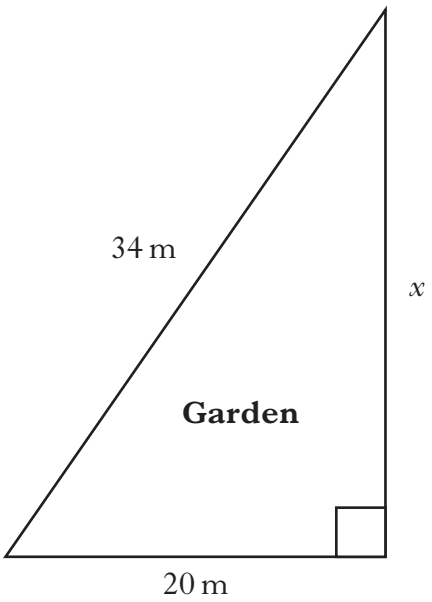
(*b*) If Maria spends more than £6, the Scouts will deliver free of charge.

Which selection would **not** be delivered free of charge?

1

Marks | KU | RE

5.



Alison's garden is in the shape of a right angled triangle.
She measured two sides of the garden.
Calculate the length, x, of the third side of her garden.
Round your answer to one decimal place.
Do not use a scale drawing.

4

	Marks	KU	RE
6. The Elaxtra car runs on electricity. It runs for eight hours before needing to be charged. Will the car be able to travel 315 kilometres at an average speed of 42 kilometres per hour before needing to be recharged? **Give a reason for your answer.**	**3**		

	Marks	KU	RE
7. (*a*) Simplify			
$4(3p - 2) + 5.$			
	2		
(*b*) Solve algebraically			
$4t - 2 \leq 34.$			
	2		

Marks

KU	RE

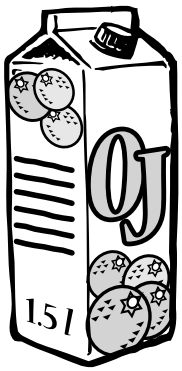
8. In Brown's Supermarket, a 1·5 litre carton of orange juice costs £1·97.

In Scott's Supermarket, a 1 litre carton of orange juice normally costs £2·12.

Scott's Supermarket has a special offer of **buy two get one free**.

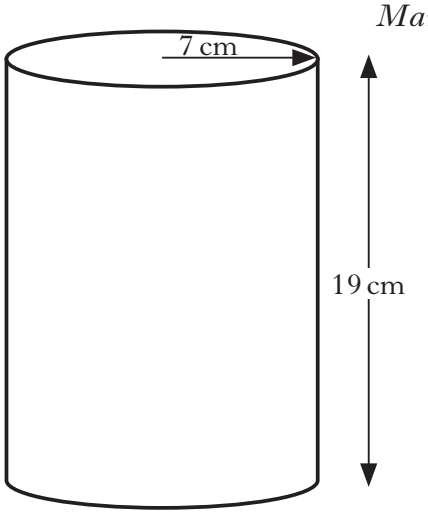
Which supermarket offers the better deal for 6 litres of orange juice?

Give a reason for your answer.

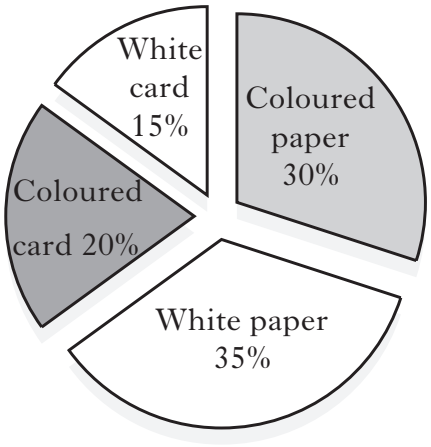


3

	Marks	KU	RE
9. A cylinder has: • radius = 7 centimetres • height = 19 centimetres. Calculate the curved surface area of the cylinder.	**2**		



	Marks	KU	RE
10. The school's ECO group is collecting card and paper for recycling. The percentage of each type of card and paper collected is shown in the pie chart. The weight of white card collected is 90 kilograms. Calculate the total weight of card and paper collected.	**3**		



Marks | KU | RE

11. Faisal and Jake are going to Belgium on holiday.

They book flights for £74 return per person.

In Belgium, they hire a caravan for 3 weeks.

The caravan costs 287·5 euros per week.

Find the total cost of their holiday **in pounds**.

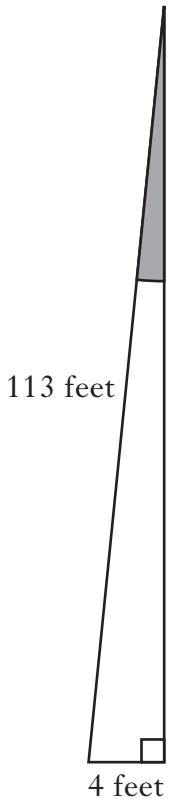
(£1 = 1·15 Euros)

3

Marks | KU | RE

12. Belfast has a leaning clock tower.

The leaning of the clock tower is shown in the diagram below.



Calculate the size of the shaded angle.

3

Marks | KU | RE

13. Jim works at Dario's Pizzas.

His basic rate of pay is £5·42 per hour.

Overtime is paid at time and a half.

Last week his gross pay was £216·80.

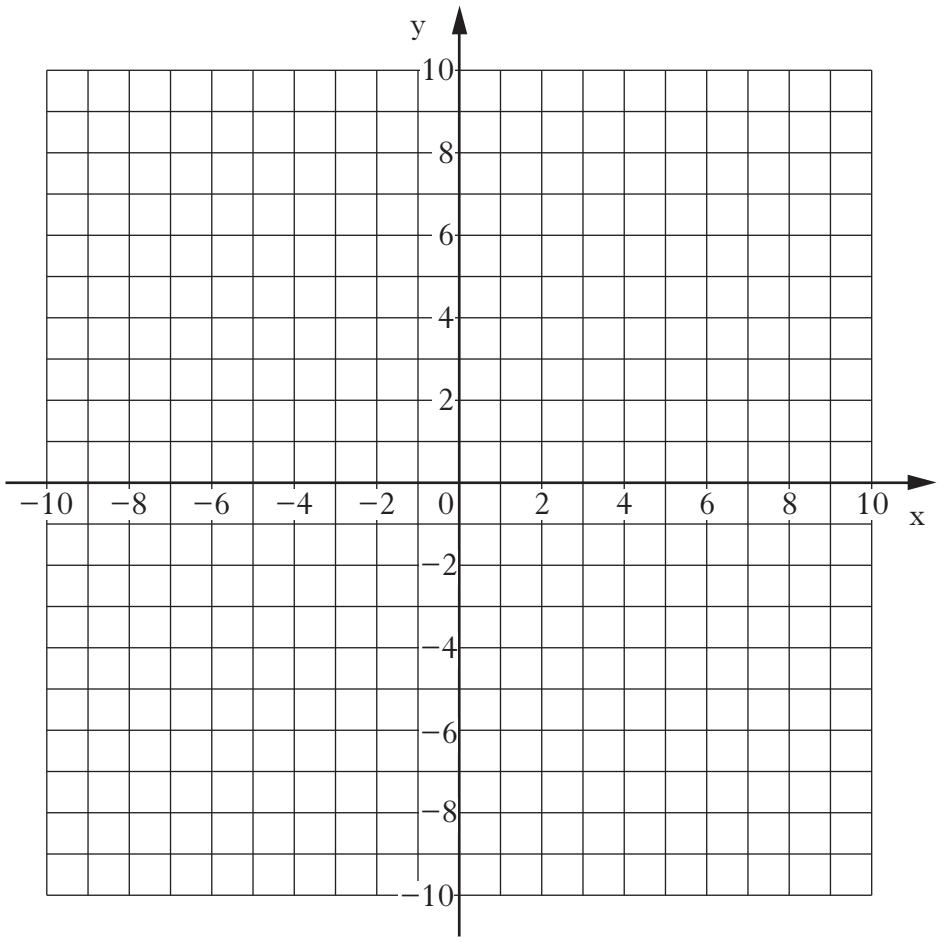
He worked 28 hours at the basic rate.

How many hours of overtime did Jim work last week?

4

Marks | KU | RE

14. (*a*) On the grid below, plot the points A (−6,4) and B (5,−1).



1

(*b*) Find the gradient of line AB.

2

Marks | KU | RE

15. In a drum kit, the diameter of the large drum is twice the diameter of the small drum.

The small drum has a radius of 30 cm.

Calculate the circumference of the large drum.

3

[*END OF QUESTION PAPER*]

ADDITIONAL SPACE FOR ANSWERS

Marks	KU	RE

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Marks	KU	RE

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