$= 6400 - \pi r^2$

$= 6400 - \frac{22}{7} \times (14)^2$

$= 6400 - \frac{22}{7} \times 14 \times 14^2$

$= 6400 - 22 \times 14 \times 2$

$= 6400 - 616$

Area of remaining portion $= 5784\ m^2$

MCQs

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

Mental Maths

1. 1000, 100 **2.** 32 cm
3. 24.5 cm **4.** 3× side
5. 40 cm

17 Data Handling

Exercise 17.1

1. (i) variable (ii) data array (iii) range
(iv) frequency data table
(v) frequency (vi) mean

2. Arrange in ascending order
130, 130, 150, 150, 150, 150, 180, 180, 180, 180, 180, 180, 200, 200, 200

Wages	Tally Mark	Frequency
130	||	2
150	||||	4
180	~~||||~~ |	6
200	|||	3

3. Arrange in ascending order
5, 5, 6, 6, 6, 6, 7, 7,7, 7, 7, 7, 7, 8, 8, 8, 8, 8, 9, 9, 10, 10

Data	Tally Mark	Frequency
5	||	2
6	||||	4
7	~~||||~~ ||	7
8	~~||||~~	5
9	||	2
10	||	2
		22

4. Arrange in ascending order
1, 1, 2, 2, 2, 2, 2, 3, 4, 4,4, 4, 5, 5, 5, 5, 5, 5, 6, 6

Number	Tally Mark	Frequency
1	||	2
2	~~||||~~	5
3	|	1
4	||||	4
5	~~||||~~ |	6
6	||	2
		20

5. (i) Arrange in descending order
29, 28, 28, 25, 25, 21, 19, 18, 18, 15, 15, 12, 12, 7, 7,6, 5,4, 4, 2
(ii) Maximum value 29
(iii) Minimum value 2
(iv)

Data	Tally Mark	Frequency
29	|	1
28	||	2
25	||	2
21	|	1
19	|	1
18	||	2
15	||	2
12	||	2

7	||	2
6	|	1
5	|	1
4	||	2
2	|	1

6.

Weight (kg) (x)	Number of workers (f)	$f \times x$
60	4	240
63	3	189
66	2	132
69	2	138
72	1	72
	12	771

$$\text{Mean} = \frac{\Sigma f_i x_i}{\Sigma f_i} = \frac{771}{12}$$

Mean = 64.250 kg

7.

No. of misprint (x)	No. of pages (f)	$f \times x$
0	154	0
1	95	95
2	36	72
3	7	21
4	6	24
5	2	10
	300	222

$$\therefore \quad \text{Mean} = \frac{\Sigma fx}{\Sigma f}$$

$$= \frac{22}{300}$$

Mean = 0.74

8.

Height (in cm) (x)	Numbers of plants (f)	$f \times x$
58	20	1160
60	25	1500
62	15	930
64	8	512
66	12	792
74	10	740
	90	5634

$$\text{Mean} = \frac{\Sigma fx}{\Sigma f} = \frac{5634}{90}$$

Mean = 62.6 cm

9.

Class-Interval	x	f	$x \times f$
0-20	10	7	70
20-40	30	8	240
40-60	50	12	600
60-80	70	10	700
80-100	90	8	720
100-120	110	5	550
		$\Sigma f = 50$	$\Sigma xf = 2880$

$$\text{Mean} = \frac{\Sigma fx}{\Sigma f}$$

$$= \frac{2880}{50} = 57.6$$

Mean = 57.6

Mean of runs scored by the bats man

= 57.6

10.

C.I. (Age)	x	Numbers in Patients (f)	xf
10-15	12.5	5	62.5
15-20	17.5	6	105
20-25	22.5	8	180

25-30	27.5	12	330
30-35	32.5	6	195
35-40	37.5	3	112.5
		$\Sigma f = 40$	$\Sigma xf = 985$

$$\bar{x} = \frac{\Sigma xf}{\Sigma f}$$
$$= \frac{985}{40} = 24.625$$

Exercise 17.2

1. First 15 odd numbers are
1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29

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

$\therefore$ Median $= 15$

2. First 10 even numbers are
2, 4, 6, 8, 10, 12,14,16, 18, 20
Median

$$= \frac{1}{2}\left[\left(\frac{1}{2}\right)^{\text{th}} \text{ term} + \left(\frac{n}{2}+1\right)^{\text{th}} \text{ term}\right]$$
$$= \frac{1}{2}[5^{\text{th}} \text{ term} + 6^{\text{th}} \text{ term}]$$
$$= \frac{1}{2}(10+12)$$

$\therefore$ Median $= 11$

3. First 50 whole numbers are
0, 11, 2, 4, ... 49
Median

$$= \frac{1}{2}\left[\left(\frac{1}{2}\right)^{\text{th}} \text{ term} + \left(\frac{n}{2}+1\right)^{\text{th}} \text{ term}\right]$$
$$= \frac{1}{2}[25^{\text{th}} \text{ term} + 26^{\text{th}} \text{ term}]$$
$$= \frac{1}{2}(24+25)$$
$$= \frac{1}{2}(49)$$

$\therefore$ Median $= 24.5$

4. (i) Arrange in Ascending order
2, 2, 3, 5, 7,9,9, 10, 11 (odd terms)

$\therefore$ Median $= \left(\frac{n+1}{2}\right)^{\text{th}}$ term
$$= \left(\frac{9+1}{2}\right)^{\text{th}} \text{ term}$$
$$= 5^{\text{th}} \text{ term}$$

$\therefore$ Median $= 7$

(ii) Arrange in ascending oder
6, 8, 9, 15, 16, 18, 21, 22, 25
(9 terms) odd

$\therefore$ Median $= \left(\frac{n+1}{2}\right)^{\text{th}}$ term
$$= \left(\frac{9+1}{2}\right)^{\text{th}}$$
$$= 5^{\text{th}} \text{ term}$$

$\therefore$ Median $= 16$

(iii) Arrange in Ascending order
6, 8, 9, 13, 15, 16, 18, 20, 21, 22, 51 ($\therefore$11 terms odd)

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

$\therefore$ Median $= 16$

5. (i) Arrange in ascending order
9, 10,17, 19, 21, 22, 32, 35,
(8 terms $\therefore$even)

$\therefore$ Median
$$= \frac{1}{2}\left\{\left(\frac{n}{2}\right)^{\text{th}} \text{ term} + \left(\frac{n}{2}+1\right)^{\text{th}} \text{ term}\right\}$$
$$= \frac{1}{2}[4^{\text{th}} \text{ term} + 5^{\text{th}} \text{ term}]$$
$$= \frac{1}{2}(9+21)$$
$$= \frac{1}{2}(40)$$

$\therefore$ Median $= 20$

(ii) Arrange in ascending order
29, 35, 51, 55, 60, 63, 72, 82, 85, 91

Median

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

$$=\frac{1}{2}[5^{\text{th}} \text{ term}+6^{\text{th}} \text{ term}]$$

$$=\frac{1}{2}(60+63)=\frac{1}{2}(123)$$

$\therefore$ Median $=61.5$

6. Arrange is ascending order
17, 17, 19, 19, 20, 21, 22, 23, 24, 25, 26, 29, 31, 40

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

$$=\left(\frac{15+1}{2}\right)^{\text{th}} \text{ term}$$

$$=8^{\text{th}} \text{ term}$$

$\therefore$ Median $=23$

7. Arrange in ascending order
31, 34, 36, 37, 40, 43, 46, 50, 52, 53
Median

$$=\frac{1}{2}\left[\left(\frac{1}{2}\right)^{\text{th}} \text{ term}+\left(\frac{n}{2}+1\right)^{\text{th}} \text{ term}\right]$$

$$=\frac{1}{2}[5^{\text{th}} \text{ term}+6^{\text{th}} \text{ term}]$$

$$=\frac{1}{2}(40+43)$$

$$=\frac{1}{2}(83)$$

$\therefore$ Median $=41.5$ years

8. We have,
28, 34, 32, 41, 36, 32, 36, 38, 32, 40, 31
In the given data 32 is repeated more number of times than any other number
$\therefore$ Model age $=32$ years

9. (i) We have,
10, 8, 4, 7, 8,11, 15, 8, 6, 8
In the given data 8 is repeated more number of times than any other number
$\therefore$ Mode $=8$

(ii) We have,
27, 23, 39, 18, 27, 21, 27,27, 40, 36, 27
In the given data 27 is repeated more number of times than any other number
$\therefore$ Mode $=27$

10. We have, 1, 2, 3, 3, 3, 4, 5, 5, 6, 7
Median

$$=\frac{1}{2}\left[\left(\frac{1}{2}\right)^{\text{th}} \text{ term}+\left(\frac{n}{2}+1\right)^{\text{th}} \text{ term}\right]$$

$$=\frac{1}{2}[5^{\text{th}} \text{ term}+6^{\text{th}} \text{ term}]$$

$$=\frac{1}{2}(3+4)$$

$\therefore$ Median $=3.5$

Mode : in the given data 3 occures maximum number of times
$\therefore$ Mode $=3$

Mean

$$=\frac{1+2+3+3+3+4+5+5+6+7}{10}$$

$$=\frac{39}{10}$$

$\therefore$ Mean $=3.9$

11. We have 1, 1, 2, 2, 3, 3, 3, 6
Median

$$=\frac{1}{2}\left[\left(\frac{1}{2}\right)^{\text{th}} \text{ term}+\left(\frac{n}{2}+1\right)^{\text{th}} \text{ term}\right]$$

$$=\frac{1}{2}[4^{\text{th}} \text{ term}+5^{\text{th}} \text{ term}]$$

$$=\frac{1}{2}(2+3)=\frac{5}{2}$$

$\therefore$ Median $=2.5$

Mode : In the given data 3 occures maximum number of times.
$\therefore$ Mode $=3$

$$\text{Mean}=\frac{1+1+2+2+3+3+3+6}{8}$$

$$=\frac{21}{8}$$

$\therefore$ Mean $=2.625$

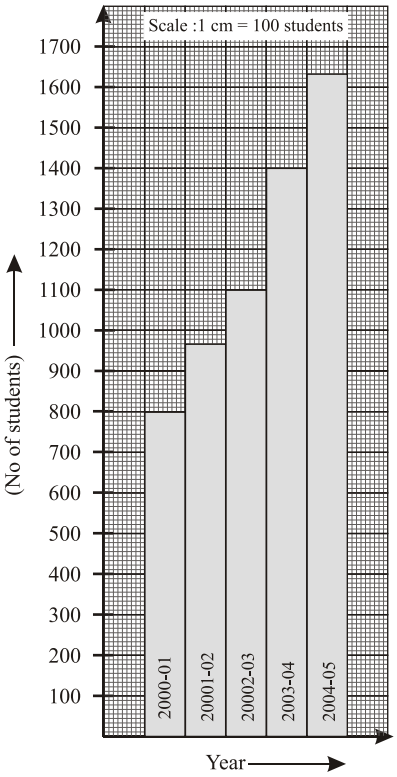
12. We have,

Marks	15	17	20	22	25
No. of students	6	6	12	18	8

In the given data marks 22 is obtained by maximum number of students
$\therefore$ Mode $=22$

Exercise 17.3

1.



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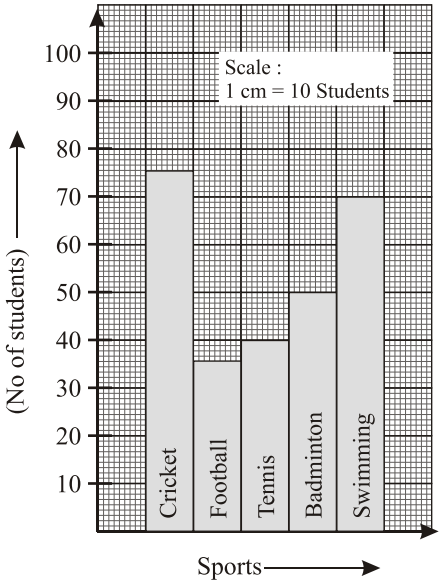

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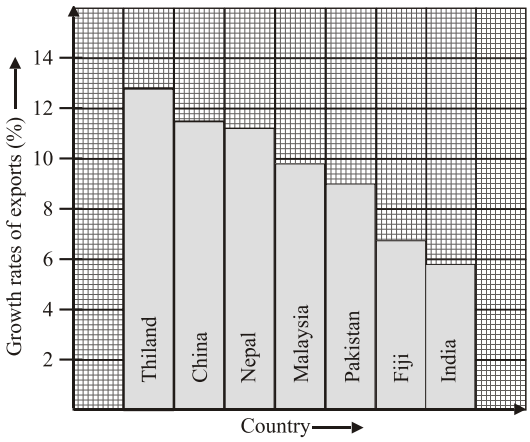

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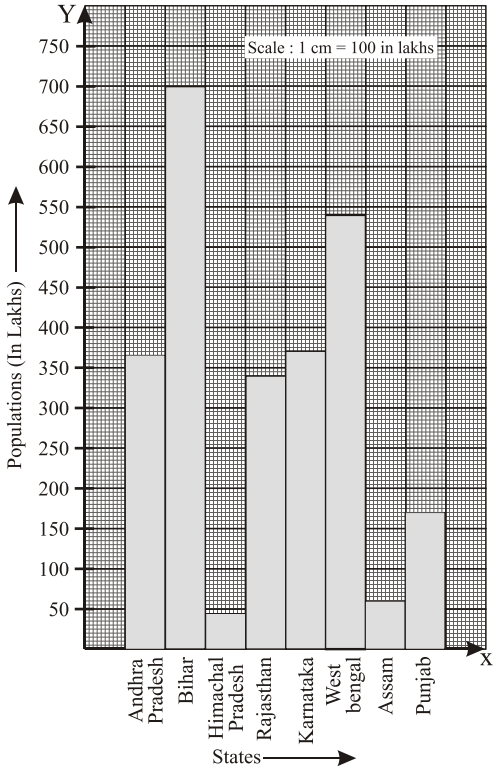

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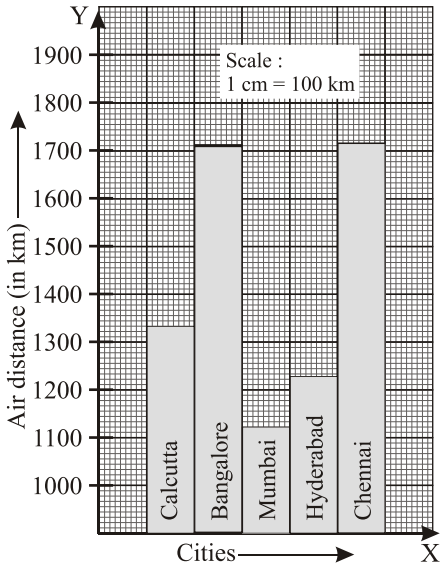
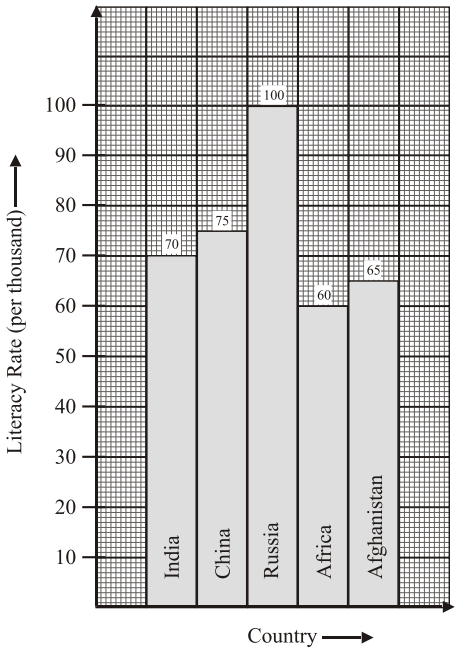
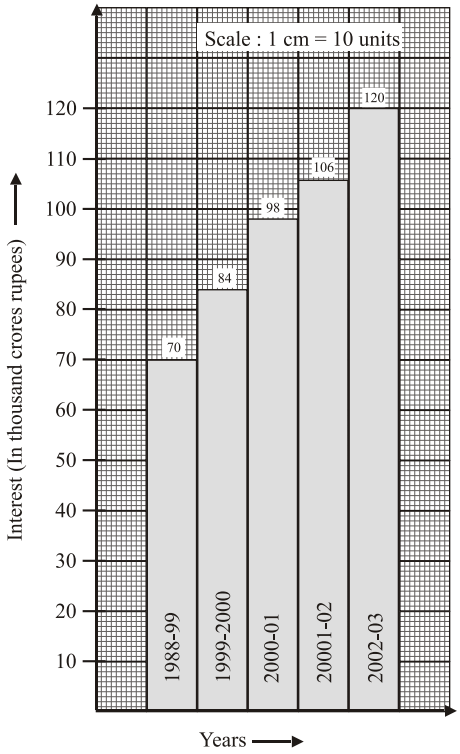

Y
Scale :
1 cm = 100 km
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
Air distance (in km)
Calcutta
Bangalore
Mumbai
Hyderabad
Chennai
Cities
X

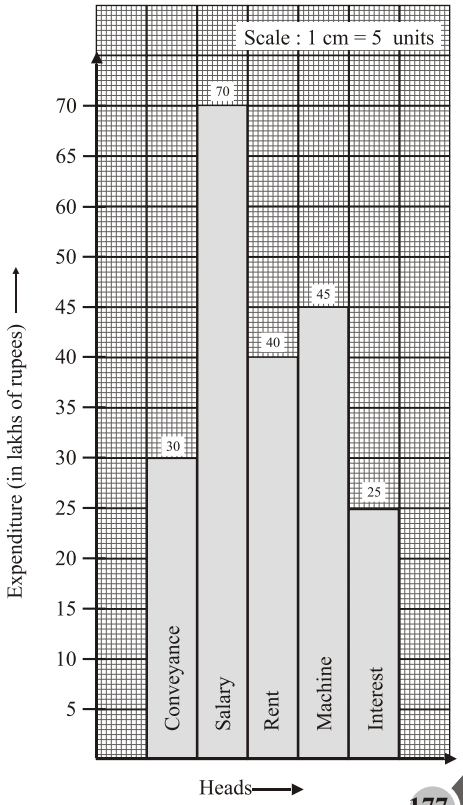
6.


100
90
80
70
60
50
40
30
20
10
Literacy Rate (per thousand)
70
75
100
60
65
India
China
Russia
Africa
Afghanistan
Country

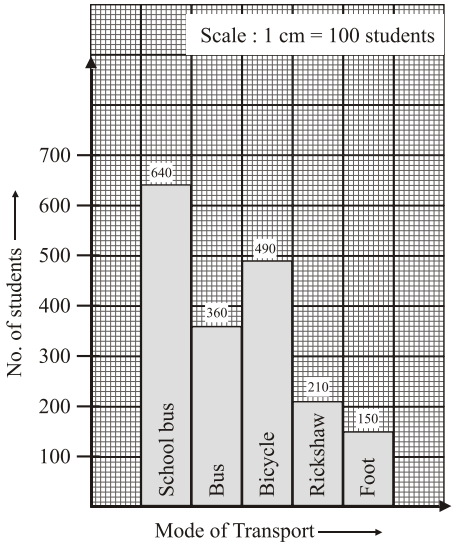
7.


Scale : 1 cm = 10 units
120
110
100
90
80
70
60
50
40
30
20
10
Interest (In thousand crores rupees)
70
84
98
106
120
1988-99
1999-2000
2000-01
20001-02
2002-03
Years

8.


Scale : 1 cm = 5 units
70
65
60
50
45
40
35
30
25
20
15
10
5
Expenditure (in lakhs of rupees)
30
70
40
45
25
Conveyance
Salary
Rent
Machine
Interest
Heads

9.



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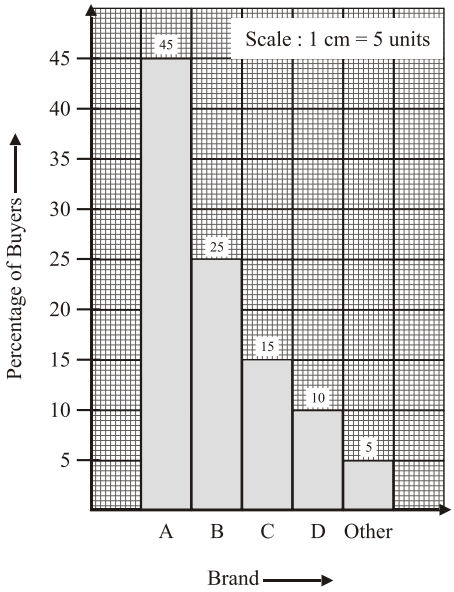

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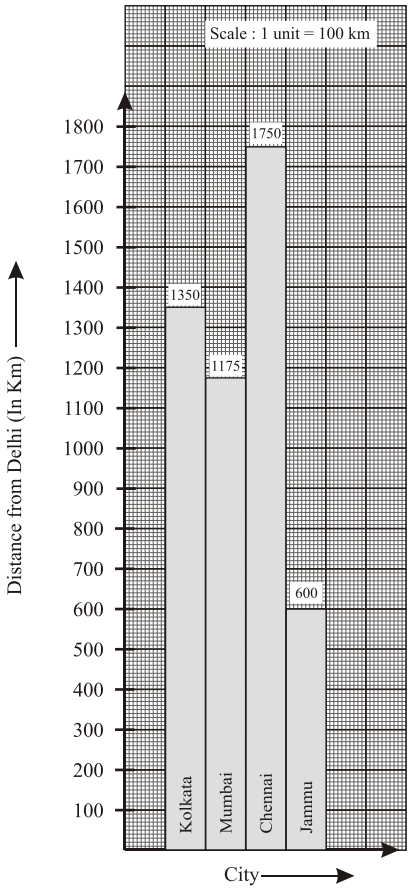

MCQs

1. (a) **2.** (c) **3.** (b) **4.** (b) **5.** (b) **6.** (a)