

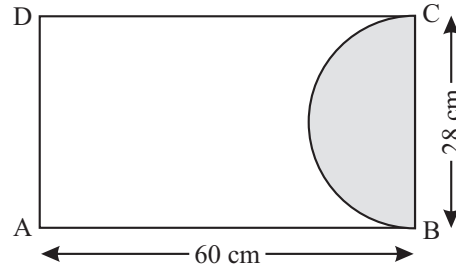
16. Area of rectangle $ABCD$
 $= l \times b = 60 \times 28$
 $= 1680 \text{ cm}^2$

Diameter of semi-circle = 28 cm

$\therefore r = \frac{d}{2} = \frac{28}{2} = 14 \text{ cm}$

Area of semi-circle = $\frac{1}{2} \pi r^2$
 $= \frac{1}{2} \times \frac{22}{7} \times (14)^2$
 $= \frac{11}{7} \times 14 \times 14^2 = 11 \times 14 \times 2 = 308 \text{ m}^2$

\therefore Area of the plot without grass (i.e. remaining portion)
 $= \text{Area of rectangle } ABCD - \text{Area of semicircle}$
 $= 1680 - 308 = 1372 \text{ cm}^2$



MCQs

- 1.(b) 2. (b) 3. (c) 4. (a) 5. (b) 6. (b) 7. (c) 8. (b)

16. Data Handling

Exercise 16.1

1. First 8 prime numbers are 2, 3, 5, 7, 11, 13, 17 and 19.

Then Mean = $\frac{\text{Sum of observations}}{\text{Number of observations}}$
 $= \frac{2 + 3 + 5 + 7 + 11 + 13 + 17 + 19}{8}$
 $= \frac{77}{8} = 9.625$

2. Mean = $\frac{\text{Sum of observations}}{\text{Number of observations}}$
 $= \frac{8 + 6 + 10 + 12 + 1 + 3 + 4 + 4}{8} = \frac{48}{8} = 6$

3. First ten odd numbers are 1, 3, 5, 7, 9, 11, 13, 15, 17, 19

Then Mean = $\frac{\text{Sum of observations}}{\text{Number of observations}}$
 $= \frac{1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19}{10}$
 $= \frac{100}{10} = 10$

4. (a) Mean = $\frac{10 + 32 + 14 + 42 + 20 + 22 + 38 + 34 + 27 + 16 + 9 + 18 + 17 + 25 + 36}{15}$
 $= \frac{360}{15} = 24$



$$\begin{aligned} \text{(b) Mean} &= \frac{3.8 + 4.2 + 3.3 + 3.7 + 4 + 3.7 + 4.6 + 3.9 + 4.4 + 4.4}{10} \\ &= \frac{40}{10} = 4 \end{aligned}$$

5. Mean = 8 Number of observations = 6
then Mean = $\frac{\text{Sum of observations}}{\text{Number of observations}}$

$$\frac{8}{1} = \frac{4 + 7 + a + 8 + 10 + 12}{6}$$

$$8 \times 6 = 31 + a \quad (\text{cross multiplication})$$

$$48 = 31 + a$$

$$a = 48 - 31 = 17$$

$$a = 17$$

6. Mean = 7 Number of observation = 5
then, Mean = $\frac{\text{Sum of observations}}{\text{Number of observations}}$

$$\frac{7}{1} = \frac{6 + 8 + 5 + x + 4}{5}$$

$$7 \times 5 = 23 + x \quad (\text{cross multiplication})$$

$$x = 35 - 23 = 12$$

$$x = 12$$

7. Mean = $\frac{\text{Sum of observations}}{\text{Number of observations}}$

$$\frac{2 + 1 + 2 + 3 + 4 + 7 + 3 + 7 + 3 + 1 + 3 + 6 + 4 + 2 + 4 + 5 + 2 + 3 + 3 + 3 + 3 + 3 + 4 + 2 + 2 + 5 + 4 + 1 + 1 + 3}{30}$$

$$= \frac{96}{30} = 3.2 \text{ A}$$

Mean = 3.2

8. Average (Mean) = $\frac{\text{Sum of scores}}{\text{Number of batsman}}$

$$= \frac{15 + 20 + 3 + 0 + 50 + 16 + 35 + 61 + 20 + 15 + 18}{11}$$

$$= \frac{243}{11}$$

$$= 22.09091$$

9. Mean of 75 number = 35
If each number is multiplied by 4, then
the new mean became 4 times greater than the previous mean
So, new mean = $35 \times 4 = 140$

10. Mean height of girls = $\frac{52 + 55 + 148 + 5 + 1 + 47 + 46 + 47 + 46 + 50 + 51}{10}$

$$= \frac{493}{10}$$

$$= 49.3 \text{ (inches)}$$



If 3 inches are added to each of the height
then the new mean height

$$\begin{aligned} & (52+3) + (55+3) + (48+3) + (51+3) + (47+3) + (46+3) + (47+3) \\ & + (46+3) + (50+3) + (51+3) \\ & = \frac{55 + 58 + 51 + 54 + 50 + 49 + 50 + 49 + 53 + 54}{10} \\ & = \frac{523}{10} = 52.3 \text{ (inch)} \end{aligned}$$

New mean height = 52.3 inches

11. Mean = 27 Number of observation = 5
Suppose sum of observation = x

$$\therefore \text{Mean} = \frac{\text{Sum of observations}}{\text{Number of observations}}$$

$$\frac{27}{1} \swarrow \nearrow \frac{x}{5}$$

$$x = 27 \times 5 = 135$$

after adding one more number.

New mean = 25 Number of observation = $5 + 1 = 6$

Suppose the number = y

$$\text{then Mean} = \frac{135 + y}{6}$$

$$\frac{25}{1} \swarrow \nearrow \frac{135 + y}{6}$$

$$135 + y = 150$$

$$y = 150 - 135 = 15$$

So, the number is 15.

12. (Mean) Average runs scored by $A = \frac{\text{Sum of scores}}{\text{Number of innings}}$

$$= \frac{15 + 25 + 10 + 32 + 35 + 65}{6} = \frac{172}{6} = 28.66$$

$$\begin{aligned} \text{(Mean) Average runs scored by } B &= \frac{24 + 36 + 12 + 14 + 18 + 30}{6} \\ &= \frac{134}{6} = 22.33 \end{aligned}$$

$$\text{(Mean) Average runs scored by } C = \frac{18 + 45 + 37 + 3 + 40 + 32}{6} = \frac{175}{6} = 29.16$$

Clearly we can see $29.16 > 28.66 > 22.37$

So, C is the best batsman.

13. Mean height of 15 student = 154 cm.

$$\therefore \text{sum of all the observations} = 154 \times 15 = 2310$$

In the above observation 175 cm was misread as 145.

$$\begin{aligned} \text{Therefore, correct sum of all the observations} &= 2310 - 145 + 175 \\ &= 2485 - 145 = 2340 \end{aligned}$$

$$\text{Hence correct mean} = \frac{2340}{15} = 156$$

14.

Weight (Kg) x	Frequency (f)	$f \times x$
50	8	400
52	10	520
54	15	810
56	20	1120
58	8	464
60	6	360
62	2	124
64	1	64
Total (Σf) = 70		$\Sigma fx = 3862$

Hence $\text{mean} = \frac{\Sigma fx}{\Sigma f} = \frac{3862}{70} = 55.17143 \text{ kg.}$

15.

Height (inches) (x)	Frequency f	$f \times x$
60	2	120
61	3	183
62	5	310
63	8	504
64	7	448
$\Sigma f = 25$		$\Sigma fx = 1565$

Hence, $\text{mean} = \frac{\Sigma fx}{\Sigma f} = \frac{1565}{25} = 62.6 \text{ inches.}$

16.

Maks (x)	Frequency (f)	$f \times x$
0	1	0
1	1	1
2	3	6
3	6	18
4	8	32
5	8	40
6	6	36
7	4	28
8	7	56
9	4	36
10	2	20
$\Sigma f = 50$		$\Sigma fx = 273$

Hence, $\text{Mean} = \frac{\Sigma fx}{\Sigma f} = \frac{273}{50} = 5.46$

17. (a) highest value of rainfall = 25.6 mm
lowest value of rainfall = 0.0 mm.
(b) range = highest value – lowest value
= (25.6 – 0.0) mm = 25.6 mm.

18.	Weekly wages (in ₹) (x)	Frequency (f)
	150	3
	200	5
	250	4
	300	2
	350	1
		$\Sigma f = 15$

- (a) range in wages (in ₹) = highest value – lowest value
 $= 350 - 150 = ₹ 200$
 (b) 1 worker gets ₹ 350
 (c) 3 workers get the minimum wages i.e. ₹ 150.

19.	Number of member (n)	Frequency (f)
	2	1
	3	1
	5	4
	6	6
	7	5
	8	3
		$\Sigma f = 20$

- (a) smallest family size = 2
 number of families are smallest size = 1
 (b) most common family size is 6.

20.	Marks	9	12	17	18	19	20	25
	Frequency	6	4	4	2	4	3	2

- (a) range of marks = highest marks – lowest marks
 $= 25 - 9 = 16$
 (b) Highest marks = 25
 (c) 9 marks is occurring frequently.

Exercise 16.2

1. Hence the items in ascending order are as follows :

32, 33, 34, 35, 35, 38, 42

The number of items = 7 (odd)

$$\therefore \text{Median} = \left(\frac{n+1}{2} \right)^{\text{th}} = \frac{7+1}{2} = \frac{8}{2} = 4^{\text{th}}$$

Hence median = 35.

Here the number 35 has been repeated 2 time (the most number).

Hence, the mode = 35.

2. Here the items in ascending order are as follows :

17, 18, 24, 25, 35, 36, 46

Number of items = 7 (odd)

$$\therefore \text{Median} = \left(\frac{n+1}{2}\right)^{\text{th}} \text{ item} = \frac{7+1}{2} = \frac{8}{2} = 4^{\text{th}} \text{ item}$$

Hence, median = 25.

3. Ascending order of items : 12, 12, 13, 13, 14, 14, 16, 19
Number of items = 9 (odd)

$$\therefore \text{Median} = \left(\frac{n+1}{2}\right)^{\text{th}} \text{ item}$$

Hence, median = 14.

Here, the number 14 has been repeated 3 times

\therefore Mode is 14.

4. Here the items in the ascending order are as follows :
6, 8, 10, 10, 10, 15, 15, 50, 80, 100, 120

$$\begin{aligned} \text{Mean} &= \frac{\text{Sum of the scores}}{\text{Number of batsman}} \\ &= \frac{6+8+10+10+10+15+15+50+80+100+120}{11} \\ &= \frac{424}{11} = 38.55 \end{aligned}$$

Number of items = 11 (odd)

$$\therefore \text{Median} = \left(\frac{n+1}{2}\right)^{\text{th}} \text{ item} = \frac{11+1}{2} = 6 \text{ item}$$

\therefore Median = 135

Here the number 10 has been repeated 3 times (the most number).

No, the three values are not same.

5. Here the marks in ascending order are as follows :
5, 9, 10, 12, 15, 16, 19, 20, 20, 20, 20, 23, 24, 25, 26
Number of items = 15 (odd)

$$\therefore \text{Median} = \left(\frac{n+1}{2}\right)^{\text{th}} \text{ item} = \frac{15+1}{2} = \frac{16}{2} = 8^{\text{th}} \text{ item}$$

Hence, median = 20.

Here the number 20 has been repeated 4 times (the most number).

Yes the median and mode are the same.

6. (i) False (ii) True (iii) False (iv) False (v) False.
7. (i)

Size	2	3	4	5	6	7	8
Frequency	9	12	14	16	13	10	8

Here the size 5 base maximum frequency 16.

Hence, the mode is 5.

(ii)

Size	5	6	7	8	9	10
No. of shoes	42	48	65	60	14	8

Here, the maximum number of persons is 65, who take shoes of size 7.



Hence, the mode is 7.

(iii)

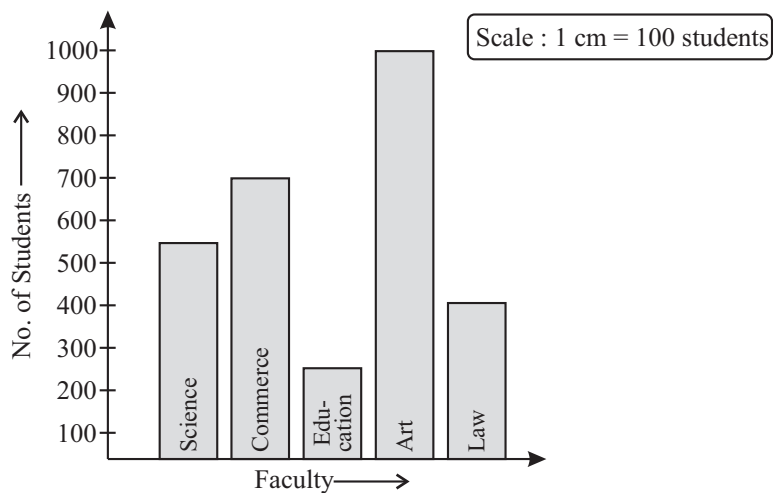
Size	2	3	4	5	6	7
Frequency	12	18	10	15	18	14

Here, the sizes 3 and 6 has maximum frequency 18.

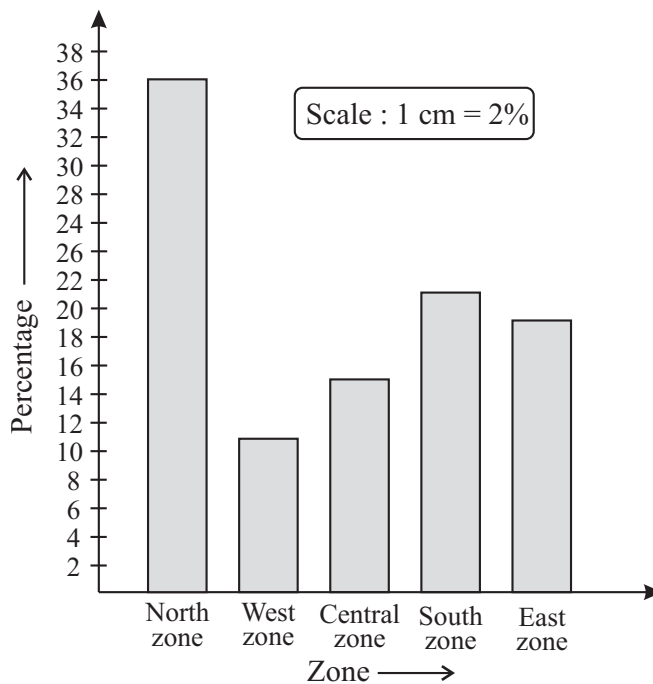
So, there are two modes here, 3 and 6.

Exercise 16.3

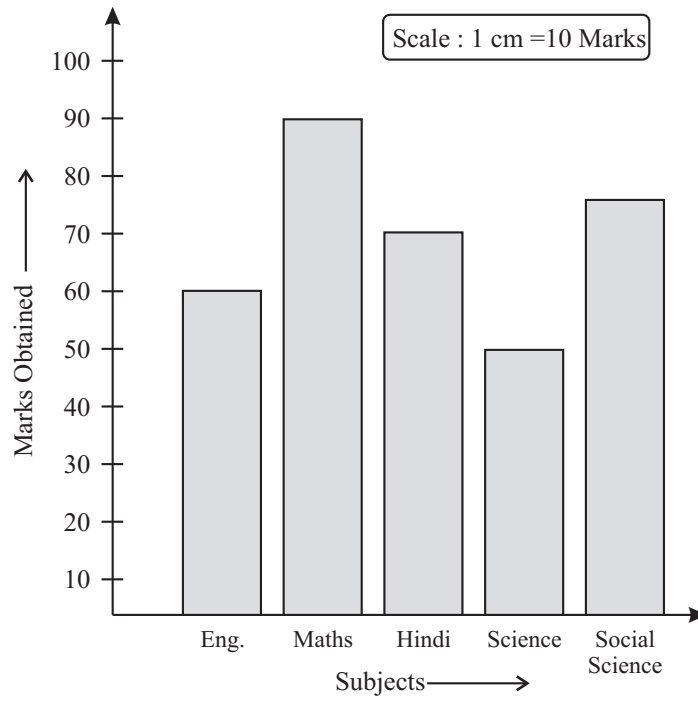
1. The bar graph shown below.



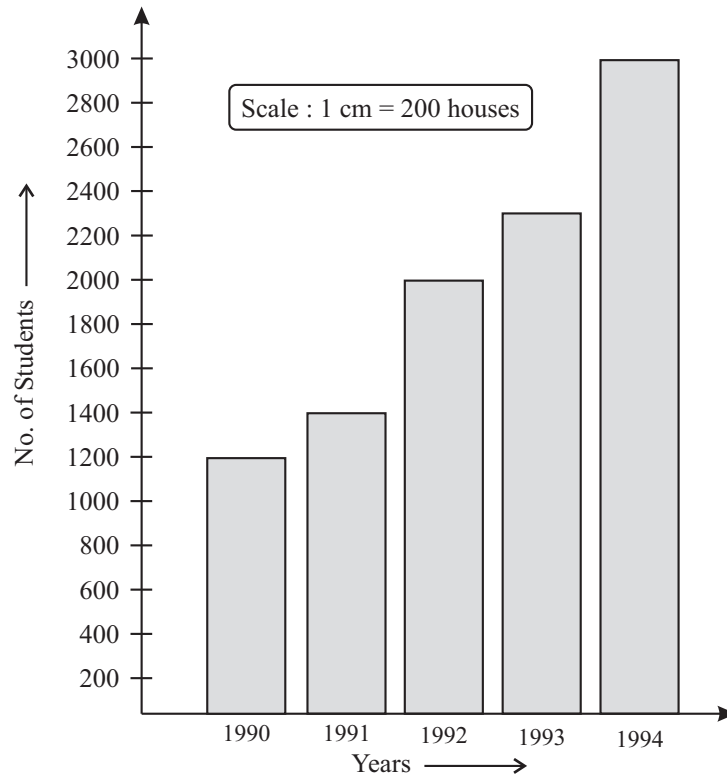
- 2.

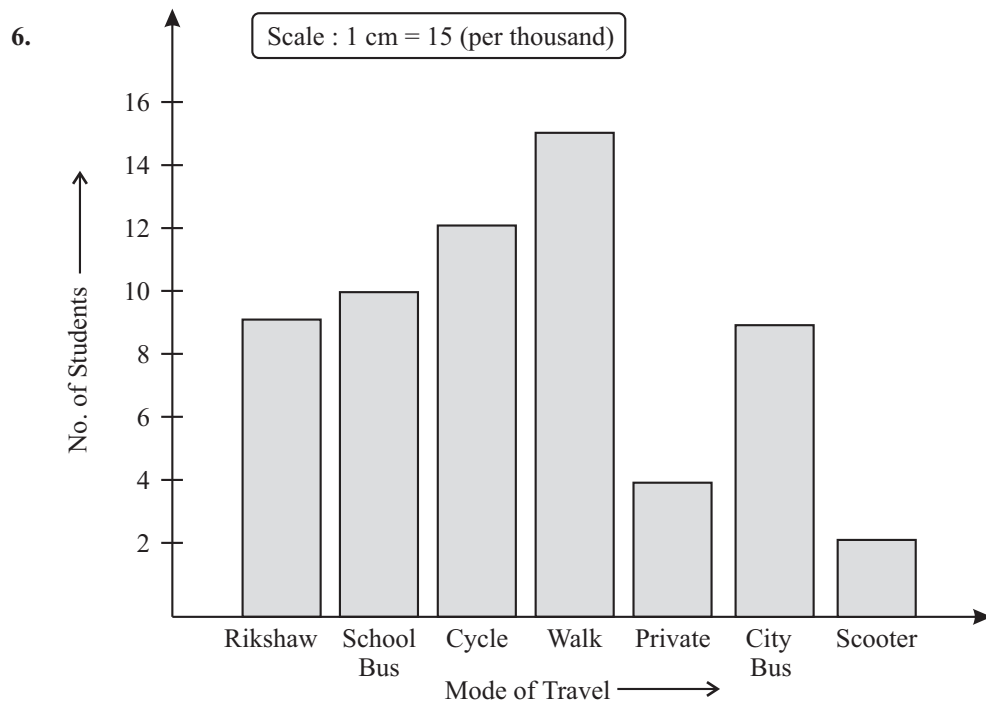
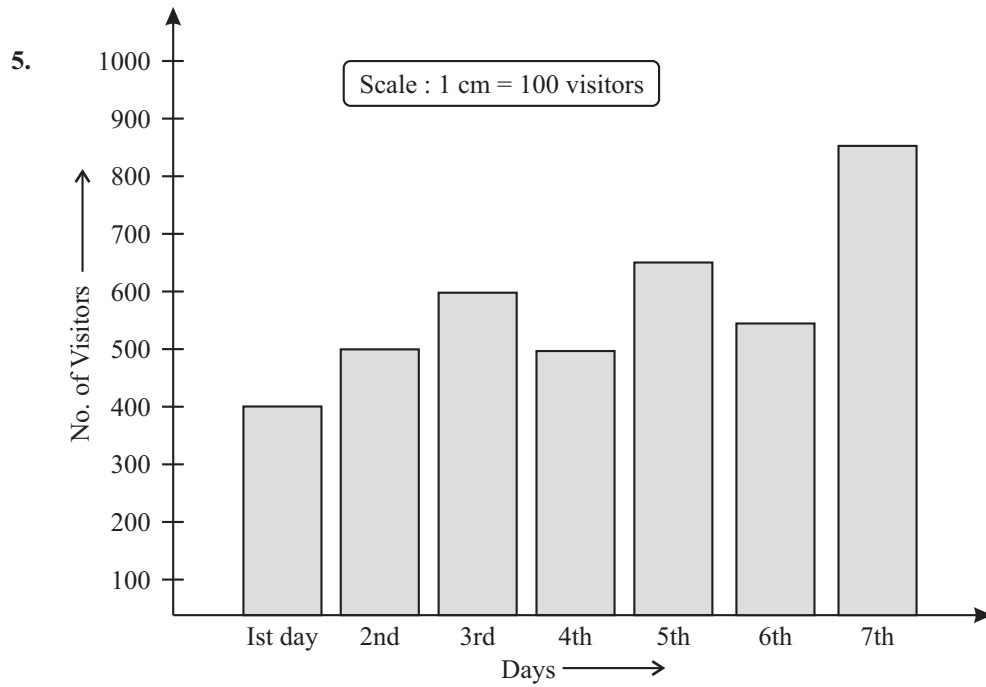


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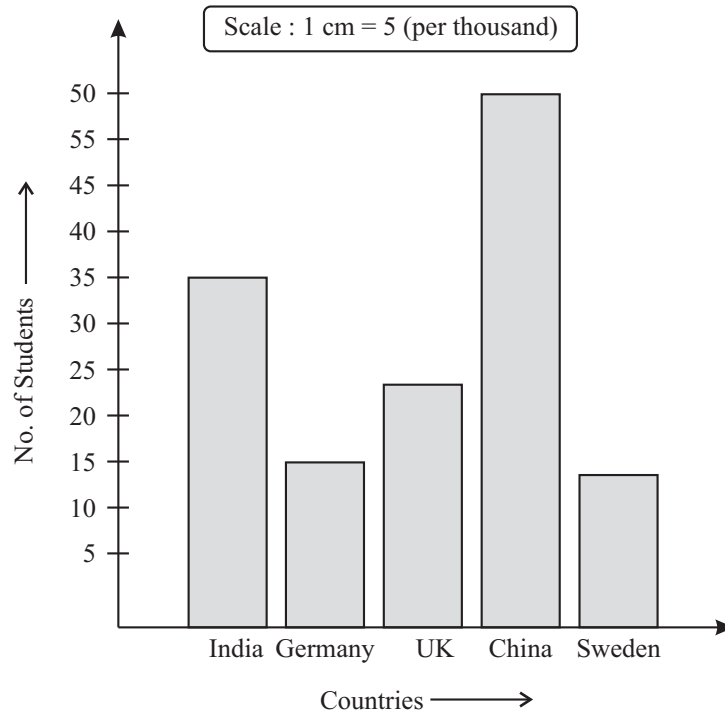


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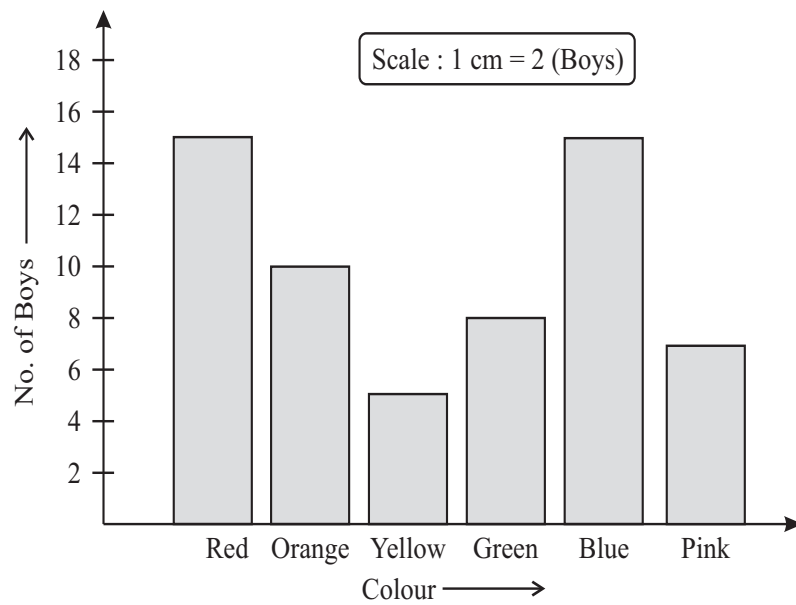




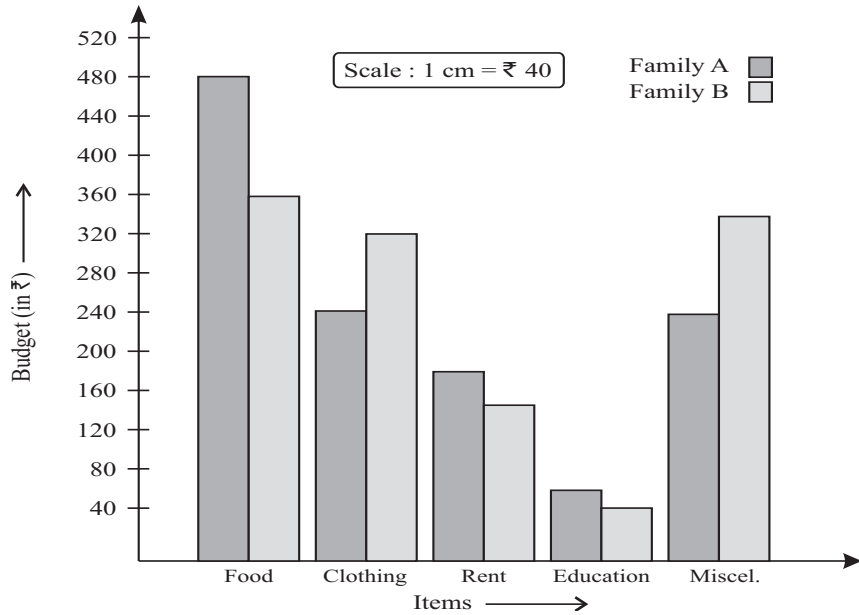
7.



8.



9.

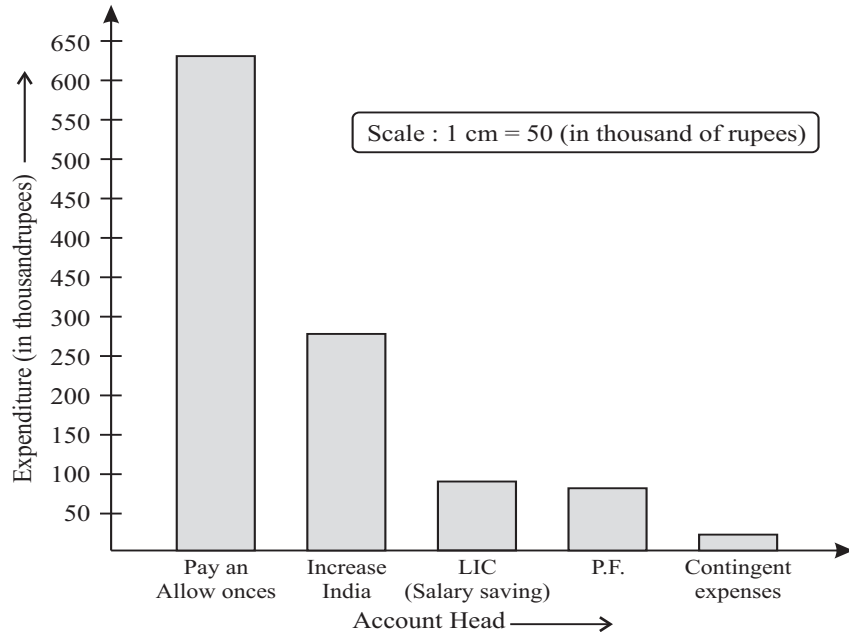


- (i) Expenditure for food by family $A = ₹ 480$
 Expenditure for food by family $B = ₹ 360$
 The difference between expenditure for food by two families $= ₹ 480 - ₹ 360$
 $= ₹ 120$

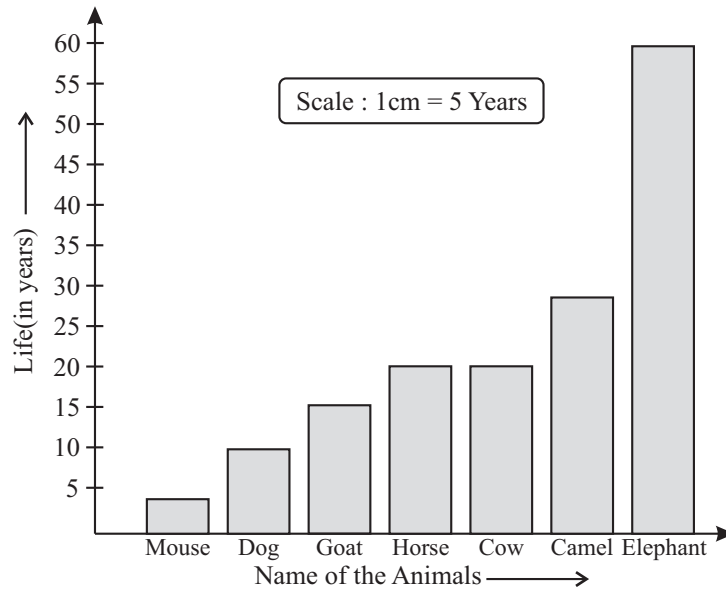
So, the family A spend ₹ 120 more than family B for food.

- (ii) Expenditure of family A for clothing $= ₹ 240$
 Expenditure of family B for clothing $= ₹ 320$
 The difference between the expenditure clothing $= ₹ 320 - ₹ 240 = ₹ 80$
 So, the family B spend ₹ 80 more than family A per clothing.

10. This bar graph shows the annual expenditure of an establishment in the year 1990-91.



11.



Exercise 16.4

- | | | | |
|--------------|--------------|----------------|-----------------|
| (a) certain | (b) possible | (c) possible | (d) certain |
| (e) possible | (f) possible | (g) impossible | (h) impossible. |
- | | | | |
|------------|--------------|--------------|------------|
| (a) likely | (b) likely | (c) unlikely | (d) likely |
| (e) likely | (f) unlikely | (g) likely. | |
- | | | | |
|-----------------|-----------------|-----------------|-------------|
| (a) likely | (b) impossible | (c) impossible | (d) likely |
| (e) even chance | (f) even chance | (g) certain | (h) certain |
| (i) unlikely | (j) unlikely | (k) even chance | (l) likely. |

Exercise 16.5

1.	S.No.	Number of Total outcomes	Possible Outcomes	Probability of each outcome
	1.	5	<i>A, E, I, O, U</i>	$\frac{1}{5}$
	2.	6	1, 2, 3, 4, 5, 6	$\frac{1}{6}$
	3.	5	<i>M, A, R, C, H</i>	$\frac{1}{5}$
	4.	$2 + 2 + 3 = 7$	<i>W, W, R, R, B, B, B</i>	$\frac{1}{7}$
	5.	4	K_1, K_2, K_3, K_4	$\frac{1}{4}$
	6.	4	<i>HH, TH, HT, TH</i>	$\frac{1}{4}$



Exercise 16.6.

- No. of angel fishes = 9,
No. of gold fishes = 3,
total no. of fishes = 12
 \therefore Possible outcomes are catching an angel or gold fish.
Catching an angel fish is more likely, because angel fishes are more than gold fishes.
- No. of black balls = 7,
No. of green balls = 3
 \therefore Possible outcomes are (black ball or green ball)
It is more likely to be black ball, because there are more black balls in the bag.
- No. of chits with name of boys = 30, No. of chits with name of girls = 12
 \therefore Possible outcomes are name of a boys or name of a girls.
It is more likely to be chosen name of boys, because name of boys are more than name of girls.
- In spinner X is the pointer more likely because the coloured part occupied more space in X .
- Picking up an apple or a mango. Picking up an apple is more likely, as their number is more.

Exercise 16.7

- Red balls = 3, Black balls = 2, Total balls = 5
(a) Probability of drawing a red ball = $\frac{\text{No. of red balls}}{\text{Total balls}} = \frac{3}{5}$
(b) Probability of drawing a black ball = $\frac{\text{No. of black balls}}{\text{Total balls}} = \frac{2}{5}$
- No. of red balls = 2,
No. of black ball = 3,
No. of blue ball = 4
 \therefore Total no. of balls = $2 + 3 + 4 = 9$
(a) $P(\text{a red ball}) = \frac{2}{9}$ (b) $P(\text{a black ball}) = \frac{3}{9} = \frac{1}{3}$
(c) $P(\text{a blue ball}) = \frac{4}{9}$
- On throwing a die, total no. of possible outcomes = 6
(a) Probability that the upper face will be 3 = $\frac{\text{Favourable outcomes}}{\text{Total outcomes}} = \frac{1}{6}$
(b) Upper face less than 3 = 1, 2
 \therefore Probability that the upper face < 3 = $\frac{\text{Favourable outcomes}}{\text{Total outcomes}} = \frac{2}{6} = \frac{1}{3}$
(c) Upper face more than 3 = 4, 5, 6
 \therefore Probability that the number face more than 3 = $\frac{3}{6} = \frac{1}{2}$
(d) Upper face will be 8 = 0 (because no face of dice has the number 8).
 \therefore Probability that the upper face will be 8 = $\frac{0}{6} = 0$.



4. On throwing a ludo dice, total no. of possible outcomes = 6
 (a) P (that the no. of dots on its upper face) = $\frac{\text{Favourable outcomes}}{\text{Total outcomes}} = \frac{1}{6}$.
 (b) P (that no. of dots less than 4 on its upper face) = $\frac{3}{6} = \frac{1}{2}$.
 (c) No. of odd number faces = (1, 3, 5) = 3
 $\therefore P$ (that the no. of dots on its upper face is an odd number).
5. No. of boys = 7, No. of chance drawing his own name from the basket = 1
 $\therefore P$ (drawing his own name from the basket) = $\frac{1}{7}$.
6. on throwing a dice, Total no. of possible outcomes = 6
 (a) no. of dots in upper faces be an odd number = (1, 3, 5) = 3
 P (an odd number on its upper face) = $\frac{\text{Favourable outcomes}}{\text{Total outcomes}} = \frac{3}{6} = \frac{1}{2}$
 (b) No. of dots in upper faces to an even number = (2, 4, 6) = 3
 $\therefore P$ (an even number on its upper face) = $\frac{3}{6} = \frac{1}{2}$
7. Number of white marbles = 2
 Number of blue marbles = 3
 Number of green marbles = 4
 Number of red marbles = 5
 \therefore total no. of marbles in the jar = 2 + 3 + 4 + 5 = 14
 (a) P (that the marble is white) = $\frac{\text{No. of white marbles}}{\text{Total no. of marbles}} = \frac{2}{14} = \frac{1}{7}$
 (b) P (that the marble is blue) = $\frac{\text{No. of blue marbles}}{\text{Total no. of marbles}} = \frac{3}{14}$
 (c) P (that the marble is green) = $\frac{\text{No. of green marbles}}{\text{Total no. of marbles}} = \frac{4}{14} = \frac{2}{7}$
 (d) P (that the marble is red) = $\frac{\text{No. of red marbles}}{\text{Total no. of marbles}} = \frac{5}{14}$
8. No. of socks in box = 2 (black and white)
 No. of black socks = 1, no. of white socks = 1
 P (picked out a black sock) = $\frac{\text{No. of black socks}}{\text{Total no. of socks}} = \frac{1}{2}$
 $\therefore P$ (that he will make a pair) = $\frac{1}{2}$
9. Total no. of chances to start the game by both the teams = 2 (A & B)
 In tossing a coin, there are two possible outcomes (H or T)
 \therefore Possible outcomes to start the game for team A = 1
 $\therefore P$ (that team a will start the game) = $\frac{\text{Chance to start the game by team A}}{\text{Total no. of chance to start the game}} = \frac{1}{2}$
10. In a gift pack of chips, number of cheese & onion = 3
 In a gift pack of chips, number of plain salted = 4
 In a gift pack of chips, number of masala munch = 5
 In a gift pack of chips, number of pudina = 2

Total no. of items in a gift packed chips = 3 + 4 + 5 + 2 = 14

$$(a) \text{ Probability picking Masala} = \frac{\text{No. of masala munch}}{\text{Total no. of items}} = \frac{5}{14}$$

$$(b) \text{ Probability picking Pudina} = \frac{\text{No. of Pudina}}{\text{Total no. of items}} = \frac{2}{14} = \frac{1}{7}$$

$$(c) \text{ Probability plain salted} = \frac{\text{No. of plain salted}}{\text{Total no. of items}} = \frac{4}{14} = \frac{2}{7}$$

$$(d) \text{ Probability cheese \& Onion} = \frac{3}{14}$$

11. Probability scale of all the events

MCQs

1.(b) 2. (c) 3. (a) 4. (d) 5. (d) 6. (a) 7. (d) 8. (b) 9. (a) 10. (a)

Formative Assessment-4

1.(b) 2. (b) 3. (d) 4. (b) 5. (c) 6. (c) 7. (a) 8. (b) 9. (c) 10. (d) 11. (a) 12. (d) 13. (a) 14. (c)
15.(a) 16. (a) 17. (b) 18. (b) 19. (c) 20. (b)

Summative Assessment-2

Section-A

1.(c) 2. (a) 3. (c) 4. (d) 5. (c) 6. (b) 7. (c) 8. (c)

Section-B

$$\begin{aligned} 9. \text{ Mean proportional} &= \frac{\text{Sum of observation}}{\text{Number of observation}} \\ &= \frac{28 + 63}{2} = \frac{91}{2} = 45.5 \end{aligned}$$

10. Here $3x + 2x = 180^\circ$ (sum of angles at straight line is 180°)

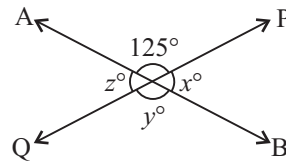
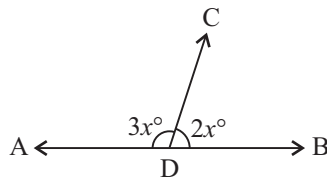
$$\begin{aligned} \Rightarrow & 5x = 180 \\ \Rightarrow & x = \frac{180}{5} = 36^\circ \end{aligned}$$

$$\begin{aligned} \Rightarrow & x = 36^\circ \\ \text{Here,} & 125^\circ + x = 180^\circ \\ & x = 180 - 125 \\ & x = 55^\circ \end{aligned}$$

$$\begin{aligned} \text{then} & x + y = 180^\circ \\ & y + 55 = 180 \\ & y = 180 - 55 \\ & y = 125^\circ \end{aligned}$$

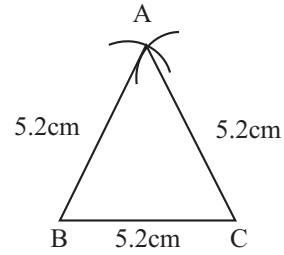
$$\begin{aligned} \text{Now} & y + z = 180 \\ & z = 180 - y \\ & z = 180 - 125 \\ & z = 55^\circ \end{aligned}$$

So, $X = 55^\circ$, $Y = 125^\circ$ and $z = 55^\circ$



11. Steps for construction :

- Draw a line segment $BC = 5.2$ cm.
- With B as centre and radius equal to 5.2 cm draw an arc.
- Then with C as centre and radius equal to 5.2 cm, cut another arc on point A .
- Join the point A with B and C .
 ΔABC is the required triangle.



- 12.** 4, 6, 6, 7, 8, 8, 8, 10, 10
 Here, the number 8 has been repeated 4 times.
 So, the mode is 8.
- 13.** Probability of getting 7 = 0
- 14.** Probability of getting a number less than 7 = $\frac{6}{6} = 1$.

Section-C

15. $\frac{4x+5}{3x+11} = \frac{3}{17}$

$$(4x+5)17 = 13(3x+11)$$

$$58x+85 = 39x+143$$

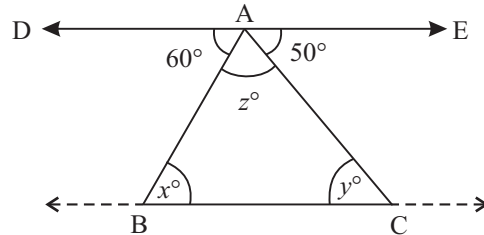
$$68x-39x = 143-85$$

(cross multiplication)

$$29x = 58 \Rightarrow x = \frac{58}{29} = 2$$

- 16.** \therefore Sum of angle of linear pair = 180
 $\therefore x + (x + 40) = 180$
 $2x + 40 = 180$
 $2x = 180 - 40$
 $2x = 140 \Rightarrow x = \frac{140}{2} = 70$

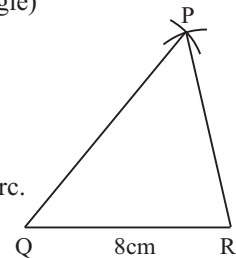
- 17.** $BC \parallel DE$ (Given)
 $\angle DAB + \angle BAC + \angle EAC = 180^\circ$
 (\because linear pair)
 $60^\circ + Z = 50 = 180$
 $Z + 110 = 180$
 $Z = 180 - 110 = 70$
 $Z = 70^\circ$



then $\angle DAB = \angle CBA$ (Alternate angles)
 So, $\angle CBA = \angle DAB = 60^\circ$
 $\therefore \angle x = 60^\circ \quad \therefore \angle EAC = \angle Y$ (alternate angle)
 $\therefore \angle Y = \angle EAC = 50^\circ$
 $\angle Y = 50^\circ \quad \angle X = 60^\circ, \angle Y = 50^\circ$ and $\angle Z = 70^\circ$

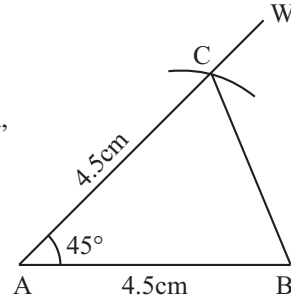
18. Steps

- Draw a line segment $QR = 8$ cm.
- With Q as centre and radius $QP = 10$ cm, draw an arc.
- Now with R as centre and radius $RP = 6$ cm, draw another arc. This arc cut the first arc at point P .
- Join P with R and Q .
- Now measure the angle $\angle PQR$ with the help of protractor. It is an scalene triangle.



19. Steps

- Draw a line segment $AB = 4.5$ cm.
- Draw an angle ($\angle BAN$) of 45° on A .
- Now with A centre and radius equal to $AC = 4.5$ cm, mark an arc on ray AN which cut the ray on point C .
- Join the point C with B .
- The ΔABC is the required triangle.



- 20.** Perimeter of square = 100 m

$$\text{Side} = \frac{\text{Perimeter}}{4} = \frac{100}{4} = 25 \text{ m}$$

$$\begin{aligned} \text{Now, Area of square} &= \text{side} \times \text{side} \\ &= (25 \times 25) \text{ m}^2 = 625 \text{ m}^2 \end{aligned}$$

- 21.** Suppose height of parallelogram = x

$$\therefore \text{Base height of parallelogram} = 4 \times x$$

$$\text{Area} = 900 \text{ m}^2 \quad (\text{Given})$$

$$\text{Then, Area} = \text{Base} \times \text{altitude (height)}$$

$$900 = (4x \times x)$$

$$4x^2 = 900$$

$$x^2 = \frac{900}{4} = 225$$

$$x = 15 \text{ m}$$

$$\text{So height} = 15 \text{ m}$$

$$\text{Now base} = 4 \times x = 4 \times 15 = 60 \text{ m.}$$

$$\text{Hence, height} = 15 \text{ m, Base} = 60 \text{ m.}$$

- 22.** First 10 natural numbers are 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

$$\text{Then, mean} = \frac{\text{Sum of observation}}{\text{Number of observations}} = \frac{1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10}{10}$$

$$= \frac{55}{10} = 5.5 \text{ Mean} = 5.5$$

- 23.** Mean = $\frac{\text{Sum of the scores}}{\text{Number of batsman}}$

$$= \frac{25 + 18 + 22 + 95 + 85 + 70 + 25 + 31 + 41 + 03}{10}$$

$$= \frac{415}{10} = 41.5$$

$$\text{Hence, mean} = 41.5 \text{ (approx)}$$

- 24.** No. of red balls = 3

$$\text{No. of blue} = 4 \text{ No. of white} = 0$$

$$\text{Total no. of balls} = 3 + 4 + 0$$

$$\text{(a) } P(\text{a red ball}) = \frac{\text{No. of red balls}}{\text{Total no. of balls}} = \frac{3}{7}$$

$$\text{(b) } P(\text{a blue ball}) = \frac{\text{No. of blue balls}}{\text{Total no. of balls}} = \frac{4}{7}$$

$$\text{(c) } P(\text{a white ball}) = \frac{\text{No. of white balls}}{\text{Total no. of balls}} = \frac{0}{7} = 0$$

Section-D

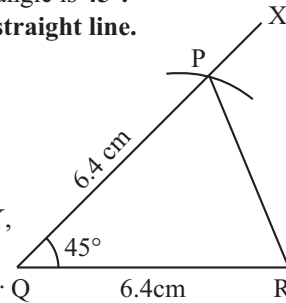
25. \therefore weight of 25 bags of wheat = 50 kg
 \therefore weight of 1 bag of wheat = $\frac{50}{25} = 2$ kg
 Now, cost of 50 kg of wheat = ₹ 15000
 \therefore cost of 1 kg of wheat = ₹ $\frac{15000}{50}$
 cost of 1 kg of wheat = ₹ 300
 \therefore weight of 1 bag = 30 kg
 \therefore weight of 15 bags = 30×15 kg = 450 kg
 Then
 \therefore the cost 1 kg of wheat = ₹ 300
 \therefore the cost 450 kg of wheat = ₹ $300 \times 450 = ₹ 135000$

26. **Fill in the blanks :**

- (a) If two angles are complementary, then the sum of their measures is **90°**.
 (b) If two angles are supplementary, then the sum of their measure is **180°**.
 (c) If two angles are complement to each other, then each angle is **45°**.
 (d) If two adjacent angles are supplementary, then form a **straight line**.

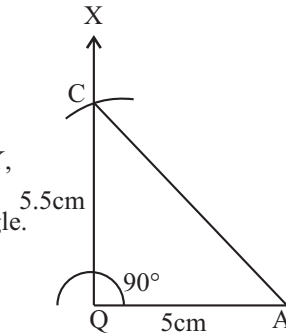
27. **Steps to construct :**

- (a) Draw a line segment $QR = 6.4$ cm.
 (b) At Q , construct $\angle XQR = 45^\circ$.
 (c) With Q as centre and radius 6.4 cm draw an arc on QX , which intersect at point P .
 (d) Join PR . Then, ΔPQR is the required isosceles triangle.



28. **Steps to construct :**

- (a) Draw a line segment $AB = 5$ cm.
 (b) At B , construct $\angle XBA = 90^\circ$.
 (c) With B as centre and radius 5.5 cm draw an arc on BX , intersecting at point C .
 (d) Join CA . Then, ΔABC is the required right angle triangle.



29. Given, Area of $\Delta = 294$ cm²
 Let base(b) = $3x$, altitude (h) = $4x$

$$\therefore \text{Area of } \Delta = \frac{1}{2} \times \text{base } (b) \times \text{altitude } (h)$$

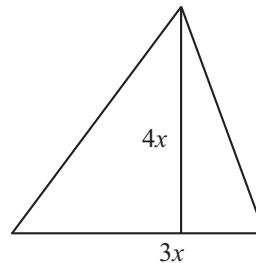
$$294 = \frac{1}{2} \times 3x \times 4x$$

$$\Rightarrow 294 = 6x^2 \Rightarrow x^2 = 49$$

$$\Rightarrow x = \sqrt{49} = 7$$

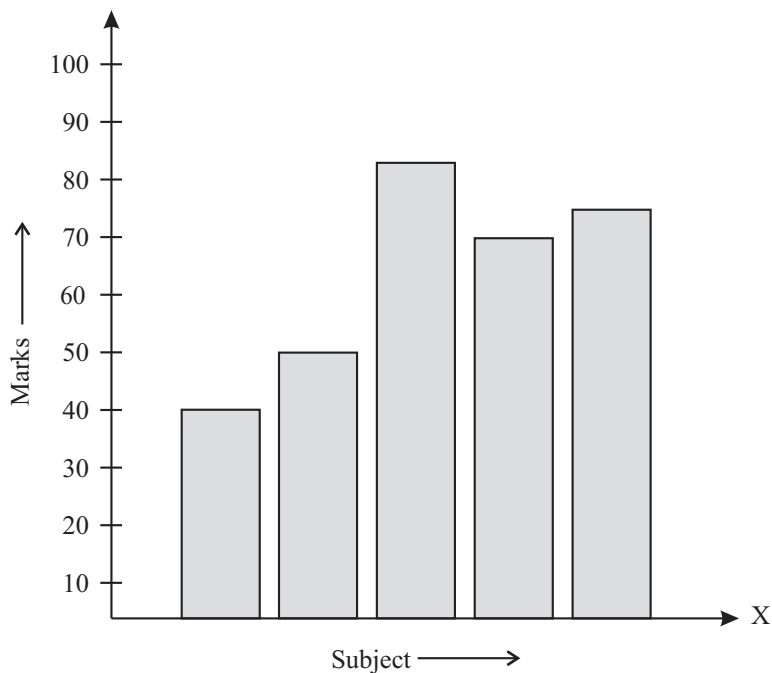
$$\therefore \text{base } (b) = 3x = 3 \times 7 = 21 \text{ cm}$$

$$\text{altitude } (h) = 4x = 4 \times 7 = 28 \text{ cm}$$



30. Area of circular plot = 616 m^2
 \therefore cost of fencing 1 m^2 Area = ₹ 15
 \therefore cost of fencing 616 m^2 area = ₹ $15 \times 616 = ₹ 9240$

31.



32.

Height (in cm)	143	147	149	150	152	155	Total
No. of students	3	1	4	2	4	4	18

Height (in cm) x	Frequency (f)	$f \times x$
143	3	429
147	1	147
149	4	596
150	2	300
152	4	608
155	4	620
	$\Sigma f = 18$	$\Sigma fx = 2700$

- (a) Height of the tallest boy = 155 cm.
 (b) Height of the shortest boy = 143 cm.

(c) range = highest value – lowest value
 $= 155 - 143 = 12$

(d) Mean $= \frac{\Sigma fx}{\Sigma f} = \frac{2700}{18} = 150$

Mean height = 150 cm.

(e) Number of boy have height more than mean height = 4 + 4 = 8.

33. Number of red balls = 3
 Number of blue balls = 4
 Number of white balls = 5
 total number of balls = 3 + 4 + 5 = 12

(a) Probability of getting a red ball $= \frac{\text{No. of red balls}}{\text{Total no. balls}} = \frac{3}{12} = \frac{1}{4}$

(b) Probability of getting a blue ball $= \frac{\text{No. of blue balls}}{\text{Total no. of balls}} = \frac{4}{12} = \frac{1}{3}$

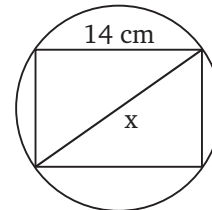
(c) Probability of getting a white ball $= \frac{\text{No. of white balls}}{\text{Total no. of balls}} = \frac{5}{12}$

34. Side of square = 14
 Now diagonal $x^2 = (14)^2 + (14)^2$
 $x = 14\sqrt{2}$

Then diagonal = diameter of circle = $2\sqrt{14}$

radius of circle $= \frac{14\sqrt{2}}{2} = 7\sqrt{2}$

Now area of circle $= \pi r^2 = \frac{22}{7} \times 7\sqrt{2} \times 7\sqrt{2} = 308 \text{ cm}^2$



OR

Diameter of wheel = 70 cm

\therefore circumference of circle $= \pi d$
 $= \frac{22}{7} \times 70 = 220 \text{ cm} = 2.20 \text{ m}$

Speed = 66 km/h

To convert the speed into metre/minute $= \frac{66 \times 1000}{60}$
 $= \frac{66000}{60} \text{ m/min} = 110 \text{ m/min.}$

Now number of revolution in 2.20 m = 1

\therefore Number of revolution in 110 m = 1
 $= \frac{1 \times 110 \times 100}{220} = 50$