

ELGIN ACADEMY

Prelim Examination 2005 / 2006

MATHEMATICS

Standard Grade - General Level
Paper I

Time Allowed - 35 minutes

First name and initials

Surname

Class

Teacher

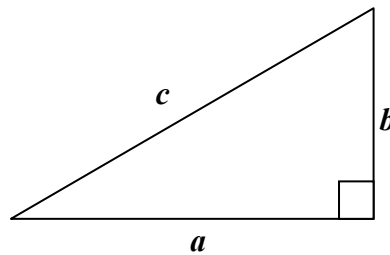
Read Carefully

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 not use a calculator**

FORMULAE LIST

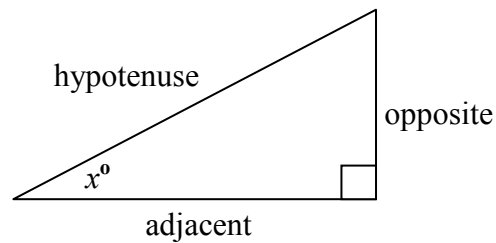
Circumference of a circle:	$C = \pi d$
Area of a circle:	$A = \pi r^2$
Curved surface area of a cylinder:	$A = 2\pi r h$
Volume of a cylinder:	$V = \pi r^2 h$
Volume of a triangular prism:	$V = Ah$

Theorem of Pythagoras:



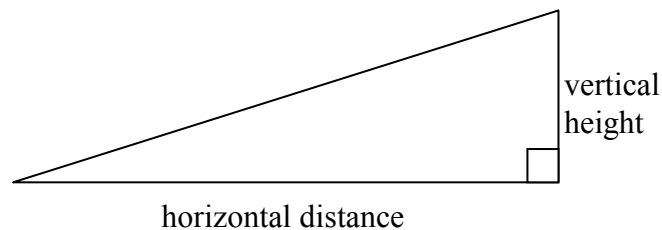
$$a^2 + b^2 = c^2$$

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. Carry out the following calculations.

(a) $409.2 - 265.47$

(1)

(b) $232.2 \div 9$

(1)

(c) 63.8×70

(1)

(d) $\frac{5}{6}$ of £72

(2)

2. The table below shows the average seasonal temperatures in Quebec.

	Spring	Summer	Autumn	Winter
Average temperature	-2°C	19°C	13°C	-13°C

(a) What is the difference between the highest and lowest average temperatures?

(2)

(b) One winter's day the temperature in Quebec was 12 degrees below the average.

What was the temperature that day?

(1)

6. (a) Multiply out the brackets and simplify: $3(2x + 3y) - 6x$.

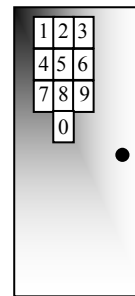
(2)

(b) Solve algebraically the equation: $6x + 4 = 2x + 17$.

(2)

7. The senior school pupils in Maurice Academy have all been assigned a locker to keep their belongings safe. Each locker has a four digit security code. Each code must follow the same rules:

- S4 pupils begin with a 4
- S5 pupils begin with a 5
- S6 pupils begin with a 6
- All four digits must be different.

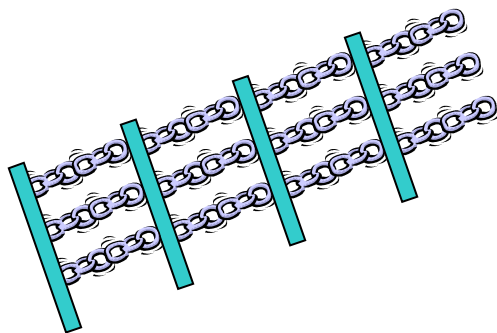


Kim, who is a sixth year pupil, has forgotten her number. She remembers that apart from one digit the rest are prime numbers less than 7. List all six possible codes for Kim's locker.

1 st digit	2 nd digit	3 rd digit	4 th digit

(3)

8. A bar gate bracelet is designed with 3 chain links between 2 solid bars as shown in the diagram below.



- (a) Complete the table below.

Number of bars (b)	2	3	4	5	6		10
Number of chains (c)	3	6	9				

- (b) Find a formula for calculating the number of chain links (c) when you know the number of bars (b).

- (c) How many bars would be in a bracelet which had 63 gold chain links?
Working must be shown.

	KU	RE
(2)		
(2)		
(2)		

END OF QUESTION PAPER