



G

Knightswood
Secondary
School

MATHEMATICS
Standard Grade
Preliminary Exams
December 2008

General Level
Paper 1

Name _____ Reg. Class 4R__

Maths Teacher _____ Maths Class 4m__

Time: 35 minutes

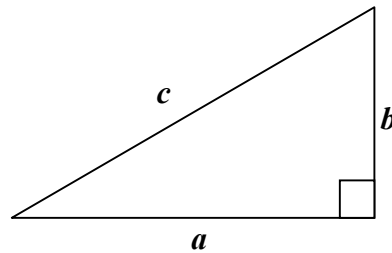
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Question	KU	RE
1a,b,c&d		
2		
3a&b		
4a,b&c		
5a&b		
6		
7a&b		
8		
9		
10		
Total p1	/17	/17
Total p2	/23	/23
Total p1+p2	/40	/40
percentage	%	%

FORMULAE LIST

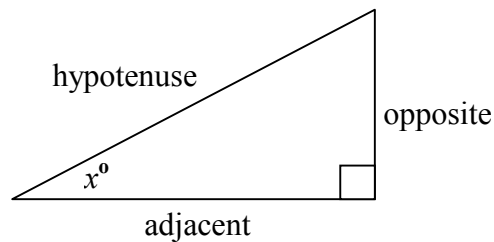
Circumference of a circle:	$C = \pi d$
Area of a circle:	$A = \pi r^2$
Curved surface area of a cylinder:	$A = 2\pi r h$
Volume of a cylinder:	$V = \pi r^2 h$
Volume of a triangular prism:	$V = Ah$

Theorem of Pythagoras:



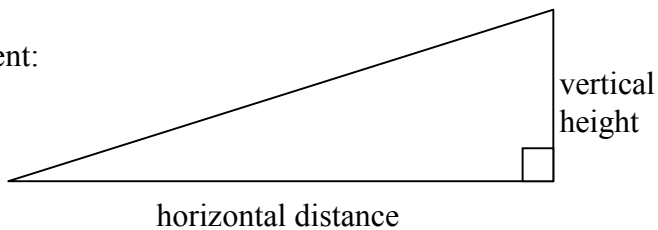
$$a^2 + b^2 = c^2$$

Trigonometrical 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) $106.7 - 13.34$

(1)

(b) 75.3×80

(1)

(c) $185.4 \div 6$

(1)

(d) $\frac{3}{8}$ of 128

(2)

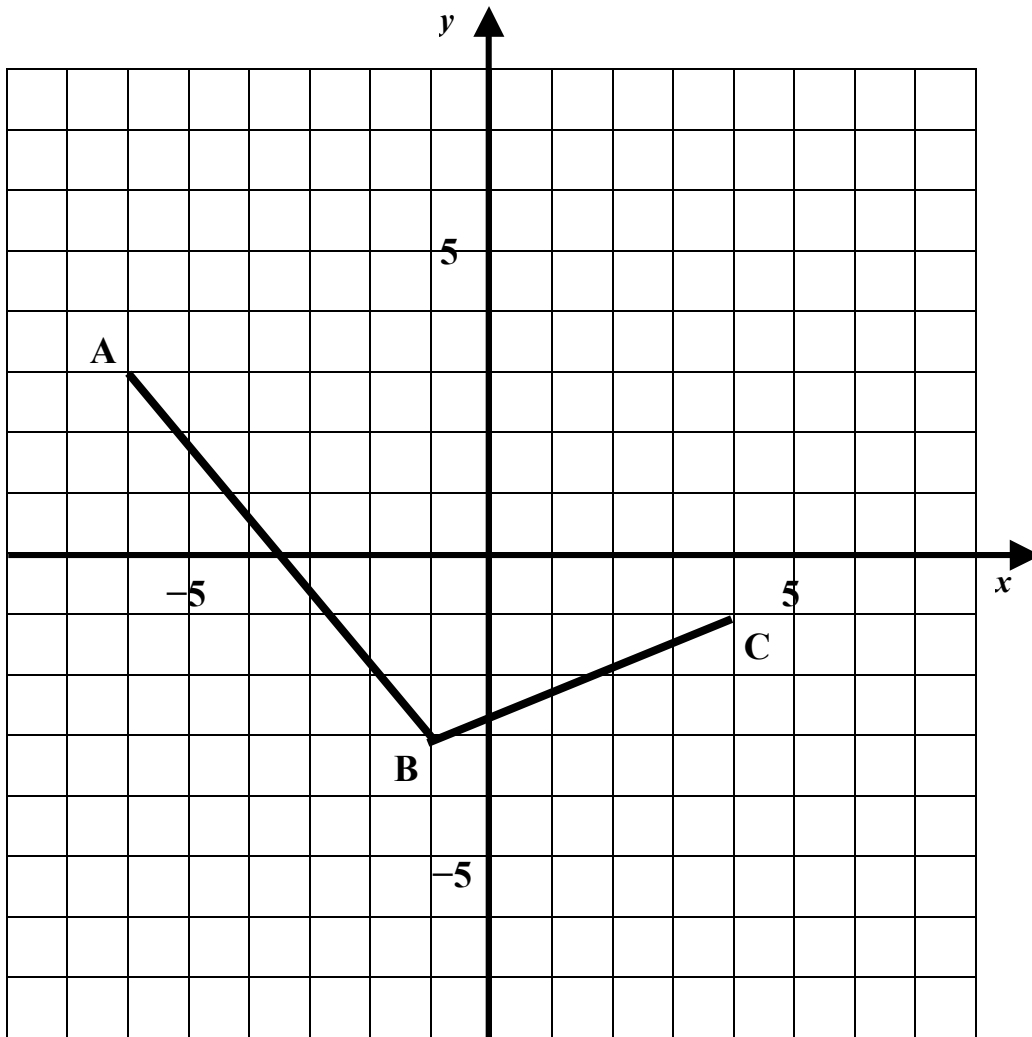
2. A train is travelling through Siberia. Inside the train, the temperature is set at 25° Celsius. Outside the temperature is -37° Celsius.

Find the difference between these two temperatures.

(2)

[Turn over

3.



(a) Plot the point D to complete the parallelogram ABCD.

(b) Find the coordinates of M, the centre of the parallelogram ABCD.

(1)

(2)

[Turn over

5. In a television game show the first round lasts for 2 minutes.
Each following round is 10 seconds less than the previous round.

(a) How long will Round 7 last?

(2)

This pattern continues until the last round:

- the last round is **only 5 seconds less** than the previous round
- the last round lasts for 35 seconds.

(b) How many rounds are in the games show?

(2)

6. 70% of Scotland's population lives in the Central Lowlands.

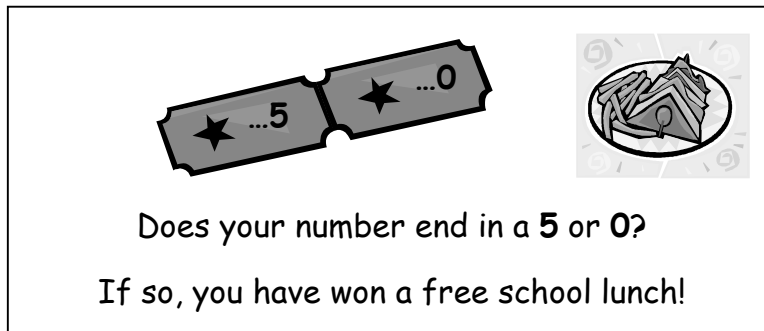
In a recent population census the population of Scotland was recorded as 5 116 900 people.

According to this census, how many people live in the Central Lowlands?

(3)

[Turn over

7. A school is promoting school lunches.
 It holds a raffle to win a free school lunch.
 Sixty tickets, numbered 1 to 60, are put in a box and chosen at random
 by 60 pupils.
 The sign below is placed in the school dining hall.



- (a) What is the probability that one of the ticket holders wins a free school lunch?

(2)

- (b) What percentage of ticket holders win a free school lunch?

(1)

[Turn over

8. An Internet bookshop has a special offer:
 “spend £12 or over and postage is free”.

The costs of paperback books in the shop are £3, £4 and £5.

Murray is buying **three** books.

The table below shows **one** way of buying three books with free postage.

Complete the table to show **five** other possible combinations of buying **three** books with free postage.

£3	£4	£5	Total Cost (£)
0	0	3	15

(3)

9. Two shops are selling the same model of computer for the same price.

One shop asks for a £200 deposit and 12 equal payments of £100.

The other shop asks for a £500 deposit and 10 equal payments.

How much should each payment be?

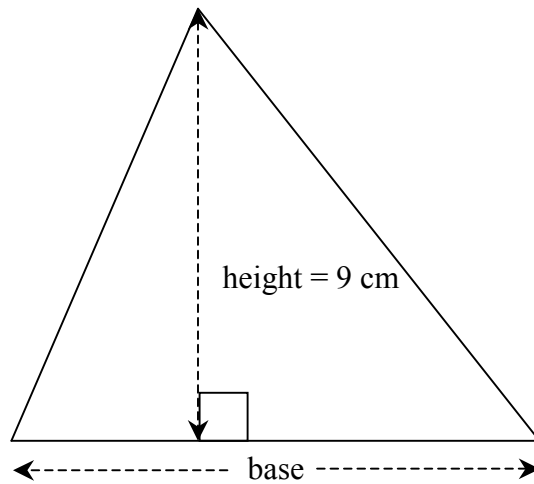
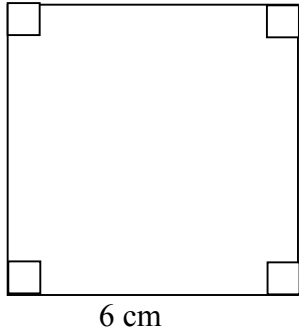
(4)

[Turn over

KU

RE

10. A square of side 6 centimetres has the same area as a triangle which has a height of 9 centimetres.



Calculate the length of the base of the triangle.

(3)

END OF QUESTION PAPER

	Give one mark for each •	Illustrations for awarding each mark
1(a)	ans: 93.36 • ¹ carry out calculation correctly	• ¹ 93.36
(b)	ans: 6024 • ¹ carry out calculation correctly	• ¹ 6024
(c)	ans: 30.9 • ¹ carry out calculation correctly	• ¹ 30.9
(d)	ans: 48 • ¹ divide by 8 • ² multiply by 3	• ¹ 16 • ² $16 \times 3 = 48$
2	ans: 62° • ¹ evidence of finding a difference • ² state correct answer	• ¹ $25 - (-37)$ or $25 + 37$ • ² 62°
3(a)	ans: D(-1,5) • ¹ plot point	• ¹ D(-1,5)
(b)	ans: M(-1,1) • ¹ draw diagonals • ² point of intersection	• ¹ draw AC and BC • ² M is point (-1,1)
4(a)	ans: 0.0375 • ¹ divide by 4 • ² multiply by 3	• ¹ $0.05 \div 4$ • ² 0.0125×3
(b)	ans: 0.375 • ¹ multiply by 10	• ¹ 0.375
(c)	ans: 3.75×10^{-1} • ¹ use scientific notation	• ¹ 3.75×10^{-1}

5 marks KU

2 marks KU

1 mark RE

2 mark RE

2 marks KU

1 mark KU

1 mark KU

	Give 1 mark for each •	Illustrations for awarding each mark
		<ul style="list-style-type: none"> •¹ 120, 110, 100, 90, 80, 70, ... •² 60 seconds <p>note there are other valid methods</p> <p style="text-align: right;">2 marks RE</p> <ul style="list-style-type: none"> •¹ 50, 40, 35 •² 10 rounds <p style="text-align: right;">2 marks RE</p>
		<ul style="list-style-type: none"> •¹ 511690 •² $\times 7$ •³ 3581830 <p style="text-align: right;">3 marks KU</p>
		<ul style="list-style-type: none"> •¹ 5,10,15,20,25,30,35,40,45,50,55,60 •² $\frac{12}{60}$ <p style="text-align: right;">2 marks KU</p> <ul style="list-style-type: none"> •¹ $\frac{1}{5}$ of 100 = 20% <p style="text-align: right;">1 mark KU</p>
		<ul style="list-style-type: none"> •¹ 0, 3, 0, £12 •² 0, 2, 1 and 2, 1, 0, £13 •³ 0, 1, 2 and 2, 0, 1, £14 <p style="text-align: right;">3 marks RE</p> <p>note there are other valid methods</p>
		<ul style="list-style-type: none"> •¹ $200 + (12 \times 1200) = \text{£}1400$ •² $1400 - 500 = \text{£}900$ •³ $900 \div 10 = \text{£}90$ <p style="text-align: right;">3 marks RE</p>
		<ul style="list-style-type: none"> •¹ area of triangle <i>or</i> area of square = 36 •² $\frac{1}{2}$ base \times 9 = 36 •³ base = 8 centimetres <p style="text-align: right;">3 marks RE</p>

Total marks: KU 17 RE 17



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Paper 2

Name _____ Reg. Class 4R__

Maths Teacher _____ Maths Class 4m__

Time: 55 minutes

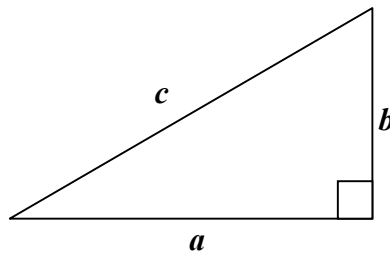
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2		
3a&b		
4a,b&c		
5a&b		
6a&b		
7		
8		
9a&b		
10		
11		
Total p2	/23	/23
Total p1	/17	/17
Total p1+p2	/40	/40
percentage	%	%

FORMULAE LIST

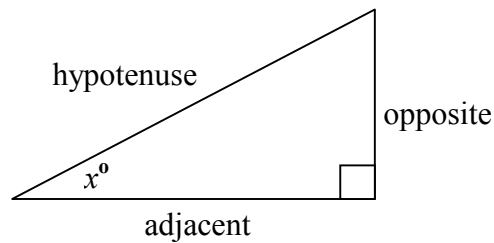
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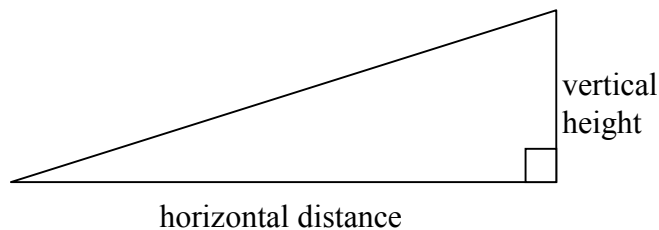
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Trigonometrical ratios
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Gradient:



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1. A take-away cup of coffee in Costella's Coffee Bar costs £2.50.
The diagram below shows the break down of the costs.

Costs in a £2.50 Coffee	
Paper cup, sugar, stirrer	8.5p
Coffee	6.0p
Milk	12.0p
Administration	117p
VAT	37.5p

- (a) Work out the profit on a cup of coffee.

(2)

- (b) Calculate the percentage profit on a cup of coffee.

(2)

[Turn over

3. A castle is opened to the public on 20 occasions throughout the summer.
For each opening the number of visitors is recorded.

48 37 26 42 58 26 30 59 64 62
55 33 45 43 39 66 62 47 49 28

- (a) Display this information in an ordered stem and leaf diagram.

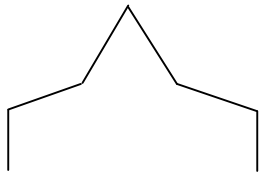
- (b) What is the median number of visitors?

(3)

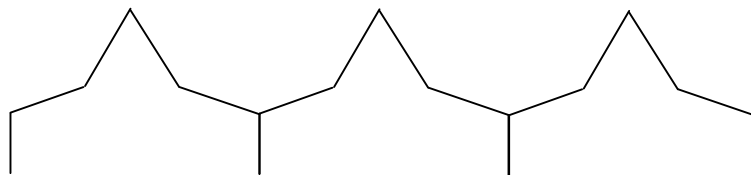
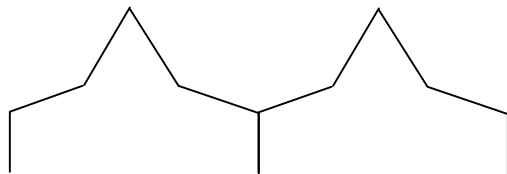
(1)

[Turn over

4. Decorative metal railings are made in panels.



1 panel has 6 railings



(a) Complete the table below.

Number of panels (p)	1	2	3	4		14
Number of railings (r)	6	11				

(2)

(b) Write down a formula for calculating the number of railings when you know the number of panels.

(2)

(c) How many panels can be made from 121 railings?

(2)

[Turn over

5. Val's monthly electricity bill is shown below.

Scotia Electricity			
Meter Readings		Details of charges	£
Present	Previous		
76648	76103	<p>Box A</p> <p><input type="text"/> units at 10.2p per unit</p> <p>Standing charges</p> <p>Total charges</p> <p>VAT at 5%</p> <p>Total bill</p>	<p><input type="text"/></p> <p>10.50</p> <p><input type="text"/></p> <p><input type="text"/></p> <p><input type="text"/></p>

(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)

6. (a) Simplify the expression

$$3(y - 4) + 14$$

(2)

(b) Solve algebraically

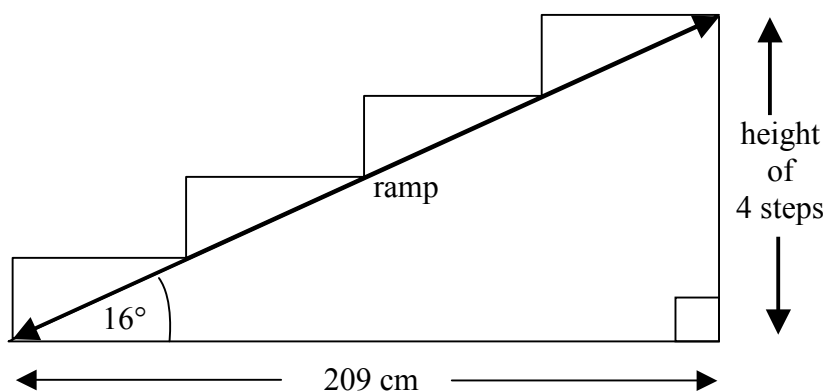
$$8a - 9 = a + 33$$

(3)

[Turn over

RE

7. Four identical steps outside a building are replaced by a ramp.



The angle between the ramp and the ground is 16° .

The ramp is 209 centimetres horizontally from the building.

Calculate the height of **one** of the steps.

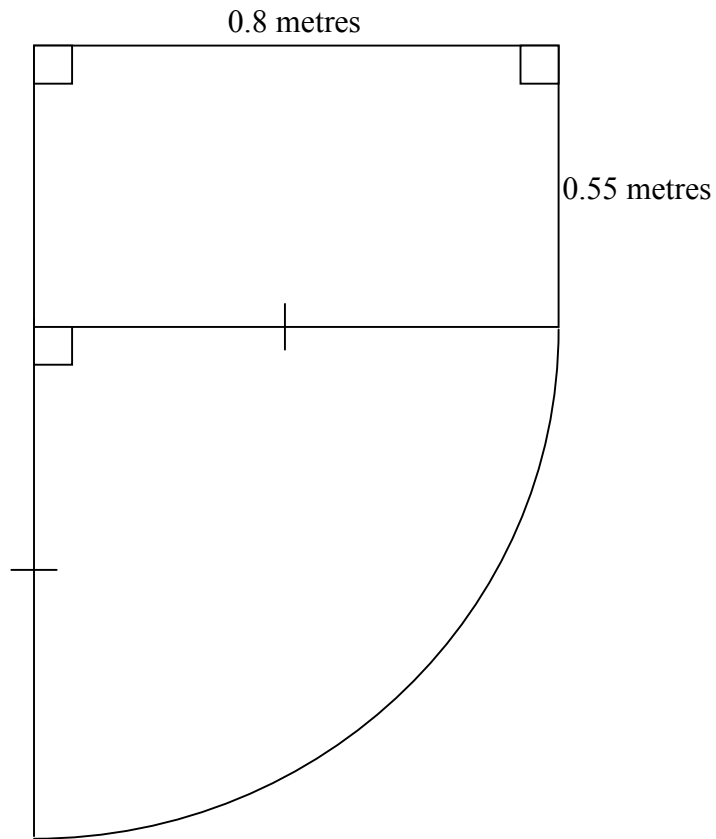
(4)

[Turn over

KU

RE

10. A work surface in a kitchen is in the shape of a rectangle and a quarter circle as shown.

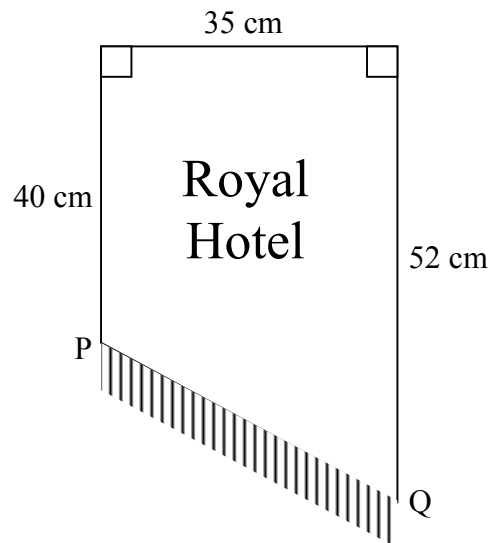


The rectangle measures 0.8 metres by 0.55 metres.
Calculate the total area of the work surface.

(3)

[Turn over

11. The diagram below shows a banner which hangs outside a hotel.



Fringing hangs along the side PQ.

Calculate the length of the fringed side PQ.

(4)

END OF QUESTION PAPER

	Give one mark for each •	Illustrations for awarding each mark
		<ul style="list-style-type: none"> •¹ £1.81 •² £2.50 – 1.81 = 69p 2 marks KU •¹ 69 ÷ 250 •² 69 ÷ 250 × 100 2marks KU
		<ul style="list-style-type: none"> •¹ 350 ÷ 1.255 (or 285 × 1.255) •² £278.88 (or 357.675) •³ £6.12 cheaper in hypermarket (or 7.67 €) 3 marks KU
		<ul style="list-style-type: none"> •¹ 5 5 •² 6 2 4 9 7 1 3 4 5 7 7 9 8 1 2 6 6 9 1 3 5 10 2 8 •³ appropriate title, key and $n = 20$ 3 marks KU •² median = 46 1 mark KU
		<ul style="list-style-type: none"> •¹ 16,21 •² 71 2 marks RE •¹ × 5 •² + 1 2 marks RE •¹ 121 = 5p + 1 •² p = 24 2 marks RE

	Give one mark for each •	Illustrations for awarding each mark

	Give one mark for each •	Illustrations for awarding each mark

Paper 2

Total Marks: KU 23 RE 23

Paper Totals : KU 40 RE 40