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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		
<b>Total</b>		



\* 2 5 0 0 2 9 0 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 **not** use a calculator.

2 Answer as many questions as you can.

3 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.

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

5 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.

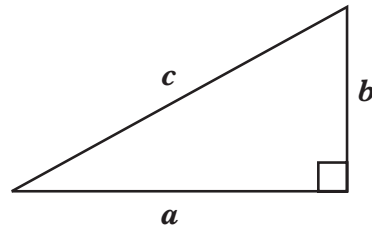


\* 2 5 0 0 2 9 0 1 0 1 \*

## FORMULAE LIST

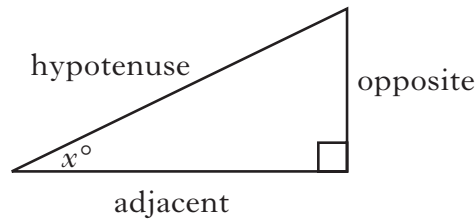
Circumference of a circle:	$C = \pi d$
Area of a circle:	$A = \pi r^2$
Curved surface area of a cylinder:	$A = 2\pi r h$
Volume of a cylinder:	$V = \pi r^2 h$
Volume of a triangular prism:	$V = Ah$

Theorem of Pythagoras:



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

Trigonometric ratios  
in a right angled  
triangle:

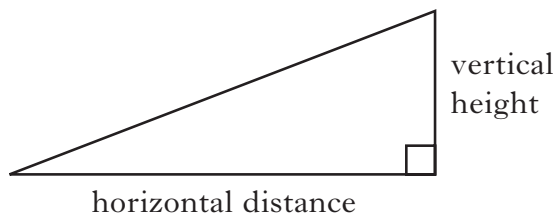


$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

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

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

Gradient:



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



1. Carry out the following calculations.

(a)  $306.5 - 214.78$

(b)  $9.53 \times 300$

(c)  $2.58 \div 4$

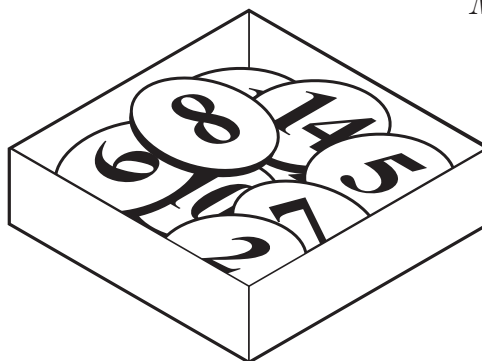
(d) 70% of 26

Marks	KU	RE
1		
1		
1		
2		



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

A counter is chosen at random.



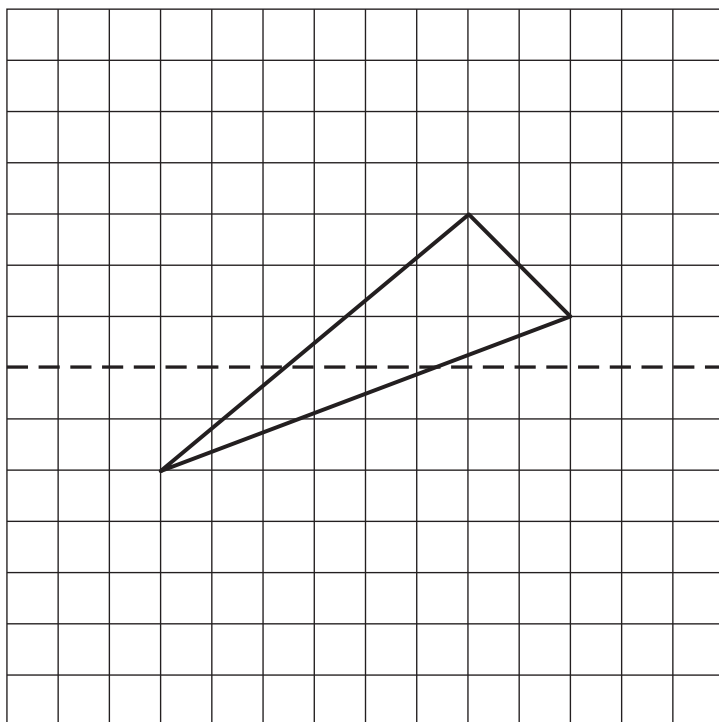
What is the probability that this counter has a number greater than 9?

Marks

	KU	RE
2		



3. Complete the diagram so that the dotted line is an axis of symmetry.



Marks

KU	RE
2	



4. A bed shop is having a sale.

Marks

**ALL BEDS  
ONE THIRD OFF NORMAL PRICE**



The normal price of a bed is £768.

Find the sale price of this bed.

	KU	RE
3		
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
<b>Crown</b>	0956	1002
<b>Union</b>	1011	[ ]
<b>Telford</b>	1018	[ ]
<b>Ferry</b>	[ ]	1044

Complete this timetable.

3



6. (a) At 6.00 am the temperature in Edinburgh was  $-13^{\circ}\text{C}$ .  
At 10.00 am the temperature was  $-5^{\circ}\text{C}$ .



Marks

	KU	RE
1		
1		

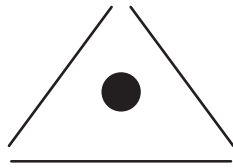
By how many degrees had the temperature risen?

- (b) At 3.00 pm the temperature had risen a further 7 degrees.  
What was the temperature at 3.00 pm?

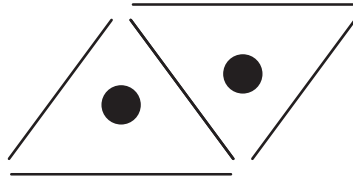


7. A wallpaper pattern consists of lines and dots.

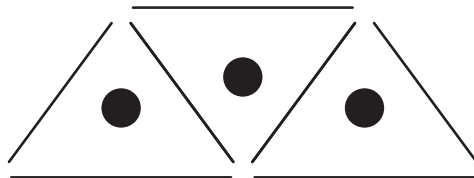
Marks



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

KU	RE





8. (a) A pack of 500 sheets of paper is 5.25 cm thick.



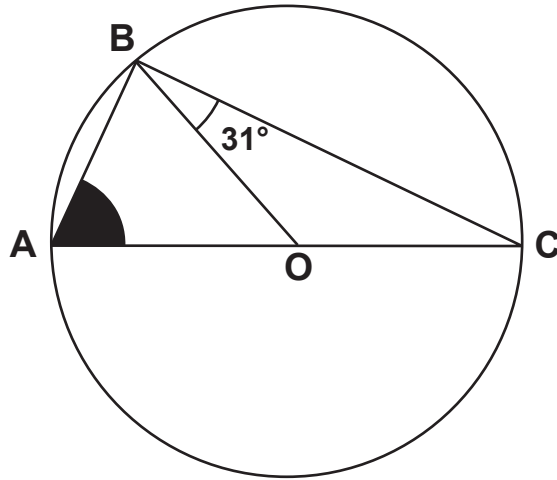
Calculate the thickness of 1 sheet of paper.

(b) Write this answer in scientific notation.

Marks	KU	RE
1		
2		



9.



The diagram above shows:

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

Calculate the size of the shaded angle BAO.

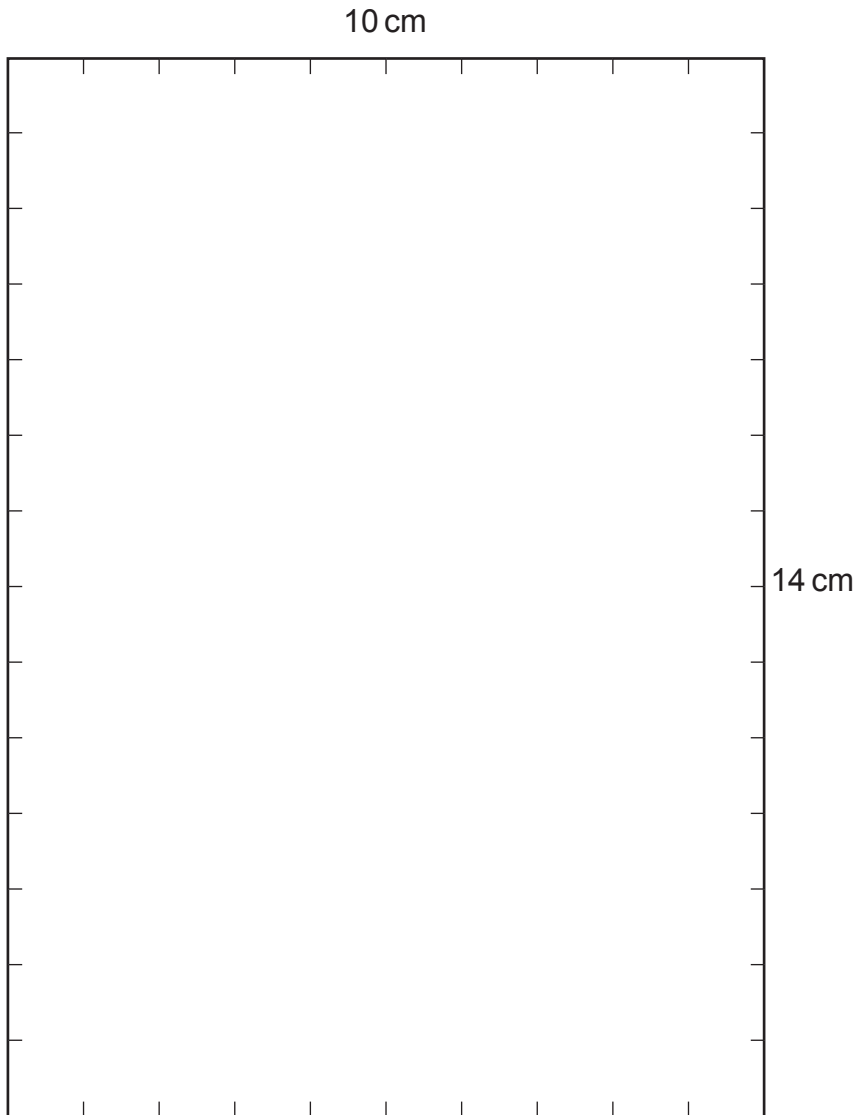
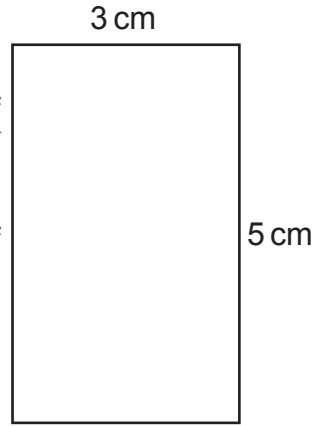
Marks	KU	RE
3		



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

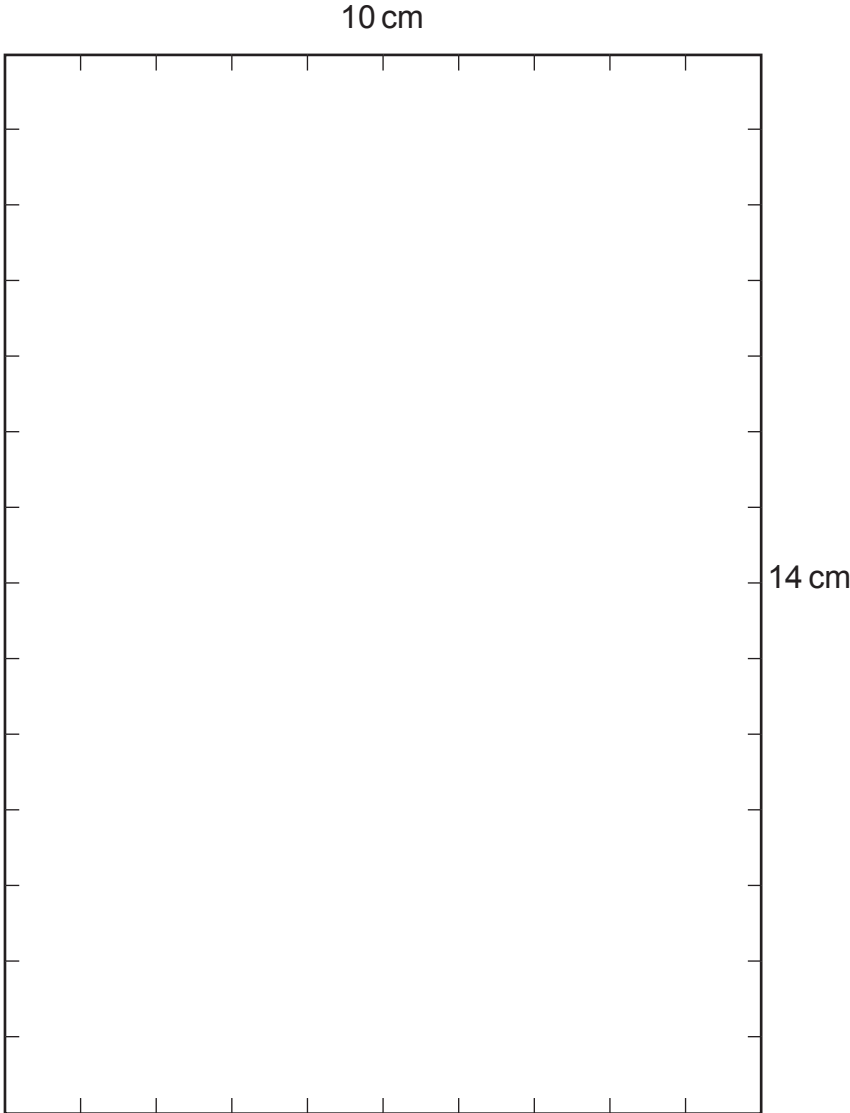
KU	RE
3	

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

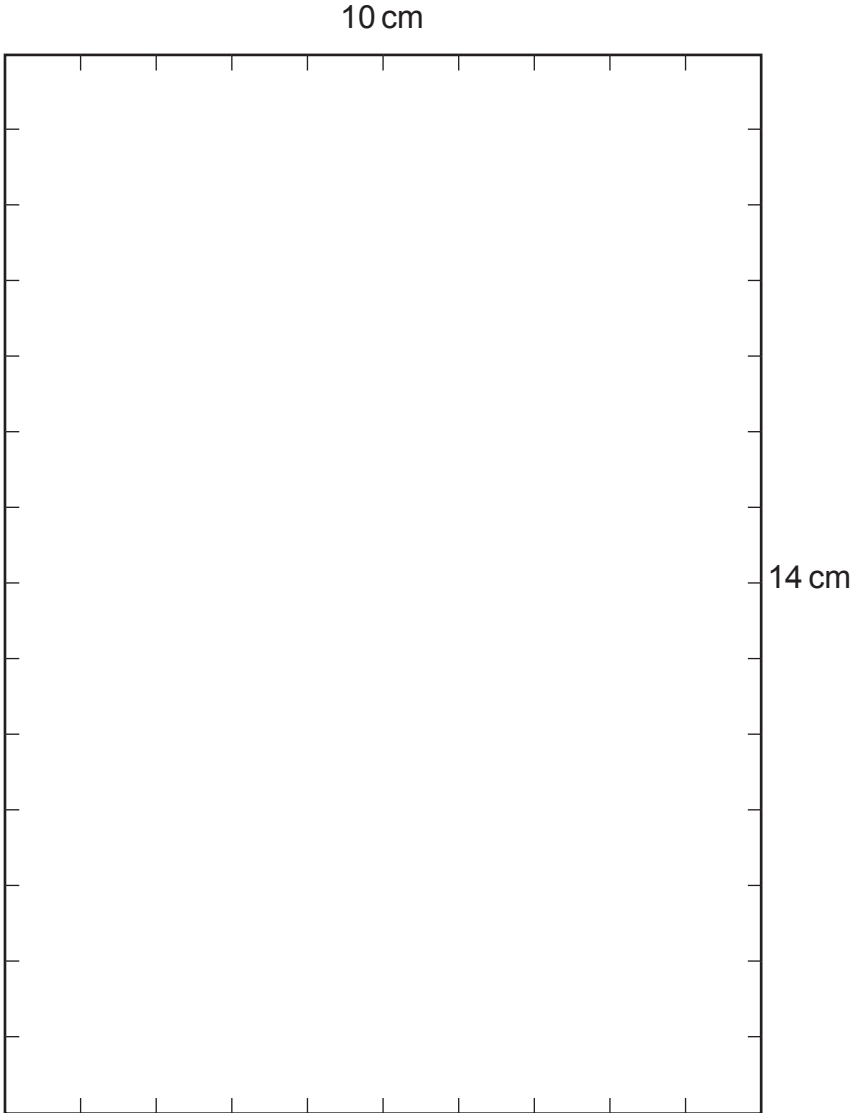
[END OF QUESTION PAPER]



Spare box for Question 10



Spare box for Question 10



ADDITIONAL SPACE FOR ANSWERS

*Marks*

KU	RE



ADDITIONAL SPACE FOR ANSWERS

<i>Marks</i>	KU	RE



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NATIONAL QUALIFICATIONS 2013

KU RE

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**MATHEMATICS**  
**STANDARD GRADE**  
 General Level  
 Paper 2

**2500/29/02**

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Town



Forename(s)

Surname

Number of seat




Date of birth

Day

Month

Year

Scottish candidate number

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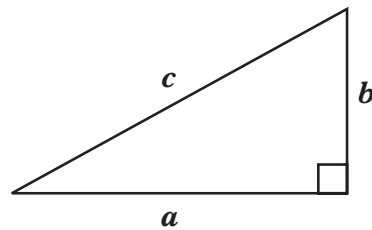


\* 2 5 0 0 2 9 0 1 1 7 \*

## FORMULAE LIST

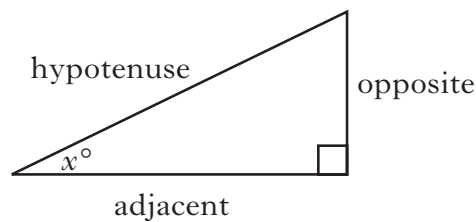
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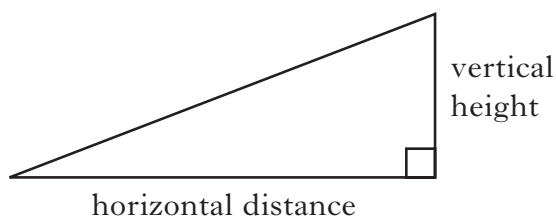


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Gradient:



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



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?



Marks

KU	RE
3	



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.

Marks

KU	RE
3	





Marks

KU	RE
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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.



<i>Vegetable</i>	<i>Cost (£)</i>
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.

<b>SELECTION</b>					<b>Cost (£)</b>
<i>Potatoes</i>	<i>Carrots</i>	<i>Onions</i>	<i>Turnips</i>	<i>Leeks</i>	
✓	✓		✓	✓	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









7. (a) Simplify

$$4(3p - 2) + 5.$$

(b) Solve algebraically

$$4t - 2 \leq 34.$$

Marks	KU	RE
2		
2		



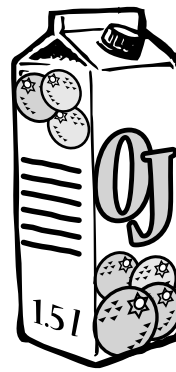
8. In Brown's Supermarket, a 1.5 litre carton of orange juice costs £1.97.

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.**

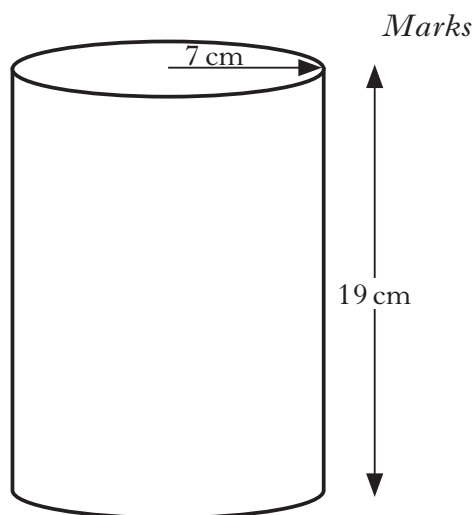


Marks

	KU	RE
3		



9. A cylinder has:
- radius = 7 centimetres
  - height = 19 centimetres.
- Calculate the curved surface area of the cylinder.



Marks

KU	RE
2	

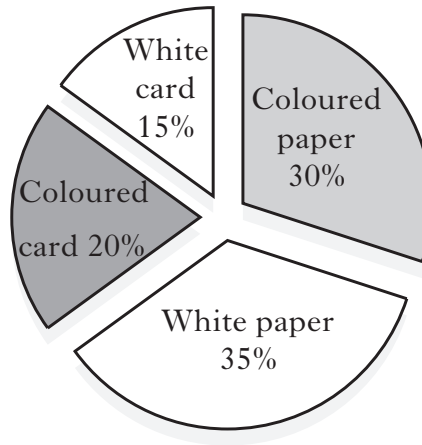


10. The school's ECO group is collecting card and paper for recycling.

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.



Marks

	KU	RE
3		





Marks

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)



	KU	RE
3		



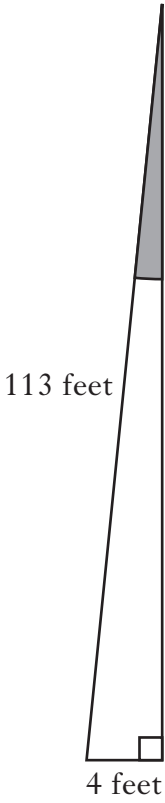


12. Belfast has a leaning clock tower.

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

Marks

KU	RE
3	



Calculate the size of the shaded angle.





Marks

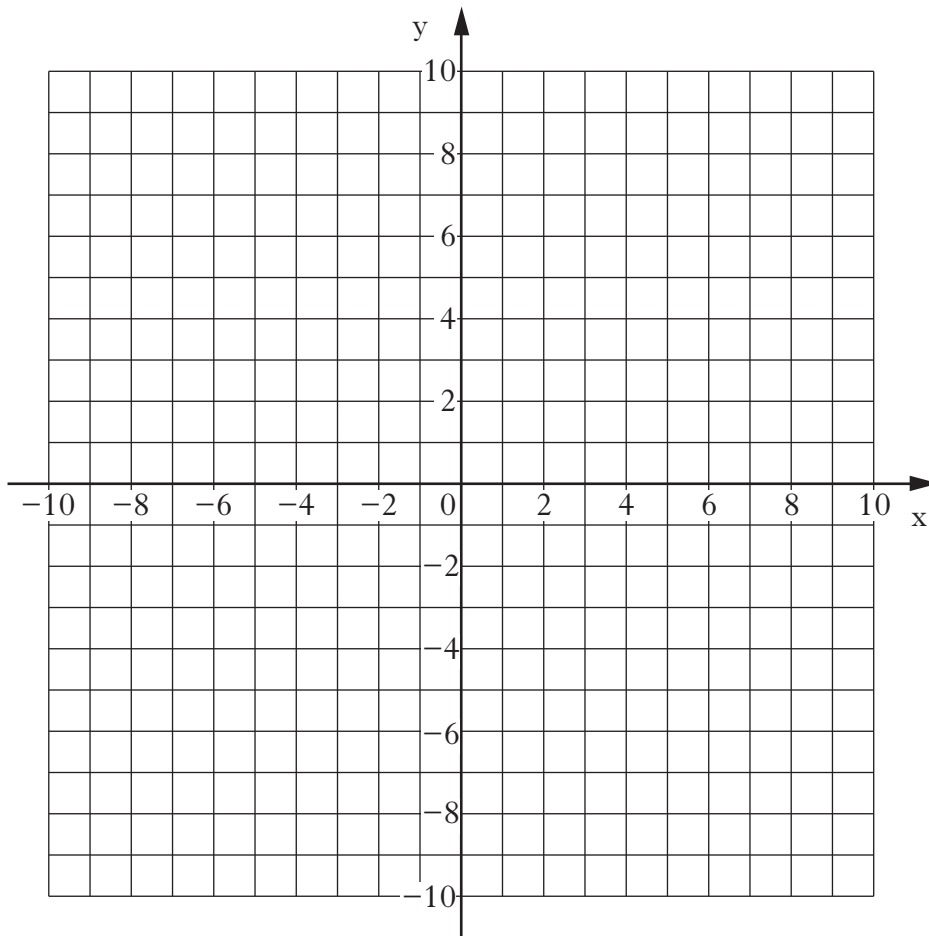
13. Jim works at Dario's Pizzas.  
 His basic rate of pay is £5.42 per hour.  
 Overtime is paid at time and a half.  
 Last week his gross pay was £216.80.  
 He worked 28 hours at the basic rate.  
 How many hours of overtime did Jim work last week?



	KU	RE
4		



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



(b) Find the gradient of line AB.

Marks	KU	RE
1		
2		







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.



Marks

KU	RE
3	

[END OF QUESTION PAPER]



ADDITIONAL SPACE FOR ANSWERS

*Marks*

KU	RE



ADDITIONAL SPACE FOR ANSWERS

*Marks*

KU	RE



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