

ELGIN ACADEMY

Prelim Examination 2007 / 08

MATHEMATICS
National Qualifications - Intermediate 1
Maths Units 1, 2 and 3
Paper 2

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

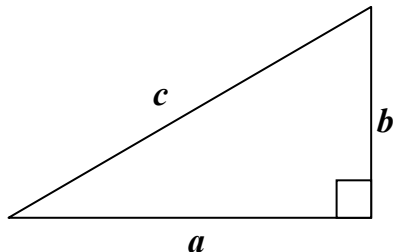
1. You may use a calculator.
2. Write your working in the spaces provided.
3. Full credit will be given only where the solution contains appropriate working.

FORMULAE LIST

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

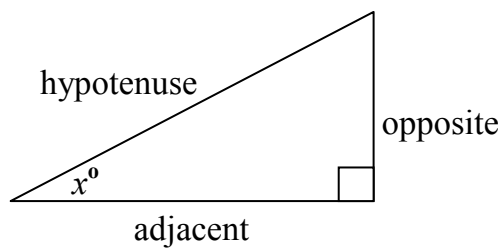
Area of a circle: $A = \pi r^2$

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

1. Jasmine won £4 000 in a competition. She invested it in a building society which paid interest at 4.5% per annum.

After 9 months she withdrew the interest she had gained to buy a new dress which cost £145.

Did she have enough interest to pay for her dress? You should show all your working and give a reason for your answer.

3

2. The data shows the number of league points scored by a top football team over the last 12 seasons.

89 77 83 80 79 75
 83 75 77 91 77 82

Find the median score

3

3. Solve the equation

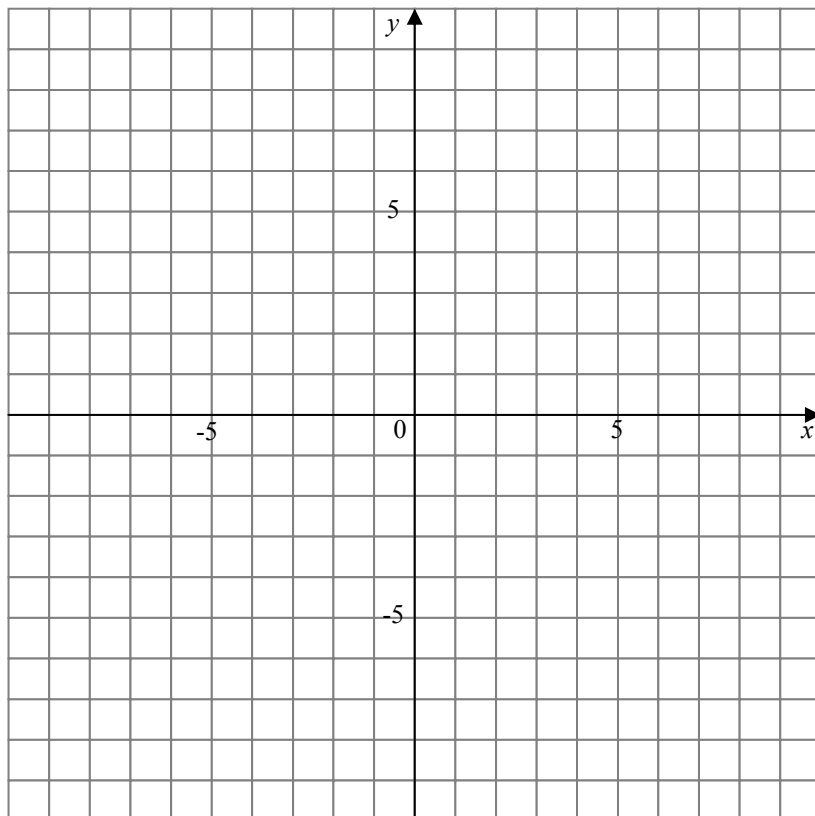
$$20y + 6 = 14y + 24$$

2

4. (a) Complete the table below for $y = 4 - x$.

x	-1	0	2	3
y				

(b) Draw the line $y = 4 - x$ on the grid.



(c) Write down the coordinates of the point where the line crosses the x - axis.

2

2

1

5. The number of times that a group of students had been to the cinema in the last 6 months was recorded and this frequency table drawn.

(a) Complete the table and calculate the mean number of visits.

Number of Visits	Frequency	Number of Visits \times frequency
5	3	15
6	2	12
7	7	
8	10	
9	6	
10	2	
Total		

(b) How does the mean compare to the modal number of visits?

6. 1.5×10^4 vehicles cross Tower Bridge in London every day.

How many vehicles cross the bridge during the month of August? Give your answer in standard form.

3

1

3

7. An insurance company charges these rates, per year, to insure valuables:

Value of Article	Amount per £1000
Up to £5 000	£4.12
Over £5 000	£5.36

Stewart has an expensive designer watch which is valued at £6 000.

How much would he have to pay to insure it?

2

8. Five fish suppers cost £22.25. Pedro has £35.

Does he have enough to buy a fish supper for himself and seven friends?

Give a reason for your answer.

4

9. Bryan was travelling 97.5km by car to board a ferry. He travelled at an average speed of 65km/hr and arrived at the ferry at 1020.

- (a) Assuming that he did not stop during the journey, when did he leave home?

3

After the crossing Bryan had another journey to get to his final destination. During this part of the journey he travelled at 70km/hr for 2 hours 15 minutes.

- (b) How far did he travel during this part of his journey?

3

10. Mrs Mitchell saw a new cooker priced at £1 150 in her local electrical store. She found the same cooker on the internet at a cost of £640.

- (a) How much did Mrs Mitchell save by buying on the internet?

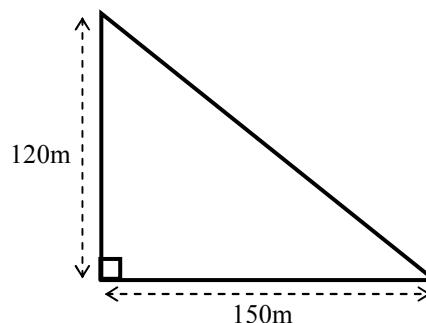
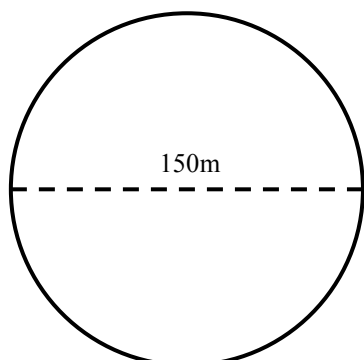
1

- (b) Express this amount as a percentage of the store price, rounding your answer to the nearest percent.

4

11. In a running event the competitors were given a choice of courses.

One course was circular with diameter 150 metres and the other was a right-angled triangular one with dimensions as shown in the diagram below.



Kashef chose the circular course because he thought that it was shorter than the other one.

Was he correct? You must show all your working and give a reason for your answer.

6

12. A formulae used in Electricity is

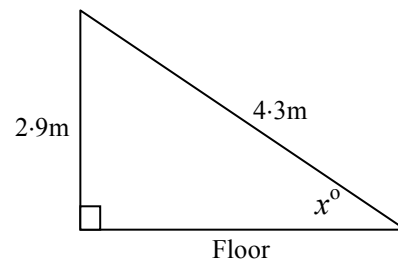
$$I = \sqrt{\frac{P}{R}}$$

where I is the current, P is the power and R is the resistance in a circuit.

Find the current (I) when there is a power of 100 and a resistance of 12.

3

13. 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

END OF QUESTION PAPER