

ELGIN ACADEMY

Prelim Examination 2005 / 2006

MATHEMATICS Standard Grade - General Level Paper II

Time Allowed - 55 minutes

First name and initials

Surname

Class

Teacher

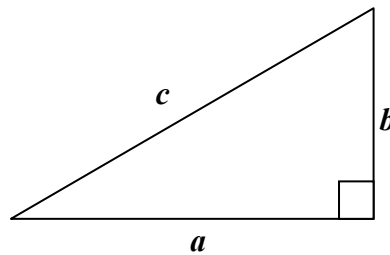
Read Carefully

1. Answer as many questions as you can.
2. Write your answers in the spaces provided .
3. Full credit will be given only where the solution contains appropriate working.
4. **You may use a calculator**

FORMULAE LIST

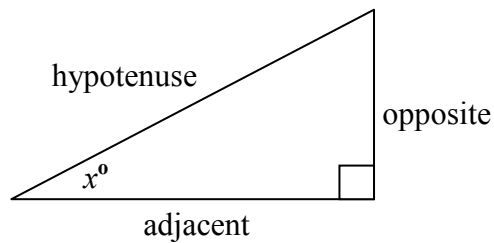
| | |
|------------------------------------|-----------------|
| Circumference of a circle: | $C = \pi d$ |
| Area of a circle: | $A = \pi r^2$ |
| Curved surface area of a cylinder: | $A = 2\pi r h$ |
| Volume of a cylinder: | $V = \pi r^2 h$ |
| Volume of a triangular prism: | $V = Ah$ |

Theorem of Pythagoras:



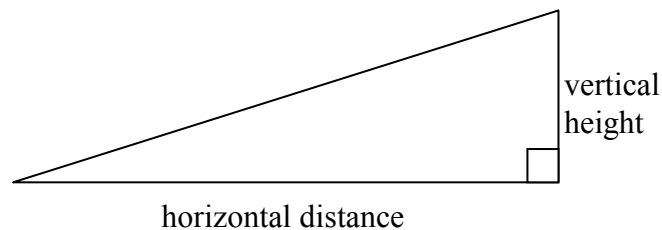
$$a^2 + b^2 = c^2$$

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. Rachael won £4200 in a prize draw. She invested it with the Oldvillage Savings Bank.

Oldvillage Savings Bank



| <i>Amount invested</i> | <i>Annual rate of interest</i> |
|------------------------|--------------------------------|
| Up to £2000 | 4.2% |
| £2001 - £6000 | 4.4% |
| £6001 - £10000 | 5.2% |
| Over £10000 | 6.2% |

Calculate the interest she would receive after 8 months.

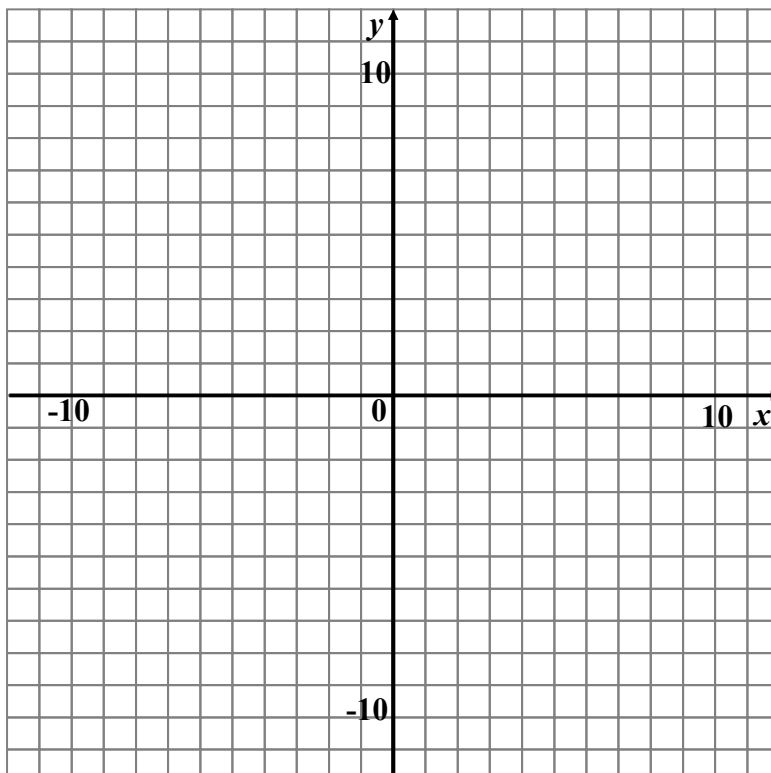
KU RE

(4)

2. (a) Complete the table below for $y = 3x + 1$

| | | | | | |
|-----|----|----|---|---|---|
| x | -3 | -1 | 0 | 1 | 3 |
| y | | | | | |

- (b) Using the table above draw the line of $y = 3x + 1$ on the grid below.



(2)

(2)



3. Tazmin is making a fruit punch.
 She mixes orange juice, pineapple juice and
 lemonade in the ratio 2 : 3 : 5.

Tazmin wishes to make 2 litres of fruit punch.

How many millilitres of orange juice will she need?

(4)

4. The ages of a group of adults travelling to a political rally are shown below.

22 28 18 34 33 31 27 27 19 45
 27 44 34 35 37 30 43 37 34 28

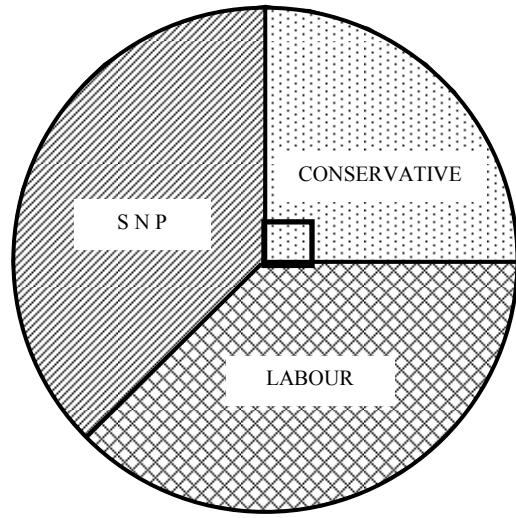
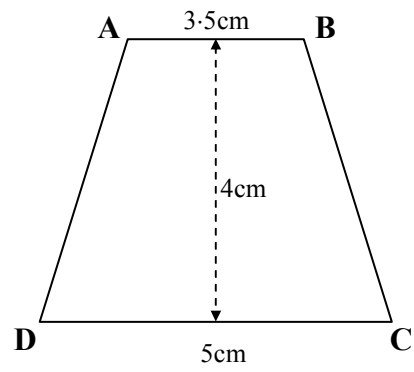
(a) Illustrate this data in an ordered stem and leaf diagram.

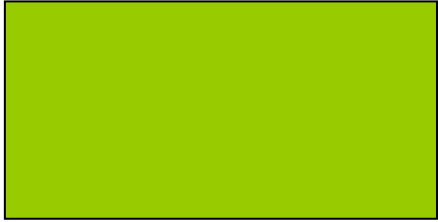

(4)

(b) What is the median age of the group?

(2)

| | | KU | RE |
|----|---|-----|----|
| 5. | (a) The times recorded by a group of 5 snowboarders on a particular run were: 38·31secs 37·49secs 39·25secs 38·54secs 39·06secs Calculate the mean time recorded by the snowboarders. | (3) | |
| | (b) A sixth boarder recorded a time of 37·21 seconds. How did his time compare to the mean time set by the others? | (1) | |
| 6. | The quadrilateral in the diagram is called an Isosceles Trapezium. | | |
| | <ul style="list-style-type: none"> • $AD = BC$ • the height of the trapezium is 4 centimetres • AB is 3·5 centimetres long • CD is 5 centimetres long <p>Calculate the perimeter of the trapezium.</p> | (4) | |
| 7. | During 2005 Maurice Academy students ran their own General Election. 840 students voted in this election and the results are shown below. SNP and Labour gained exactly the same number of votes. | | |
| | (a) Write down the size of the angle in the SNP sector. | (2) | |
| | (b) Calculate the number of students who voted SNP. | (2) | |



| | | KU | RE |
|-----|--|-----|----|
| 10. | A rectangular field has a perimeter of 360 metres. Its length is $(2x - 3)$ metres and its breadth is $(x + 3)$ metres. | | |
| | <div style="text-align: center;"> $(2x - 3)\text{m}$  </div> <p>(a) Using the information given above, construct an equation for the perimeter of this rectangle.</p> <p>(b) By solving the equation in (a), find the breadth of the field.</p> | (2) | |
| | | (2) | |
| 11. | Two swimmers must each complete a distance of 1500 metres. | | |
| |  <p>Swimmer A decides to swim at a constant speed of 75 metres per minute without stopping.</p> <p>Swimmer B decides to swim at a faster speed of 80 metres per minute but rests for 10 seconds after every 150 metres.</p> <p>If the two swimmers set off at the same time, who will finish first and by how much?</p> | (5) | |