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| Total Marks for Paper 1 | |
| Total Marks for Paper 2 | |
| Total Marks for Intermediate 1 | |

ELGIN ACADEMY

Prelim Examination 2008 / 09

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| <p>MATHEMATICS</p> <p>National Qualifications - Intermediate 1</p> <p>Maths Units 1, 2 and 3</p> <p>Paper 2</p> |
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Time allowed - 55 minutes

Fill in these boxes and read carefully what is printed below

Full name of centre

Town

Forename(s)

Surname

Date of birth

Day Month Year

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Candidate number

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Seat number

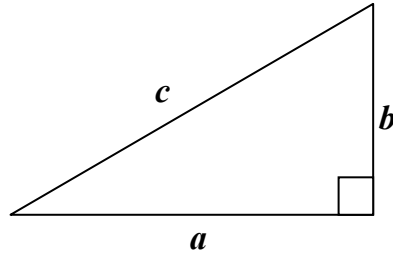
1. You may use a calculator.
2. Write your working in the spaces provided.
3. Full credit will be given only where the solution contains appropriate working.

FORMULAE LIST

Circumference of a circle: $C = \pi d$

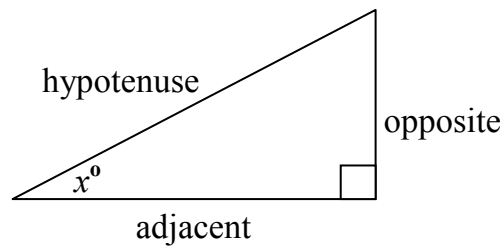
Area of a circle: $A = \pi r^2$

Theorem of Pythagoras:



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

Trigonometric ratios in a right angled triangle:



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

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

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

All questions should be attempted

Marks

1. An intercity bus leaves Glasgow at 2250 and arrives in London at 0935 the next morning.

(a) How long does the journey take?

2

The distance from Glasgow to London is 670km

(b) Calculate the average speed of the bus for the journey giving your answer correct to 1 decimal place.

4

2. The period of the swing of a pendulum is given as $T = 2\sqrt{\frac{l}{g}}$.

Calculate T when $l = 75$ and $g = 10$.

3

3. Solve, algebraically, the equation $12x - 11 = 8x + 5$

3

4. Salina took out some life insurance. The insurance company quoted her a monthly premium of £1.10 per thousand pounds insured.

(a) Calculate the monthly premium if Salina took a policy for £20 500.

2

Her husband also took some insurance but as he was a smoker the premium was £1.24 a month per thousand pounds insured.

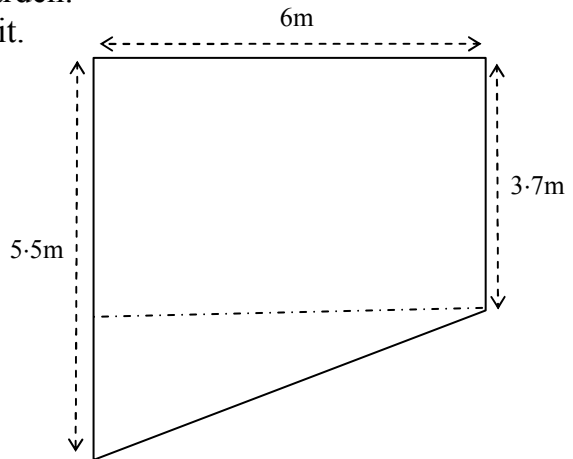
(b) Calculate how much extra her husband would have to pay in a year if his policy was for the same amount as Salina.

3

5. I have just built a new patio area in my garden.
The diagram shows the measurements of it.

I am going to put a low fence round its perimeter.

Calculate the length of fencing that I will require.



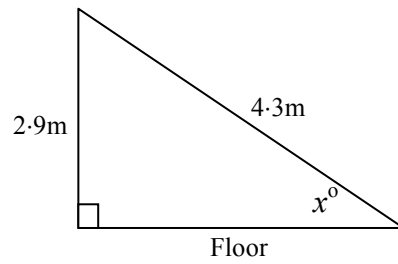
4

6. Last year I bought a new car which cost £8400. During the first year it lost value, I sold the car last week for £4595.

Express my loss as a percentage of what I paid for the car.

4

7. I have just had a new staircase fitted in my house. It rises by a height of 2.9m and is 4.3m long.



Find the angle, x° , which the staircase makes with the floor.

4

8. The capacities (in 1000s) of some of the premier league football stadiums in Scotland are

12 18 18 22 50 61 15 14 18

- (a) Calculate the mean capacity.
- (b) Find the median.
- (c) How does the median compare to the mean?

3

2

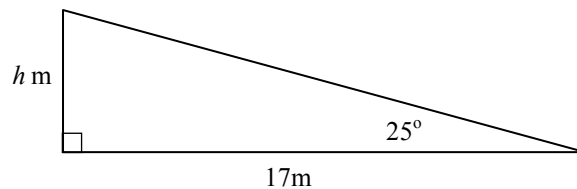
1

9. A ticket for a coach trip from Dundee to Paris costs £56.
 Marteen wants to pay using Euros.(€)

Given that the exchange rate is £1 = €1.25, find the cost of the ticket in Euros.

2

10. A skateboard ramp has been designed to have the dimensions shown in the diagram.



- (a) Calculate the height, h m, of the ramp.

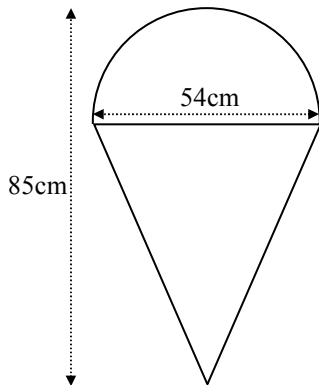
4

Safety regulations state that the angle that the ramp makes with the ground should be a **maximum** of 23° .

- (b) Calculate how much the height of the ramp would have to be lowered for it to be considered safe. Give your answer in centimetres.

4

11. The sign outside the Yummy Ice Cream shop is formed from a triangle and a semi-circle.



The diameter of the semicircle is 54cm and the overall height of the sign is 85cm.

Calculate the area of the sign.

5

END OF QUESTION PAPER