

FOR OFFICIAL USE

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G

2500/403

	KU	RE
Total marks		

NATIONAL
QUALIFICATIONS
2004

FRIDAY, 7 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
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Scottish candidate number

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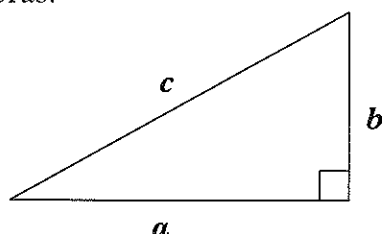
Number of seat

- 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.
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FORMULAE LIST

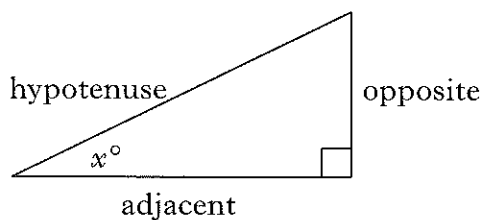
Circumference of a circle: $C = \pi d$
 Area of a circle: $A = \pi r^2$
 Curved surface area of a cylinder: $A = 2\pi r h$
 Volume of a cylinder: $V = \pi r^2 h$
 Volume of a triangular prism: $V = Ah$

Theorem of Pythagoras:



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

Trigonometric ratios
in a right angled
triangle:

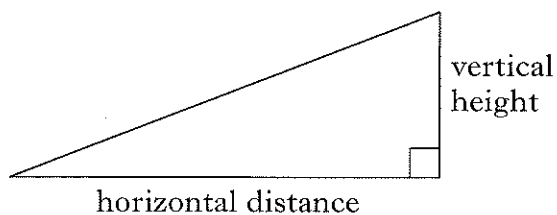


$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

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

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

Gradient:



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

1. Carry out the following calculations.

(a) $14.93 - 3.7 + 2.15$

Marks	KU	RE
1		
1		
1		
2		
2		

(b) 42.8×7

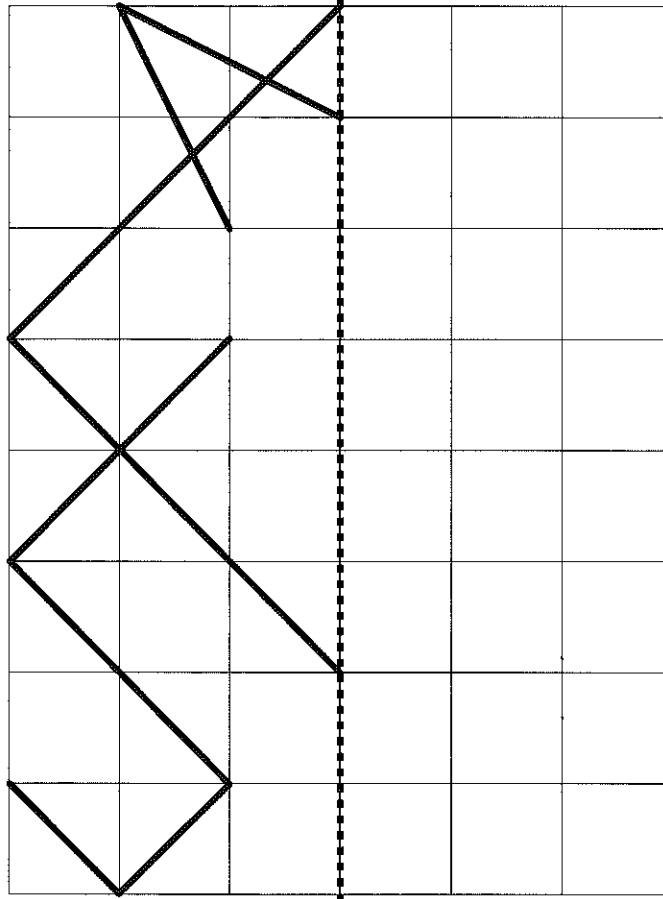
(c) $1710 \div 3000$

(d) 90% of £180

2. Express $\frac{3}{7}$ as a decimal.

Give your answer correct to two decimal places.

3. Ann Fiona Johnstone has drawn a design which uses her initials. She wants her finished design to be symmetrical. Complete her design so that the dotted line is an axis of symmetry.



Marks

KU	RE
3	
1	

4. The largest ocean in the world is the Pacific Ocean. Its area is approximately 1.813×10^8 square kilometres. Write this number in full.

3

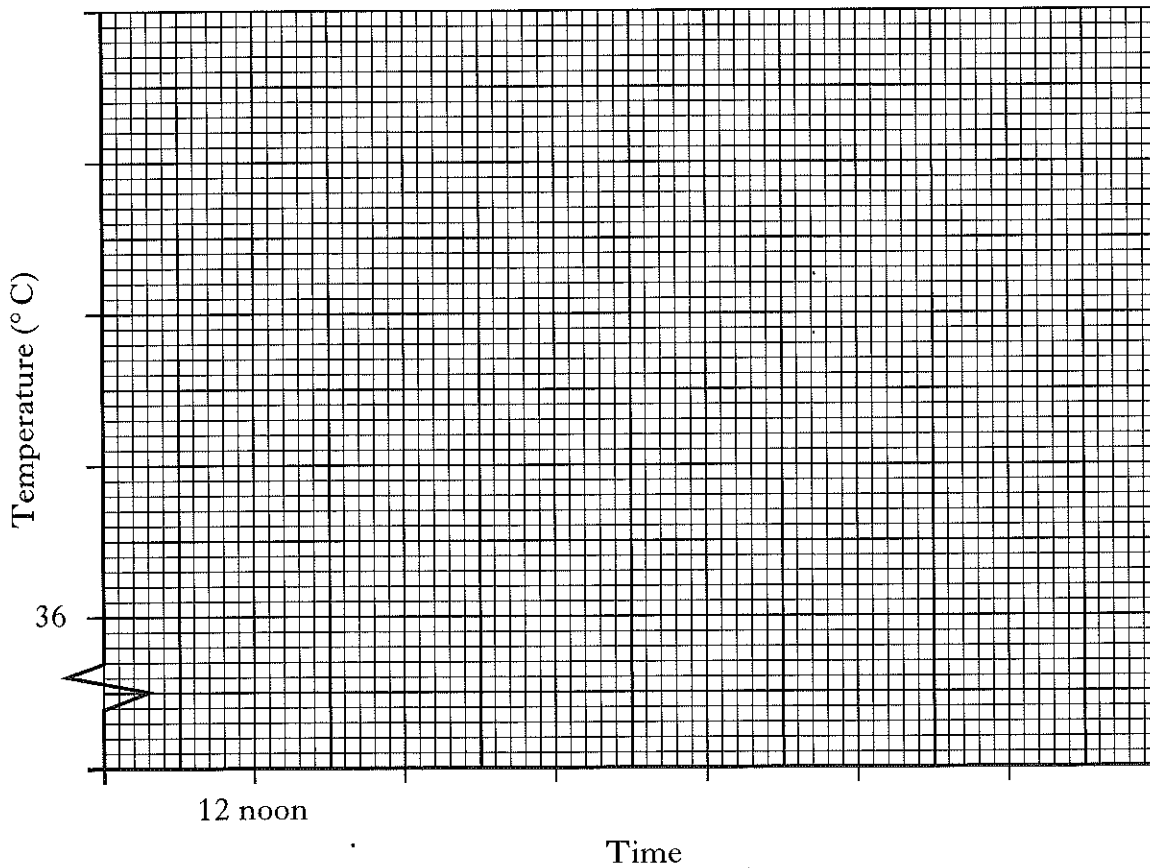
1

5. A patient in hospital had his temperature checked every two hours.
The results are shown in the table below.

Time	12 noon	2 pm	4 pm	6 pm	8 pm	10 pm
Temperature ($^{\circ}\text{C}$)	38.2	38.6	38.1	37.9	37.5	36.9

Illustrate this data on the grid below using a line graph.

Temperature Chart



Marks

KU	RE
4	

[Turn over

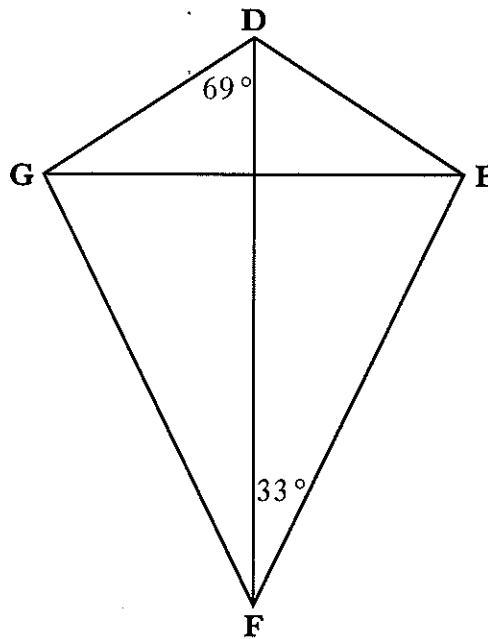
6. Last month a garage sold 12 red cars, 9 silver cars and 15 black cars.
Joe bought one of these cars.
What is the probability that the car Joe bought was silver?
Give your answer as a fraction in its simplest form.

Marks

	KU	RE
2		
3		

7. DEFG is a kite.
• Angle GDF = 69°
• Angle EFD = 33°

Calculate the size of angle DGF.



Marks

8. Christy needs a four-digit code to switch on her mobile phone. She uses the digits from her birth date 4/3/89, but in a different order. She knows that the last digit is 8. One of the possible four-digit codes Christy could try is shown in the table below. Complete the table to show all the possible four-digit codes.

4	3	9	8

3

9. A recipe for Shortbread uses the following ingredients.
300 grams flour
100 grams sugar
200 grams butter

Alana has only 240 grams of flour.

To make Shortbread using all of the 240 grams of flour she will have to adjust the quantities of sugar and butter.

How many grams of sugar and how many grams of butter should she use?

4

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G

2500/404

	KU	RE
Total marks		

NATIONAL
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2004

FRIDAY, 7 MAY
11.35 AM - 12.30 PM

MATHEMATICS
STANDARD GRADE
General Level
Paper 2

Fill in these boxes and read what is printed below.

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Date of birth

Day	Month	Year
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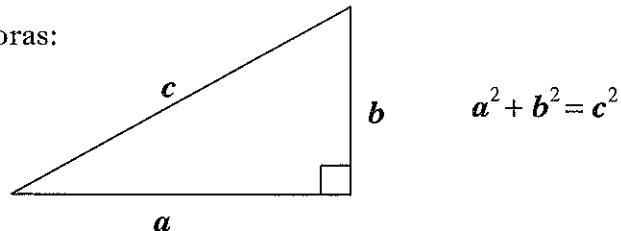
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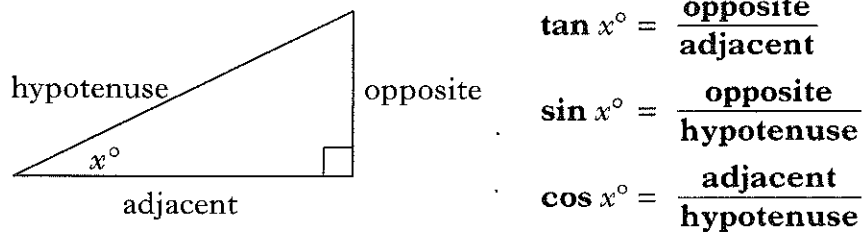
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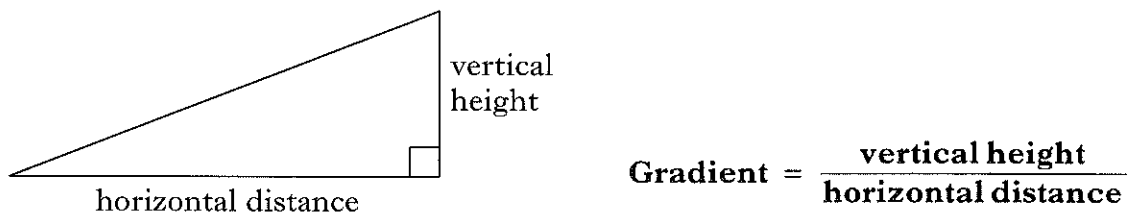
Theorem of Pythagoras:



Trigonometric ratios
 in a right angled
 triangle:



Gradient:



Marks

KU	RE

2. A company manufactures boxes of tacks and claims that there are “on average” 60 tacks per box.

This claim is tested by counting the number of tacks in a sample of 100 boxes.

The results are shown below.

Number of tacks	Frequency	Number of tacks \times Frequency
57	7	
58	13	
59	21	
60	24	
61	19	
62	12	
63	4	
Totals	100	

- (a) Find the mean number of tacks per box.

3

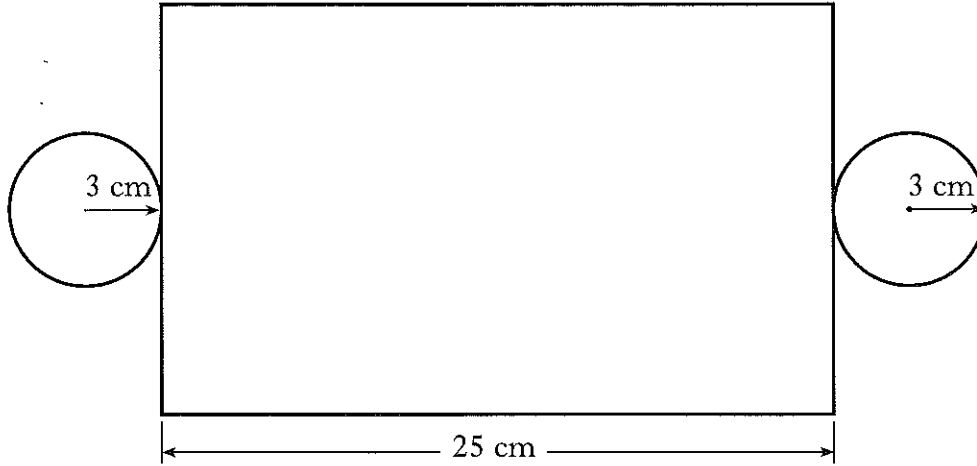
- (b) Is the company’s claim reasonable?

You must give a reason for your answer.

1

3. The sketch below shows the net of a three-dimensional shape.
The net consists of a rectangle and two equal circles of radius 3 centimetres.

Marks



Find the **volume** of the three-dimensional shape formed from this net.

3

[Turn over

KU	RE

4. (a) Solve algebraically

$$5x - 2 = 2x + 19.$$

Marks

KU	RE

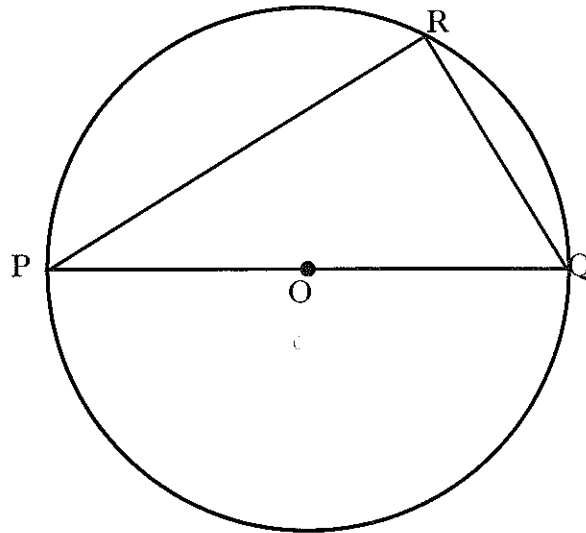
3

(b) Factorise fully

$$12 + 8p.$$

2

5.



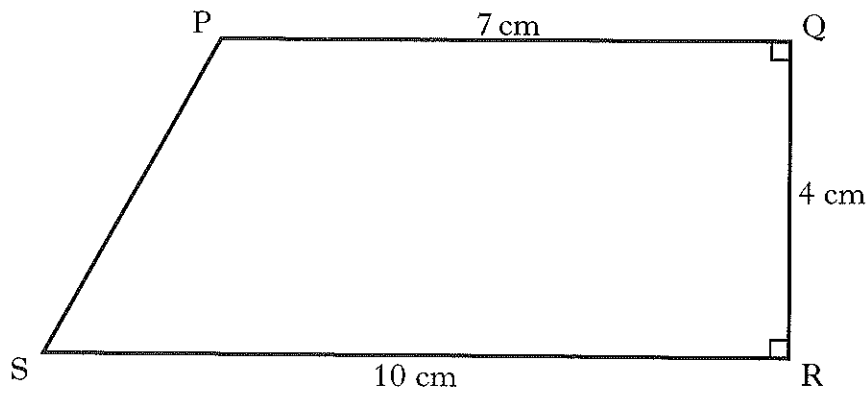
PQ is a diameter of the circle with centre O.
 R is a point on the circumference of the circle.
 PR is 12 centimetres.
 RQ is 5.5 centimetres.
 Calculate the length of the radius of the circle.

Marks

KU	RE
4	

[Turn over

6.



PQRS is a trapezium.

- $PQ = 7$ centimetres.
- $QR = 4$ centimetres.
- $SR = 10$ centimetres.
- Angles PQR and QRS are both right angles.

Calculate the size of angle PSR.

Do not use a scale drawing.

Marks

	KU	RE
4		

7. (a) John is going to Italy on holiday.
He changes £500 to Euros.
The exchange rate is £1 = 1.51 Euros.
How many Euros will he get?

Marks

KU	RE

2

- (b) While in Italy he decides to visit Switzerland for a day.
He wants to change 100 Euros to Swiss Francs.
John knows the exchange rate is £1 = 2.33 Swiss Francs.
How many Swiss Francs should he get for 100 Euros?

3

9. A basic cable television package, which includes 30 channels, costs £8.75 per month.

The cost of installation is £75 which will be included in the first month's bill.

Additional channels can be added to the basic service.

- The movie channels package costs £12.50 per month.
- The music channels package costs £7.50 per month.
- The sports channels package costs £14.50 per month.

The Mackie family's first bill after having cable television installed was £98.25.

They chose the basic cable television package plus one additional channels package.

Which additional package did they choose?

Give a reason for your answer.

Marks

KU	RE
3	

[Turn over

Marks

KU	RE

10. (continued)

(b) The Parkway Hotel charges an extra £4.95 per person per night for a single room.

How much extra will Janice pay for her 14 night holiday if she wants a single room?

1

(c) If Janice books today she will get a 20% discount on her **total cost**.

Find the discounted price of her 14 night holiday in a single room from 5th July.

2

DO NOT
WRITE IN
THIS
MARGIN

Marks

KU	RE

11. Mara travels 1850 miles every month.

Currently her car runs on unleaded petrol, which costs 76·9p per litre and her car travels 8·5 miles per litre.

(a) What is her monthly petrol bill?

2

Mara is thinking of having her car converted to run on Liquid Petroleum Gas (LPG).

LPG costs 38·9p per litre and using this fuel her car will travel 7·8 miles per litre.

(b) What will be her monthly saving if she converts her car to run on LPG?

2

<i>Marks</i>	KU	RE
2		

11. (continued)

(c) The cost of converting Mara's car to run on LPG is £800.

How many months of savings will it take to recover the cost of the conversion?

[Turn over

Marks

12. The current, C amps, of an electrical appliance is calculated using the formula

$$C = \frac{P}{240}, \text{ where } P \text{ watts is the power rating.}$$

- A hairdryer has a power rating of 850 watts.
- The fuse used should be the one just bigger than the calculated current.
- The choice of fuses is 3 amp, 5 amp and 13 amp.

Which fuse should be used?

	KU	RE
3		

