

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA

LEAVING CERTIFICATE EXAMINATION, 2001

MATHEMATICS - FOUNDATION LEVEL

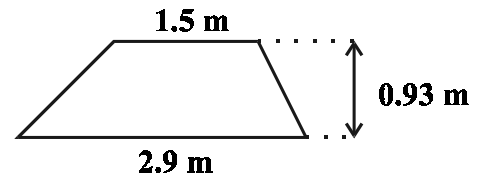
PAPER 2 (300 marks)

MONDAY, 11 JUNE - MORNING, 9.30 - 12.00

Attempt **SIX QUESTIONS** (50 marks each).

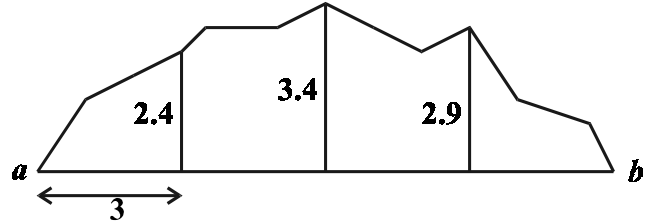
**Marks may be lost if necessary work is not clearly shown.
A sheet of formulae will be given to you by the Superintendent.**

1. (a) The parallel sides of a trapezium measure 1.5 m and 2.9 m. The height is 0.93 m. Calculate the area of the trapezium.



- (b) The diagram shows a garden which is planted with tulip bulbs.

The offsets of lengths 2.4, 3.4 and 2.9 metres are measured at intervals of 3 metres along $[ab]$.



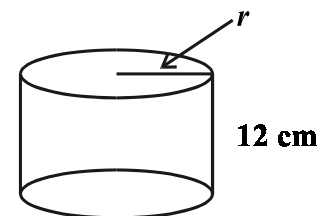
Using Simpson's Rule, calculate the area of the garden.

One tulip bulb is planted for every 0.04 m^2 of garden area. How many tulip bulbs are planted?

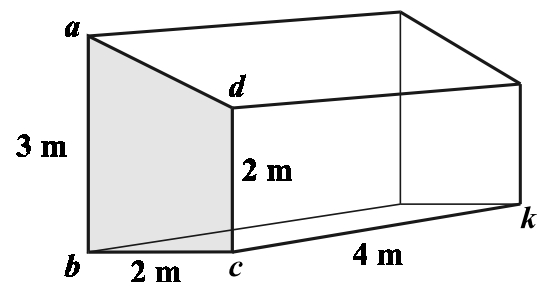
2. (a) The area of a square is 36 cm^2 .
- (i) Find the length of a side of the square.
- (ii) Find the perimeter of the square.

- (b) The volume of a cylinder is 3768 cm^3 . The height of the cylinder is 12 cm.

Calculate the radius, r , of the cylinder, taking $\pi = 3.14$.

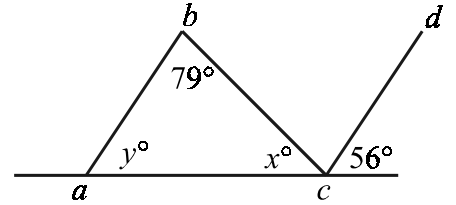


- (c) The diagram shows a prism-shaped building on a farm. One of the end walls is $abcd$. ab and dc are perpendicular to bc . The internal length is $|ck|$. ck is perpendicular to bc . The internal measurements of the building are $|ab| = 3 \text{ m}$, $|bc| = |dc| = 2 \text{ m}$ and $|ck| = 4 \text{ m}$.

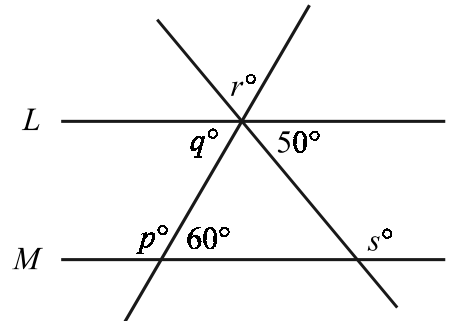


- (i) Find the area of the end wall $abcd$.
- (ii) Find the internal volume of the building.

3. (a) In the diagram ab is parallel to cd .
Find the value of x and the value of y .

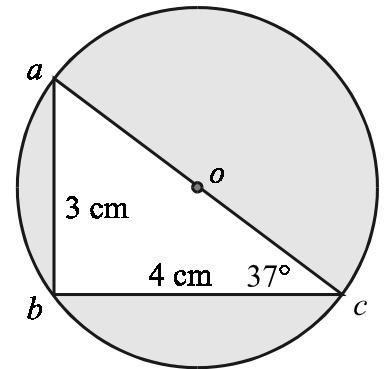


- (b) The lines L and M are parallel.
Find the value of



- (i) p
(ii) q
(iii) r
(iv) s .

- (c) a , b and c are points on a circle with centre o .
[ac] is a diameter of the circle.
 $|ab| = 3$ cm, $|bc| = 4$ cm and $|\angle acb| = 37^\circ$.



- (i) Give a reason why $\angle abc$ is a right angle.
(ii) Find the measure of $\angle bac$.
(iii) Calculate the length of the diameter [ac].
(iv) Calculate the area of the shaded region, that is, area enclosed by the circle – area of triangle abc , taking $\pi = 3.14$.

4. (a) $p(4, -4)$ and $q(-2, 4)$ are two points.
Find the length of [pq].

- (b) $r(3, 6)$ and $s(-1, 4)$ are points.

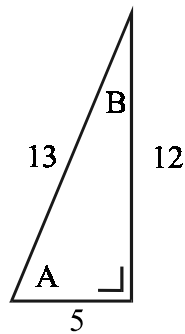
- (i) Find the co-ordinates of the midpoint of [rs].
(ii) Plot the points r and s and the midpoint of [rs] on graph paper.
(iii) Find the slope of rs .

- (c) The line L has equation $5y = 3x + 18$.
The point k has co-ordinates $(-1, 3)$.

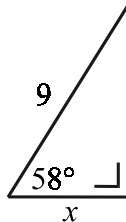
- (i) Show that the point k lies on the line L .
(ii) Find the slope of L .
(iii) Find the equation of the line M which passes through the point k and is perpendicular to L .

5. (a) Given that $\cos A = \frac{5}{13}$, write down, in each case as a fraction, the value of

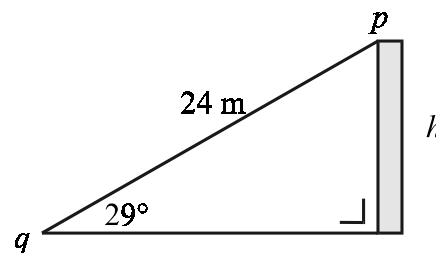
- (i) $\sin A$
(ii) $\tan A$
(iii) $\cos B$.



- (b) Calculate the value of x , correct to one place of decimals.



- (c) The distance of the point p , the top of a house, from the point q on the level ground, is 24 m. The angle of elevation of the point p from the point q is 29° . Calculate the height h of the house, correct to two places of decimals.



6. (a) A factory produces different types of cars as follows:

the colour can be black or silver or blue
the model can be Saloon or Estate or Hatchback
the style can be Standard or Deluxe.

How many different types of cars does the factory produce ?

- (b) A fair coin is tossed once and a fair die is thrown once. List the twelve possible outcomes. For example, two of the possible outcomes are:
head, one;
head, two.

What is the probability of

- (i) a head and a four
(ii) a head and an even number
(iii) a tail and a number greater than two ?

- (c) The following table shows the number of boys and girls from a group of 50 pupils who wear glasses or who do not wear glasses.

Pupils	Wear glasses	Do not wear glasses
Boys	5	20
Girls	4	21

A pupil is selected at random from the group. What is the probability that this pupil is

- (i) a girl
(ii) a boy who wears glasses
(iii) a boy who wears glasses or a girl who does **not** wear glasses?

7. (a) The mean of the five numbers 3, 4, 9, x , 14 is 8.

Find the value of x .

- (b) 50 students put money into a school savings scheme for a school trip. The results are as follows:

Amount saved in IR£	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Number of students	5	12	18	8	4	3

Note: 10 – 20 means IR£10 or more but less than IR£20, etc.

Copy and complete the cumulative frequency table below :

Amount saved in IR£	< 10	< 20	< 30	< 40	< 50	< 60
Number of students	5					50

Draw the cumulative frequency curve.
Put the number of students on the vertical axis.

Use your curve to estimate

- (i) the median amount of money saved
- (ii) the number of students who saved IR£27 or more.

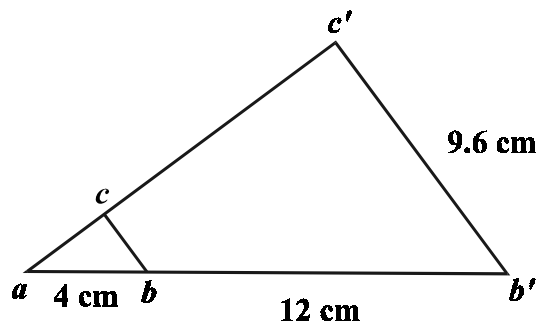
- (c) Find the mean and standard deviation of the numbers

5, 15, 25, 35

correct to two places of decimals.

8. (a) Draw a line segment $[pq]$ of length 8 cm.
Construct a perpendicular to $[pq]$ at the point p .

- (b) The triangle $a b'c'$ is an enlargement of the triangle abc .
The centre of the enlargement is a .
 $|ab| = 4$ cm, $|bb'| = 12$ cm and $|b'c'| = 9.6$ cm.



- (i) Calculate the scale factor of the enlargement.
- (ii) Find the length of $[bc]$.
- (iii) The area of triangle abc is 3.84 cm².
Find the area of triangle $a b'c'$.
- (c) Construct a parallelogram $pqrs$ so that $|pq| = 7$ cm, $|qr| = 5$ cm
and $|\angle pqr| = 120^\circ$.