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Total marks		

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NATIONAL QUALIFICATIONS 2006

FRIDAY, 5 MAY 10.40 AM - 11.15 AM MATHEMATICS STANDARD GRADE General Level Paper 1 Non-calculator

Fill in these boxes and read what is		
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You may not use a calculator. Answer as many questions as you	le array	
and Laboratory (Delawmer year working and answers to the end of this question answer bo the number of the question involve	or the appending produces. Lok for use if required. If	
4 Full credit will be given only where	The solution contains of	
5 Before leaving the examination ro not you may lose all the marks for		DOM IN STREET, IT YOU GO





FORMULAE LIST

Circumference of a circle:

 $C = \pi d$

Area of a circle:

 $A=\pi r^2$

Curved surface area of a cylinder:

 $A=2\pi rh$

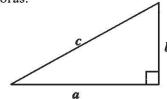
Volume of a cylinder:

 $V = \pi r^2 h$

Volume of a triangular prism:

V=Ah

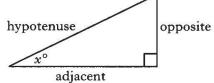
Theorem of Pythagoras:



$$\boldsymbol{a}^2 + \boldsymbol{b}^2 = \boldsymbol{c}^2$$

Trigonometric ratios in a right angled

triangle:

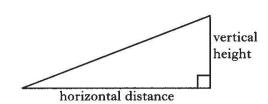


 $\tan x^{\circ} = \frac{\text{opposite}}{\text{adjacent}}$

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

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

Gradient:



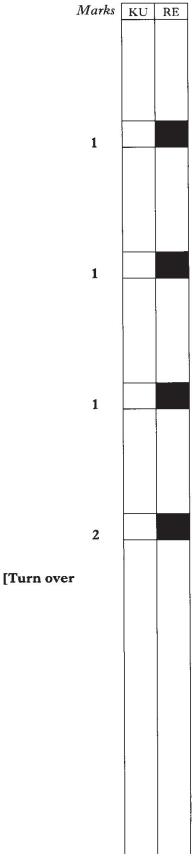
$$Gradient = \frac{vertical height}{horizontal distance}$$

1. Carry out the following calculations.

(a)
$$2.73 + 7.6 - 8.4$$

(b)
$$13 \times 7000$$

(c)
$$56.5 \div 500$$



Marks KU RE

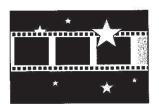
Paulo's Pizzas Student Discount $\frac{1}{3}$ off the price of each pizza

Emily is a student and she buys a pizza from Paulo's Pizzas.

She chooses a pizza which is normally £8.49.

How much will Emily pay for the pizza?

3. A new movie costs \$320 million to make. Write this amount in scientific notation.



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KU RE

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4. Jenni is making a wallpaper border.

She is using stars and dots to make the border.

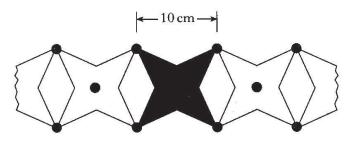


(a) Complete the table below.

Number of stars (s)	1	2	3	4	5
Number of dots (d)			11		

(b) Write down a formula for calculating the number of dots (d), when you know the number of stars (s).

(c) Each star is 10 centimetres long.



The wallpaper border Jenni makes is 300 centimetres long.

- (i) How many stars does Jenni need?
- (ii) How many dots does she need?

F

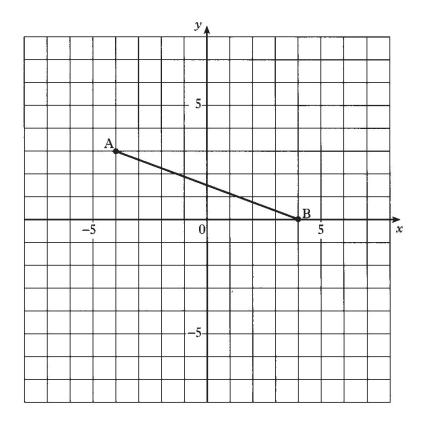
[2500/403]

Page five

[Turn over

Marks KU RE

5.	The line	AB is	drawn	on the	grid	below.	
----	----------	-------	-------	--------	------	--------	--



Calculate the gradient of the line AB.

2

[2500/403]

6. A box contains 10 coloured balls.

There are 4 yellow balls, 3 blue balls, 2 green balls and 1 red ball.

(a) David takes a ball from the box.

What is the probability that the ball is blue?



1

(b) The ball is put back in the box.

2 yellow balls and the red ball are then removed.

What is the probability that the next ball David takes from the box is green?

2

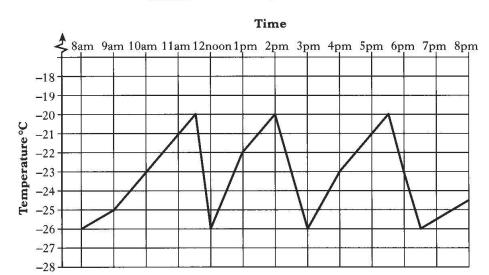
[Turn over

KU RE

Marks

7. The temperature in a supermarket freezer during a 12-hour period is shown in the graph below.

Temperature of Supermarket Freezer



(a) From 8am, how long did it take for the temperature to rise to -20 °C?

(b) For how long, in **total**, was the temperature rising during the 12-hour period?

1

3

3

1

8. Rachel asks 19 friends how many text messages they sent last week.

Their answers are shown below.

34	25	46	62	28
38	42	23	25	15
32	52	35	44	30
10	33	41	55	



(a) Display Rachel's friends' answers in an ordered stem and leaf diagram.

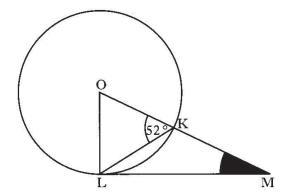
(b) What is the median number of text messages?

[Turn over for Question 9 on Page ten

KU RE

Marks

9.



In the diagram above with circle centre O:

- LM is a tangent to the circle at L
- · OM intersects the circle at K
- Angle OKL = 52° .

Calculate the size of the shaded angle OML.

3

[2500/403]

[END OF QUESTION PAPER]

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Total marks		

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NATIONAL QUALIFICATIONS 2006

FRIDAY, 5 MAY 11.35 AM - 12.30 PM MATHEMATICS STANDARD GRADE General Level Paper 2

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FORMULAE LIST

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Area of a circle:

 $A=\pi r^2$

Curved surface area of a cylinder:

 $A=2\pi rh$

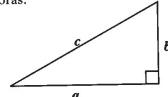
Volume of a cylinder:

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Volume of a triangular prism:

V=Ah

Theorem of Pythagoras:

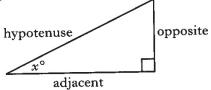


$$a^2 + b^2 = c^2$$

Trigonometric ratios

in a right angled

triangle:

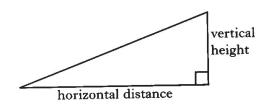


 $\tan x^{\circ} = \frac{\text{opposite}}{\text{adjacent}}$

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

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

Gradient:



Gradient = vertical height horizontal distance

KU RE

1. The Sharkey family is going on holiday to France.

They will stay at the "Prenez Les Bains" campsite.



Prenez Les Bains	Tent holiday		oliday Mobile Home holiday		
Start Date	Cost for 7 nights			Cost per extra night	
26 June – 2 July	495	39	585	58	
3 July – 9 July	535	41	615	65	
10 July – 30 July	645	46	825	72	
31 July – 13 Aug	699	47	880	75	
14 Aug – 28 Aug	670	39	845	73	

The family chooses a mobile home holiday.

Use the table above to calculate the cost of the holiday.

[Turn over

Their holiday will start on 15 July and the family will stay for 12 nights.

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2.	Carly bought a new printer for her computer.	11141113	KU	KE
	The time taken to print a document is proportional to the number of pages printed.			
	It takes 7 minutes to print a document with 63 pages.			
	How many pages can be printed in half an hour?			
		J. Carriero		
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[2500/404]

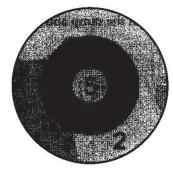
Marks KU RE

3. At a school fun day, prizes can be won by throwing darts at a target.

Each person throws six darts.

Points are awarded as follows.

	POINTS
Centre	5
Middle Ring	3
Outer Ring	2
Miss	0



Prizes are won for 25 points or more.

Complete the table below to show all the different ways to win a prize.

Number of darts scoring 5 points	Number of darts scoring 3 points	Number of darts scoring 2 points	Number of darts scoring 0 points	Total Points
4	2	0	0	26
		(

[Turn over

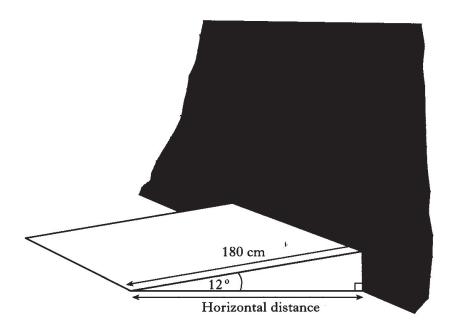
Marks

KU RE

4. The entrance to a building is by a ramp as shown in the diagram below.

The length of the ramp is 180 centimetres.

The angle between the ramp and the ground is 12° .



Calculate the horizontal distance.

Round your answer to one decimal place.

Do not use a scale drawing.

4

[2500/404] Page six

Marks KU RE 5. Ann works in a hotel. She is paid £5.60 per hour on weekdays and double time at weekends. Last month her gross pay was £436.80. Ann worked a total of 54 hours on weekdays. How many hours did she work at double time? [Turn over

6. (a) Factorise

$$6a + 15b$$
.

(b) Solve algebraically

$$4x - 3 = x + 21.$$

Marks KU RE 7. Amy and Brian travel from Dundee to Stonehaven. The distance between Dundee and Stonehaven is 80 kilometres. Amy takes 1 hour 30 minutes to travel by car. Brian takes the train which travels at an average speed of 60 kilometres per hour. What is the difference between their journey times? [Turn over

Page nine

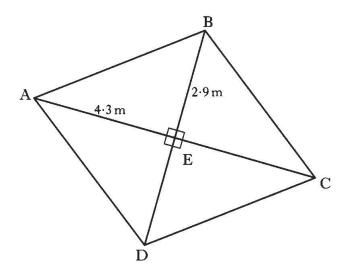
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KU RE

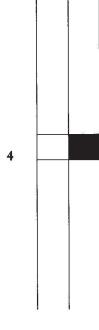
Marks

8. ABCD is a rhombus.

AE = 4.3 metres and BE = 2.9 metres. Calculate the perimeter of the rhombus.



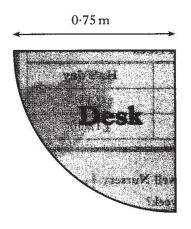
Do not use a scale drawing.



KU RE

Marks

9.	The top of Calum's desk is in the shape of a quarter-circle as shown.
	The measurement shown is in metres.





(a) Calculate the area of the top of the desk.

2

(b) Calum wants to paint the top of his desk.
 The tin of paint he buys has a coverage of 1 m².
 Using this tin of paint, how many times could he paint the top of his desk?

2

Marks

s KU RE

10. Maria is two years old.

Each week she goes to the nursery for 3 full days and 2 half days.

(a)

Playwell Nursery					
	Pri	ces			
Age	Full day	Half day			
0–2 years	£28	£15			
3-5 years	£23.50	£12·50			

Maria's mother pays for her to attend Playwell Nursery.

How much does Maria's mother pay each week?

2

On Monday, Tuesday and Wednesday Maria goes to nursery from $9\,\mathrm{am}$ to $3\,\mathrm{pm}.$

On Thursday and Friday she goes from 9 am to 12 noon.

(b) The nursery introduces a new hourly rate.

New Rate £5 per hour

Will Maria's mother save money when the nursery changes to the hourly rate?

Give a reason for your answer.

3

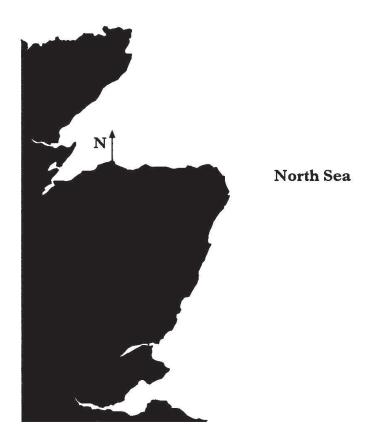
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Marks

11. The diagram below shows the positions of Lossiemouth and Leuchars.
A ship in the North Sea is on a bearing of 110° from Lossiemouth and 075° from Leuchars.

Show the position of the ship on the diagram below.



3

[Turn over for Question 12 on Page fourteen

Marks KU RE

Gordon is insuring his car with Carins Insurance.
 The basic annual premium is £765.



As Gordon is a new customer his premium is calculated by taking $\frac{1}{5}$ off the basic annual premium.

However, because he wants to pay in monthly instalments, Carins Insurance add an extra 8% to his premium.

How much in total will Gordon pay per month?

4

[END OF QUESTION PAPER]