1. (a) (i) A trader bought an article for Rs 500 and marked its selling price as Rs 600. Find the percentage profit he expected. On selling the above article, if the trader allowed a discount of 8% on the marked price, at what price did he sell it?.

(ii) Find the value of $(81)^{\frac{3}{4}}$

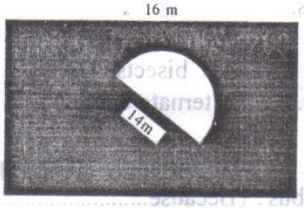
(b) A semicircular flower bed is constructed in a rectangular block of land as shown in the diagram. The remaining area is covered with grass.

(i) Find the lenght of a single strand of barbed wire needed in fencing off the block of land.

(ii) What is the area of the semicircular flower bed?

(Take $\pi = 22/7$)

(iii) Find the area of the portion coverded with grass.



(c) (i) Simplfiy : $(2x+3)(x-5)$

(ii) Solve : $4x+y=7$
$2x+y=4$

(d) In the given diagram AB and DC are two parallel chords of a circle whose centre is O. The lines AC and BD intersect at P. If $A\hat{B}D = 42^0$, **giving reasons,**

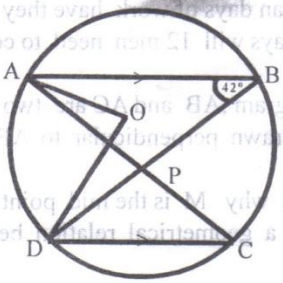
(i) find the magnitude of $A\hat{C}D$.

(ii) find the magnitude of $B\hat{A}C$.

(iii) find the magnitude of $A\hat{P}D$.

(iv) find the magnitude of $A\hat{O}D$.

(v) Suggest an appropriate name for the quadrilateral AOPD.



(e) (i) Let P be the set of multiples of 4 between 1 and 25. Write the set P in two other forms.

(ii) It is given that the universal set $= \varepsilon \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ and two of its subsets are $A = \{3, 6, 9\}$ and $B = \{2, 4, 6, 8\}$ Represent this information in a Venn diagram.

(iii) If an element is taken at random from the universal set mentioned in part (ii) above, find the probability that it will be an element of B'

(f) Sunil collected the following information relevant to the number of 1 kg packets of sugar sold during a day in his grocery.

Number of packets sold in a day	10	11	12	13	14	15
Number of days	3	3	5	7	8	4

6. (a) A study was done to assess the progress of a campaign for the prevention of an epidemic .The frequency distribution shown below gives the information collected from a hospital in a certain area about the relevant patients admitted in 42 days.

(Note that the class intervals are selected first for 6 days then for 12 days and thereafter for 6 days each)

Class interval (days)	0 - 6	6 - 18	18 - 24	24 - 30	30 - 36	36 - 42
Frequency (Number of patiant)	6	20	8	6	3	1

(i) Draw a histogram to represent this distribution. (Drawing on a graph paper is not necessary.)
(ii) Using the histogram, draw the relevant frequency polygon on the same chart. .
(iii) Conclude, giving reasons, whether the campaign for the prevention of the epidemic is successful.

(b) In a campaign for the prevention of a disease funds spent for the first month was Rs 10 000. The amount spent for each month thereafter was twice the amount spent in the previous month.

(i) Write the amount spent in the first month,second month and third month respectively.
(ii) What type of a progression is represented by these numbers?
(iii) Hence, find the total amount spent during the first six months.

7. An incomplete table of values of **x** and **y** for drawing the graph of the function $Y = x^2 - 9$

X	-4	-3	-2	-1	0	1	2	3	4
Y	7	.....	-5	-8	-9	.....	-5	0	7

(a) (i) Copy this table onto your answer script and fill in the blanks.

(ii) Taking ten small divisions along the x- axis to represent **one unit** and ten small divisions along the y-axis to represent two units as scale, draw the graph of the above function on the garaph papr provided.

(b) Using your graph find,

(i) the minimum value of the function. (ii) the roots of the equation $X^2 - 9 = 0$

(c) Write the quadratic function of the graph which passes through the two points of intersection of the above graph and the x-axis and having a maximum value of 9.

(d) Draw the straight line passing through the points , (0, -9) and (3, 0) on your graph paper itself and .
(i) find the gradient of the straight line (ii) find the intercept of the straight line
(iii) Write down the equation of the straight line.

8. The diagram shows a compund solid made by joining a solid right circuler cone of base radius r and height twice the radius with a solid hemisphere whose diameter of the base of the cone .

(a) In terms of ***r,***
(i) Write down the diameter of the hemisphere
(ii) find the height of the compound solid.
(b) (i) Write down the expressions for the volume of the cone and that of the hemisphere in terms of π and r.
(ii) What is the relation between the volume of the above cone and that of the hemisphere ?
(iii) Obtain an expression in its simplest form for the volume of the compound solid in terms of π and r.
(vi) Taking $r = 8.5$cm, $\pi = 3.14$ and using logarithmic tables , find the volume of the compound solid.
(c) **Without calculating** write the radius of a solid sphere whose volume is equal to the volume of this compound solid.