FOR OFFICIAL USE

G

	KU	RE
Total marks		

2500/403

NATIONAL QUALIFICATIONS 2005

FRIDAY, 6 MAY
10.40 AM – 11.15 AM

MATHEMATICS STANDARD GRADE

General Level
Paper 1
Non-calculator

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Date of birth
Day Month Year

Scottish candidate number

Number of seat

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.

LIB 2500/403 6/65470

FORMULAE LIST

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

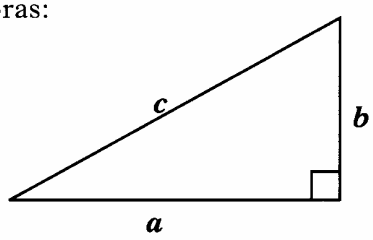
Area of a circle: $A=\pi r^2$

Curved surface area of a cylinder: $A=2\pi rh$

Volume of a cylinder: $V=\pi r^2 h$

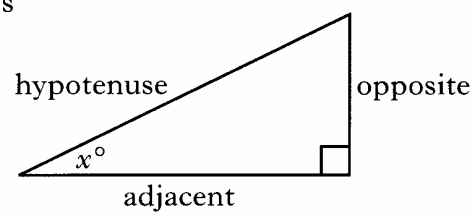
Volume of a triangular prism: $V=Ah$

Theorem of Pythagoras:



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

Trigonometric ratios in a right angled triangle:

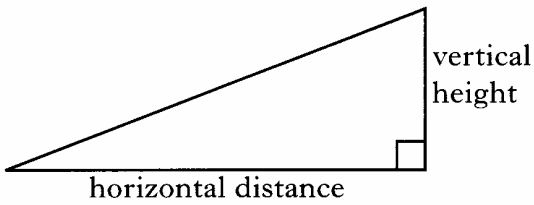


$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

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

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

Gradient:



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

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

1. Carry out the following calculations.

(*a*) $209{\cdot}3 - 175{\cdot}48$

1

(*b*) $56{\cdot}7 \times 90$

1

(*c*) $324{\cdot}1 \div 7$

1

(*d*) $\frac{3}{4}$ of 56 cm

2

2. When an aircraft leaves Prestwick airport the outside temperature is 12 ° Celsius.

The aircraft climbs to 10 000 metres and the outside temperature is –50 ° Celsius.

Find the difference between these temperatures.

2

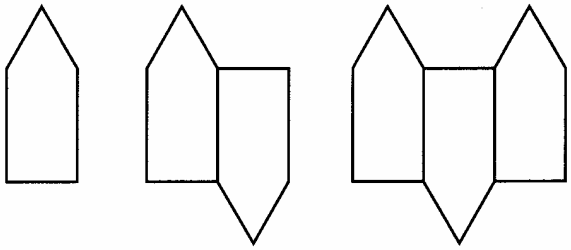
DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

3. Sandra is working on the design for a bracelet.

She is using matches to make each shape.

Shape 1 **Shape 2** **Shape 3** **Shape 4**



(*a*) Draw shape 4. **1**

(*b*) Complete the following table.

Shape number (s)	1	2	3	4	5	6		13
Number of matches (m)	5	9			21			

2

(*c*) Find a formula for calculating the number of matches, (m), when you know the shape number, (s).

2

(*d*) Which shape number uses 61 matches?

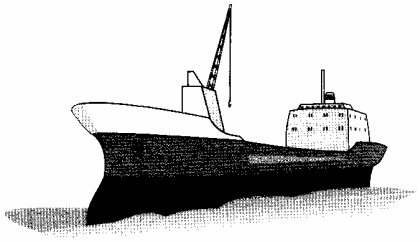
You must show your working.

2

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

4. A ship is transporting 2800 cars.
Each car is worth £20 000.



(*a*) What is the total value of all the cars?

1

(*b*) Write the total value in scientific notation.

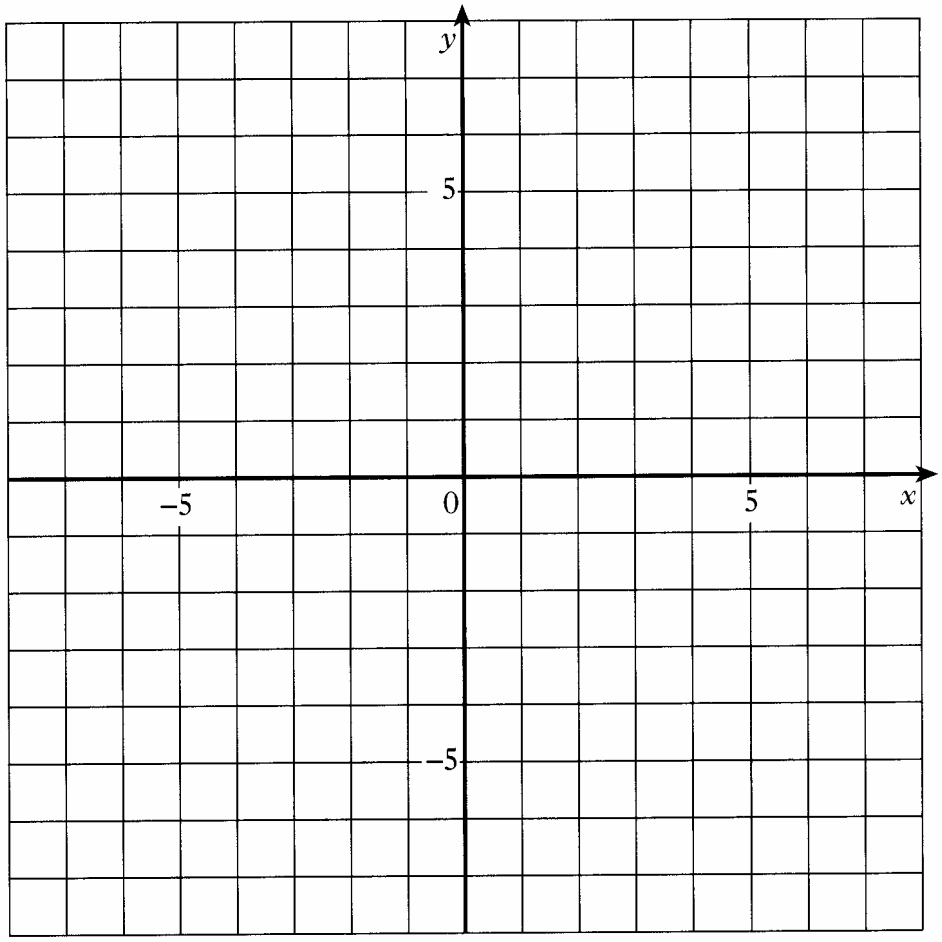
1

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

5. (*a*) On the grid below, plot the points A(7, 5), B(5, –1) and C(–1, –3).



2

(*b*) Plot a fourth point D so that ABCD is a rhombus. **1**

(*c*) Reflect rhombus ABCD in the ***y*-axis**. **2**

DO NOT WRITE IN THIS MARGIN

Marks | KU | RE

6. The table below can be used to convert tyre pressures from pounds per square inch (lb/sq in) to kilograms per square centimetre (kg/sq cm).

lb/sq in	20	22	24	26	28	30	32	34
kg/sq cm	1·41	1·55	1·69	1·83	1·97	2·11	2·25	2·39

Convert **29 lb/sq in** to **kg/sq cm**.

2

7. (*a*) Graham goes into a shop and buys a bottle of water and a cheese roll for £1·38.

In the same shop, Alan pays £1·77 for 2 bottles of water and a cheese roll.

How much does a bottle of water cost?

1

(*b*) Craig goes into the shop and buys 4 bottles of water and 3 cheese rolls.

How much will this cost?

3

[Turn over

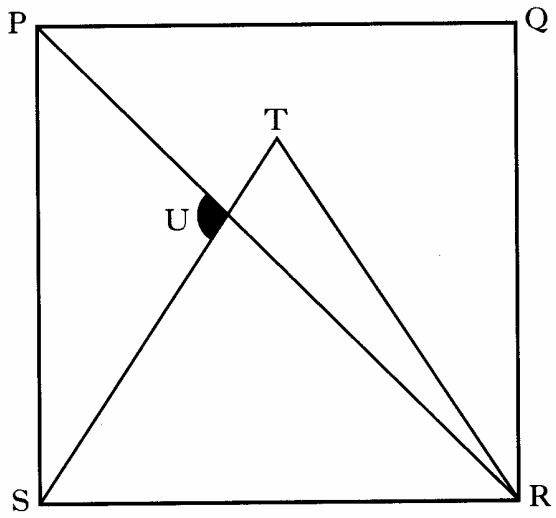
DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

8. John buys a football programme for £1·60 and sells it for £2·00.
Calculate his percentage profit.

3

9.



In the diagram above

- PQRS is a square
- PR is a diagonal of the square
- Triangle RST is equilateral.

Calculate the size of the shaded angle SUP.

3

[END OF QUESTION PAPER]

FOR OFFICIAL USE

G

	KU	RE
Total marks		

2500/404

NATIONAL QUALIFICATIONS 2005

FRIDAY, 6 MAY
11.35 AM – 12.30 PM

MATHEMATICS STANDARD GRADE

General Level
Paper 2

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Date of birth
Day Month Year

Scottish candidate number

Number of seat

1 **You may 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.

LIB 2500/404 6/65470

FORMULAE LIST

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

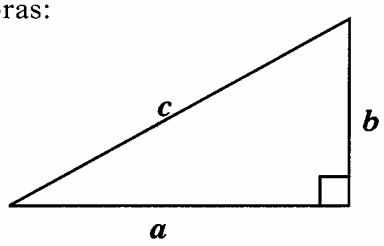
Area of a circle: $A = \pi r^2$

Curved surface area of a cylinder: $A = 2\pi rh$

Volume of a cylinder: $V = \pi r^2 h$

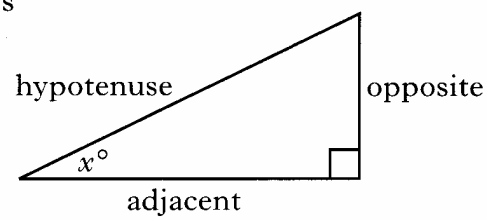
Volume of a triangular prism: $V = Ah$

Theorem of Pythagoras:



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

Trigonometric ratios in a right angled triangle:

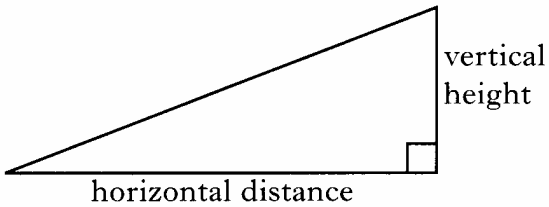


$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

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

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

Gradient:

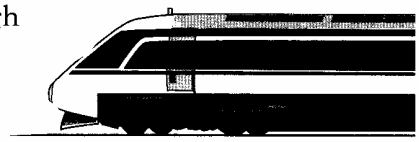


$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

1. A night train from London to Edinburgh leaves at 2321 and arrives at 0651.



(*a*) How long does the train journey take?

2

(*b*) The distance from London to Edinburgh is 644 kilometres.
Find the average speed of the train in kilometres per hour.
Give your answer correct to one decimal place.

3

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

2. The marks of a group of pupils in a maths test are shown below.

43	17	25	25	29	31	32	11	26	20
25	42	32	33	25	28	41	35	32	26

(*a*) Illustrate this data in an ordered stem and leaf diagram.

3

(*b*) What is the mode for the above data?

1

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

3. Scott sees the following notice in the window of the Big Computer Shop.

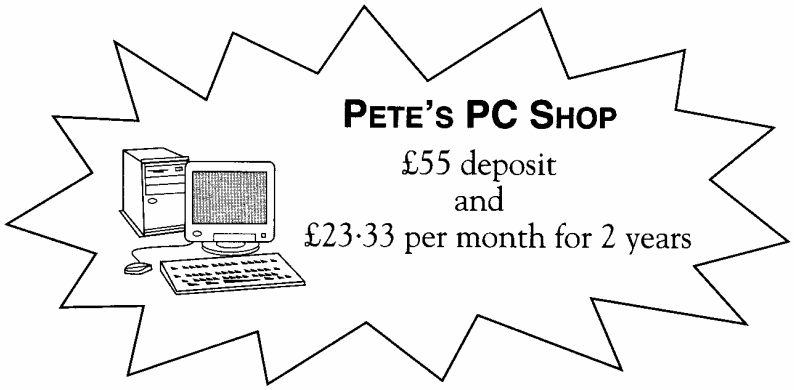
> ***The Big Computer Shop***
>
> Massive Sale
>
> $33\frac{1}{3}$% discount
>
> on all purchases

(*a*) A computer was £834.

How much would Scott pay for it in the sale?

2

The same computer can be bought in Pete's PC Shop on hire purchase.



(*b*) Which shop sells the computer cheaper?

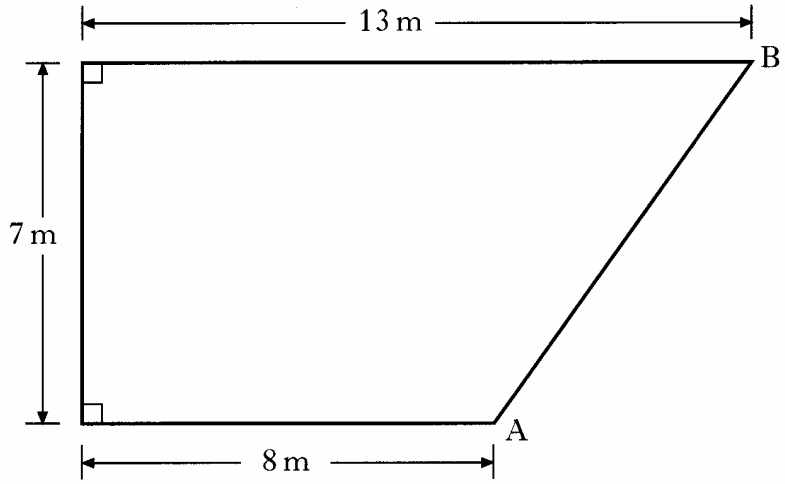
Show your working.

3

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

4. The diagram below shows the shape of Sangita's garden.
Sangita plants a hedge along side AB.



Calculate the length of the hedge.

4

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

5. (*a*) Remove the brackets and simplify

$$5 + 3(2x - 5).$$

2

(*b*) Solve the inequality

$$3x - 5 \geq 13.$$

2

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks | KU | RE

6. The sponsors of the Champions league have given £900 000 to be shared among the four competing teams.

The league table is shown below.

The teams share the money in the ratio of the **points** they gain.

How much is **United's** share of the money?

	Played	**Won**	**Lost**	**Drawn**	**Points**
Inter	3	3	0	0	**9**
Athletic	3	2	1	0	**6**
United	3	1	2	0	**3**
Red Star	3	0	3	0	**0**

4

DO NOT WRITE IN THIS MARGIN

Marks | KU | RE

7. The diagram below shows Isla McGregor's electricity bill.

ScoPower Electricity			
Ms I McGregor 8 Birch Grove Pineford			Account No: 050621743X
Statement Date: 20 April 2005	From: 21 Feb 2005		To: 18 Apr 2005
Present reading	**Previous reading**	**Details of charges**	£
006890	006487	**Box A** units at 7·567p per unit	.
		Standing Charge	9·21
		Sub Total	.
		VAT @ 5%	.
		Total Charge	.

(*a*) Calculate the number of units used.

Write your answer in **Box A**.

1

(*b*) Complete the electricity bill by filling in the shaded boxes.

3

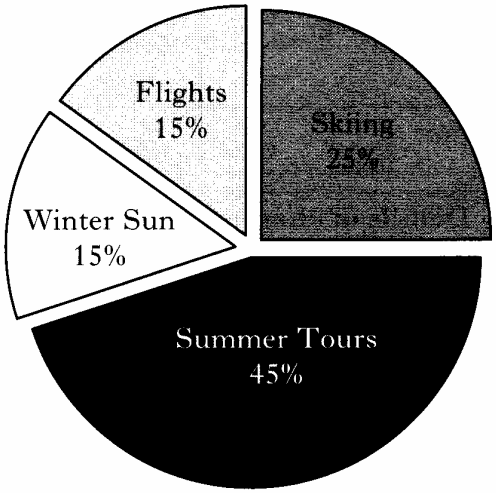
[Turn over

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

8. eSunTours is a holiday company.

Last year's percentage income from Skiing, Summer Tours, Winter Sun and Flights is shown in the pie chart below.



The income from Winter Sun holidays was £750 000 last year.

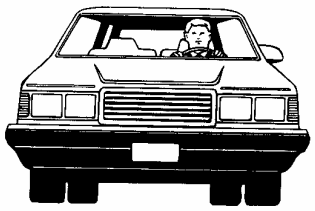
What was eSunTours' total income?

3

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

9. Serge drives from his home in Paris to Madrid, a journey of 1280 kilometres.



His car has a 60 litre petrol tank and travels 13 kilometres per litre.

Serge starts his journey with a full tank of petrol.

What is the least number of times he has to stop to refuel?

Give a reason for your answer.

3

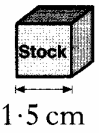
[Turn over

DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

10. (*a*) The edge of a stock cube measures 1·5 centimetres.

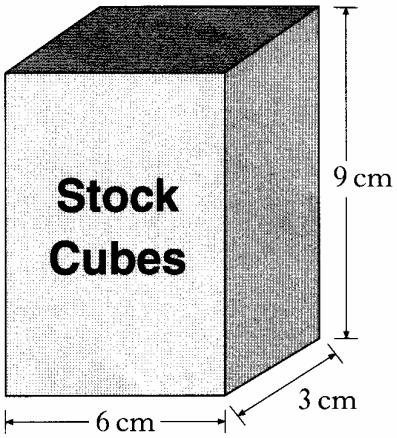
Calculate the volume of the stock cube.



1

(*b*) A number of the above stock cubes are packed into a cuboid box.

The box is 6 centimetres long, 3 centimetres broad and 9 centimetres high.



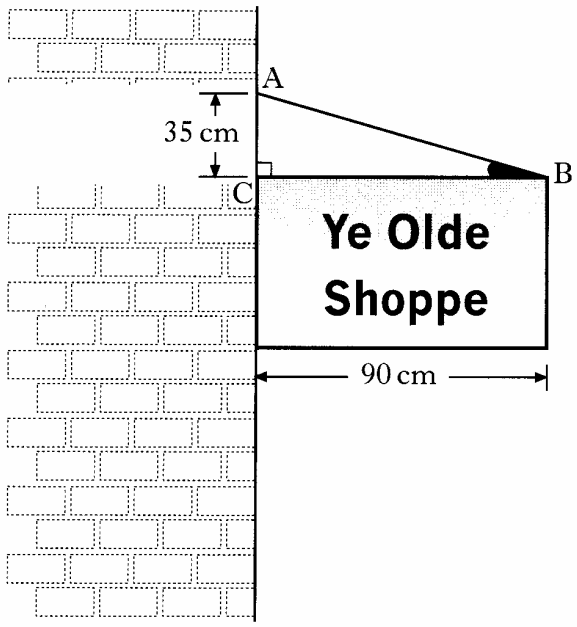
How many stock cubes are needed to fill the box?

3

DO NOT WRITE IN THIS MARGIN

Marks | KU | RE

11.



A rectangular shop sign is supported by a metal bar AB.

The length of the shop sign is 90 centimetres and the bar AB is attached to the wall 35 centimetres above the sign.

Calculate the size of the shaded angle ABC.

Do not use a scale drawing.

3

[Turn over for Question 12 on *Page fourteen*

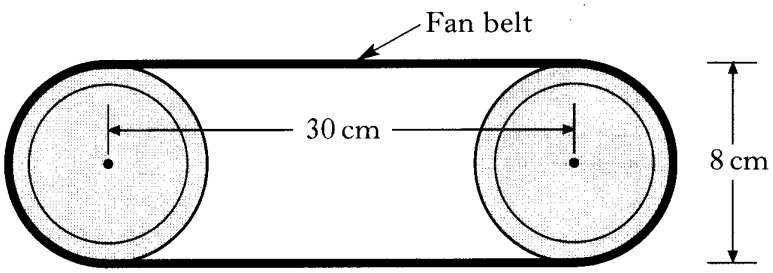
DO NOT WRITE IN THIS MARGIN

Marks	KU	RE

12. The diagram below shows the fan belt from a machine.

The fan belt passes around 2 wheels whose centres are 30 centimetres apart.

Each wheel is 8 centimetres in diameter.



Calculate the total length of the fan belt.

4

[*END OF QUESTION PAPER*]