1. Find six rational numbers between 3 and 4.

2. Show that 3.142678 is a rational number .In other words express 3.142678 in the form of $\dfrac{p}{q}$, where p and q are integers and q $\neq 0$.

3. Verify whether 2 and 0 are zeroes of the polynomial $x^2 - 2$

4. Find the value of the polynomial $5x - 4x^2 + 3$ at
    (i) $x = 0$ (ii) $x = -1$ (iii) $x = 2$

5. Plot the points (x, y) given in the following table on the plane, choosing suitable units of distance on the axes

x	−2	−1	0	1	3
y	8	7	−1.25	3	−1

6. Find the value of the polynomial $5x - 4x^2 + 3$ at
    (i) $x = 0$ (ii) $x = -1$ (iii) $x = 2$

7. Write each of the following as an equation in two variables:
    (i) $x = -5$ (ii) $y = 2$ (iii) $2x = 3$ (iv) $5y = 2$

8. Given the point (1, 2), find the equation of a line on which it lies. How many such equations are there

10. If A, B and C are three points on a line, and B lies between A and C then prove that AB + BC = AC.

Fig. 5.7

11. Does Euclid's fifth postulate imply the existence of parallel lines? Explain.

12. In Fig. 6.30, if AB || CD, EF $\perp$ CD and $\angle$ GED = 126°, find $\angle$ AGE, $\angle$ GEF and $\angle$ FGE.

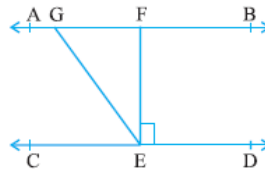Fig. 6.30

13. AB is a line segment and line l is its perpendicular bisector. If a point P lies on l, show that P is equidistant from A and B.

14. E and F are respectively the mid-points of equal sides AB and AC of $\triangle$ ABC (see Fig. 7.28). Show that BF = CE.
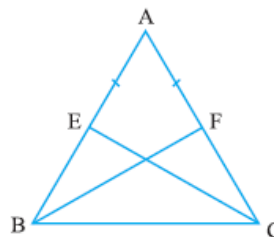

Fig. 7.28

15. The angles of quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.

16. Show that a median of a triangle divides it into two triangles of equal areas.

17 In Fig.9.29, ar (DRC) = ar (DPC) and ar (BDP) = ar (ARC). Show that both the quadrilaterals ABCD and DCPR are trapeziums
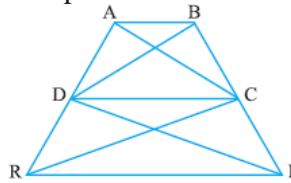

Fig. 9.29

18. Prove that the quadrilateral formed (if possible) by the internal angle bisectors of any quadrilateral is cyclic.

19. Two circles intersect at two points A and B. AD and AC are diameters to the two circles (see Fig.10.34). Prove that B lies on the line segment DC.
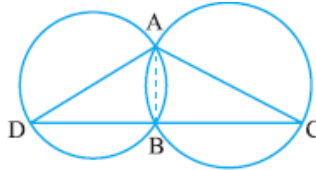

Fig. 10.34

20. Construct the following angles and verify by measuring them by a protractor:
    (i) 75°   (ii) 105°   (iii) 135°

21. Sanya has a piece of land which is in the shape of a rhombus (see Fig. 12.13). She wants her one daughter and one son to work on the land and produce different crops. She divided the land in two equal parts. If the perimeter of the land is 400 m and one of the diagonals is 160 m, how much area each of them will get for their crops?
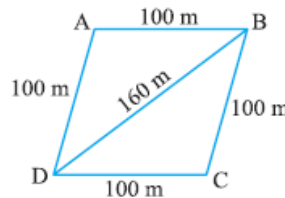

Fig. 12.13

22. The paint in a certain container is sufficient to paint an area equal to 9.375 m². How many bricks of dimensions 22.5 cm × 10 cm × 7.5 cm can be painted out of this container?

23. Give five examples of data that you can collect from your day-to-day life.

24. Consider the frequency distribution table (Table 14.3, Example 4, Chapter 14), which gives the weights of 38 students of a class. (i) Find the probability that the weight of a student in the class lies in the interval 46-50 kg.
 (ii) Give two events in this context, one having probability 0 and the other having probability 1.

25.1500 families with 2 children were selected randomly, and the following data were recorded:

Number of girls in a family	2	1	0
Number of families	475	814	211