

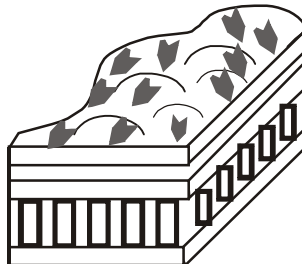
Section -A

Fence it off

We often use mathematics to make the best possible about resource allocation. In the problems which follow, the farmer has to decide how to use a limited amount of fencing. Builders, planners and engineers often have similar problems to solve.

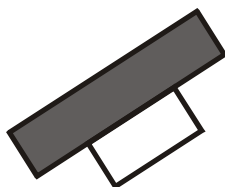
1. A farmer has exactly 200 metres of fencing with which to construct a rectangular pen for her sheep. In order to enclose as much grass as possible, the farmer tries out different dimensions and finds the area in each case.

Dimensions (m)	Area (m ²)
5 and 95	475
10 and 90	900
15 and 85	1275
-----	-----



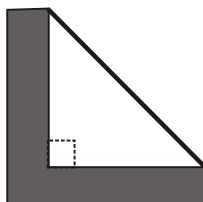
Complete the table, and find the dimensions which give the maximum area.

2. The farmer again wants to form a rectangular pen, but this time has a long straight wall which can form one of the sides.



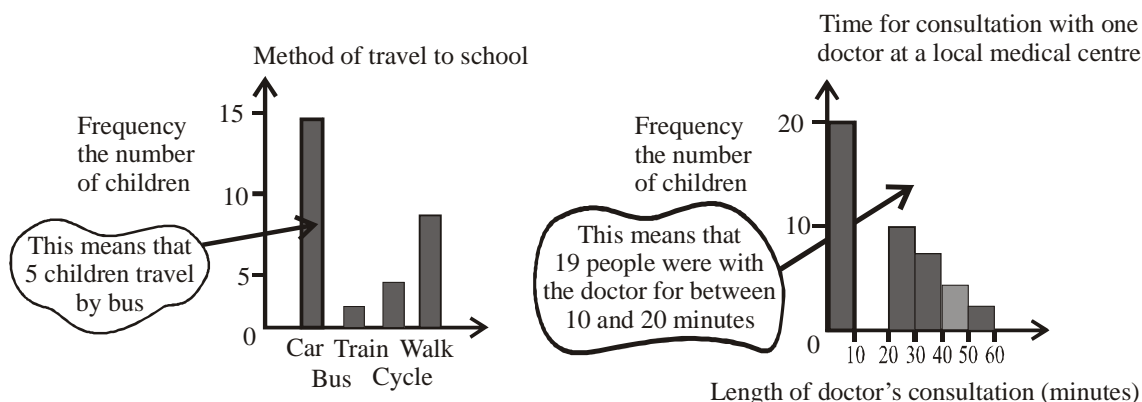
With her 200m of fencing, what is the largest area of grass that she can enclose?

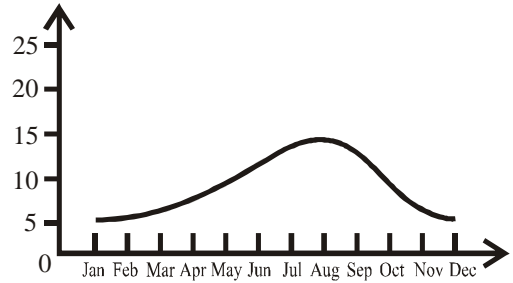
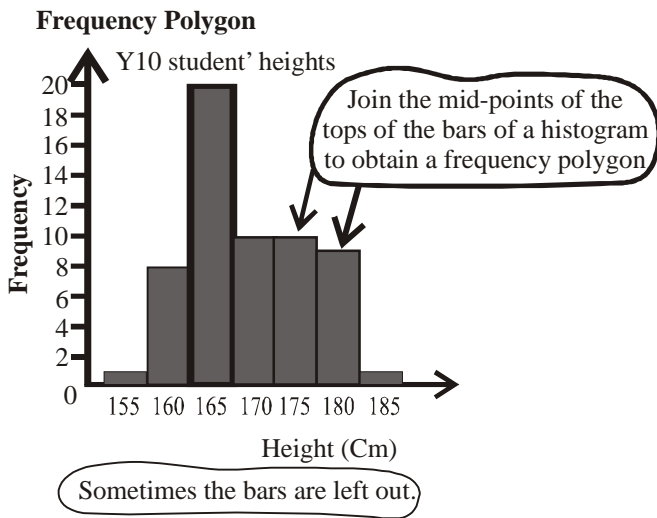
3. The farmer now wishes to use her fencing to cut off a corner of a field, as in the diagram. If the length of fencing is again 200m, what is the maximum area that can be enclosed?



4. Can you generalise the results of the three questions above to a fencing length of x metres?

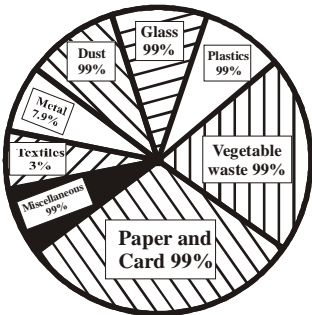
Section-B





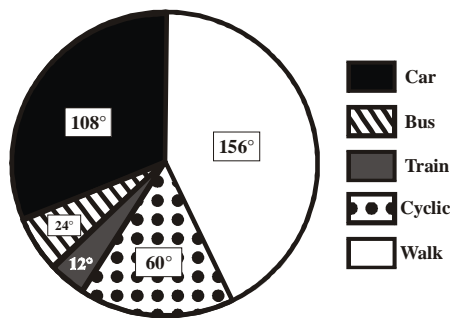
Percentage Pie Charts

Those are easy to draw if you have a pie chart template (sold with many geometry kills)



Type of Transport	Number of students	Site of angle in pie chart
Car	13	$13 \times 12^\circ = 156^\circ$
Bus	5	$5 \times 12^\circ = 60^\circ$
Train	1	$1 \times 12^\circ = 12^\circ$
Cycle	2	$2 \times 12^\circ = 24^\circ$
Walk	9	$9 \times 12^\circ = 108^\circ$
Total	30	360°

There are 30 students altogether. So, each student is represented by $360^\circ \div 12^\circ$

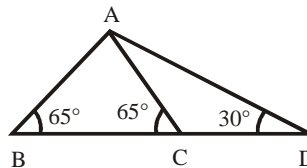


Section C [Mathematics]

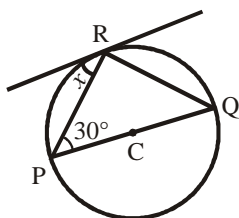
1. $\overline{0.585}$ is equal to
- (a) $\frac{585}{99}$ (b) $\frac{585}{999}$ (c) $\frac{999}{585}$ (d) None of these

2. Which of the following point lie on the x-axis?
 (a) (0, 5) (b) (-3, 0) (c) (3, -3) (d) (2, -2)

3. In the adjoining figure, the measure of $\angle BAC$

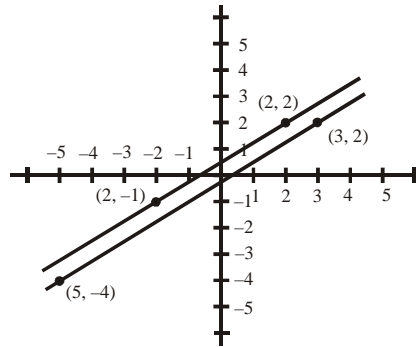


- (a) 65° (b) 50° (c) 55° (d) 60°
4. Two opposite angles of a cyclic quadrilateral are $4x^\circ$ and $5x^\circ$, then the value of x° is equal to
 (a) 0° (b) 20° (c) 30° (d) 40°
5. A rectangle is 8cm longer than its width. A square of side x cm has been cut out of it. If x cm is half the width of the rectangle, then the remaining area is
 (a) $(2x^2 + 8x)$ cm² (b) $(2x^2 + 16x)$ cm² (c) $(3x^2 + 8x)$ cm² (d) $(3x^2 + 16x)$ cm²
6. Two angles are called adjacent if
 (a) They lie in the same plane and have a common vertex.
 (b) They have a ray in common.
 (c) The intersection of their interiors is empty.
 (d) All the above
7. Choose the rational number which does not lie between rational numbers $-\frac{2}{5}$ and $-\frac{1}{5}$.
 (a) $-\frac{1}{4}$ (b) $-\frac{3}{10}$ (c) $\frac{3}{10}$ (d) $-\frac{7}{20}$
8. Three metal cubes of volume 125cm^3 , 64cm^3 and 27cm^3 are melted to form a new cube, then the edge of the new cube formed is
 (a) 12cm (b) 6cm (c) 20cm (d) 10cm
9. A bag contains 5 white, 4 red and 3 black balls. If a ball is drawn from the beg then the probability of ball that it is not black is:
 (a) $\frac{6}{7}$ (b) $\frac{5}{6}$ (c) $\frac{3}{4}$ (d) $\frac{1}{2}$
10. In the given figure (PQ is diameter), x is equal to



- (a) 30° (b) 45° (c) 70° (d) 60°
11. The remainder when $x^3 - 6x^2 + 11x - 6$ is divided by $x + 2$ is
 (a) -60 (b) -39 (c) 31 (d) 45

12. The equation representig in the adjoining graph are



- (a) $7x + 2y = 11; y - 2x = 3$ (b) $2x + 7y = 11; 5x + \frac{35}{2}y = 25$
 (c) $3x - 7y = 10; 8y - 6x = 4$ (d) $3x - 4y = 1; 8y - 6x = 4$

13. The area of a right angled triangle is 20cm^2 and one of the sides containing the right triangle is 4cm . Then the altitude on the hypotenuse is

- (a) 8cm (b) 10cm (c) $\frac{10}{\sqrt{41}}\text{cm}$ (d) $\frac{20}{\sqrt{29}}\text{cm}$

14. The cost of plastering the four walls of room is Rs.25. The cost of plastering a room twice in length, breadth and height will be

- (a) Rs. 50 (b) Rs. 75 (c) Rs. 100 (d) Rs. 200

15. ABCD is a cyclic quadrilateral in which AD is the diameter and $\angle BCD = 125^\circ$, then the measure of $\angle ADB$ is

- (a) 35° (b) 45° (c) 55° (d) 65°

Section -D - [Mental Ability]

16. A and B are brother. C and D are sisters. A's son is D's brother. How is B related to C?

- (a) Father (b) Brother (c) Grandfather (d) Uncle

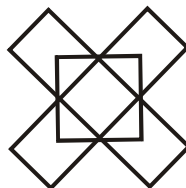
17. I went 15m to the North, then I turned South and covered 5m and then east and covered 10m. In which direction am I from my house?

- (a) North-East (b) South-East (c) East (d) West

18. Which one is like grandfather, father and brother

- (a) Baby (b) Son (c) Father-in-law (d) Son-in-law

19. How many rectangles does the following figure have?



- (a) 10 (b) 12 (c) 13 (d) 14

20. What is related with 'Homi Bhabha' as 'Dharma' is related to 'Yudhisthira'?

- (a) Horticulture (b) Adventure (c) Atomic Energy (d) Antartica