



MATHS

BOOKS - PEARSON IIT JEE FOUNDATION

STATISTICS

Example

1. In a pie graph, if a component is represented as a sector with sector angle 81° , then find the percentage of the component value in the total.



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2. Find the mean of the first 10 natural numbers.

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3. The mean of y and $1/\gamma$ is z . Find the mean of γ^2 and $\frac{1}{\gamma^2}$.

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4. The daily wages of 20 workers are given below:

Salary (in rupees)	Number of workers
60	4
80	2
100	2
150	8
200	4
Total	20

Find the mean daily wage of twenty workers.

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5. The average weight of 25 students of a class is 28 kg. If the average weight of all the boys is 30 kg and average weight of all the girls is 25 kg, then find the number of boys in the class.



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6. Find the median of the following values of a variable: 5, 16, 8, 3, 4, 2, and 17.



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7. Find the median of the data 13, 22, 26, 17, 31, 42.



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8. Find the median of the following data:

Variable (x)	2	3	5	7	11	13	17
Frequency (f)	4	2	6	9	10	3	2

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9. Find the mode of 0, 5, 2, 7, 2, 1, 1, 3, 2, 4, 5, 7, 5, 1 and 2.

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10. Find the mode from the following data:

Variable (x)	5	10	15	20	25	30	35
Frequency (f)	3	4	10	7	6	4	2

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11. If the mode of the following data is 4, then find the median of the data.

x	2	3	P	5	6
f	1	2	7	6	6

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12. Find the mode when median is 12 and mean is 16 of a data .

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13. The ratio of the mode and the median of a set of values is 15:11. Find the ratio of their mean and mode.

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Test Your Concepts Very Short Answer Types Questions

1. The class size of 9–12 (Inclusive form) is _____



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2. If the mean of x , y , and z is k , then mean of $\frac{x}{\gamma}$, 1 and $\frac{z}{\gamma}$ is _____



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3. A bar graph is drawn to the scale $1 \text{ cm} = 250$ units. The length of the bar representing a quantity of 300 units is _____



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4. In bar graphs, the width of the bar represents the value of the item. (True/False)

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5. If the median of $a, b, c, d, e,$ and f ($a < b < c < d < e < f$) then the median of $b, c, d,$ and e is _____

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6. In histograms, width of the bars is determined by class size. (True/False)

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7. The class mark of 10–15 (exclusive form) is _____



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8. The mode of 1, 2, 3, 4, 6, 6, 6, 7, 8, 9, and x is _____



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9. If the mean of p, q, r, s, and t is 5, then $(p - 5) + (q - 5) + (r - 5) + (s - 5) + (t - 5) =$ _____



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10. The number of times a particular observation occurs is called its.....



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11. Which measure of central tendency can be used to know the sales strategy in a shoe shop?



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12. The mean of the first n natural numbers is 10, then the number of observations is _____



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13. If the total weight of 25 students is 625 kg, then mean weight of 25 students is _____



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14. In a certain data, highest value is $(x + 4)$ and lowest value is $(x - 4)$. Range of the data is _____



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15. The mean of certain number of observations is 10. Even though one observation is deleted, mean is not altered. Then the deleted observation is _____



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16. For a certain data, if the median is equal to the mean, then the mode = _____



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17. A person spends 20% of his income towards food, 25% for education, 15% for miscellaneous expenses, and saves 40%. The angle of sector representing expenditure towards education in pie diagram showing his income is _____



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18. The frequency of an observation p is q and the frequency of another observation q is p , then mean is _____



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19. The most stable measure of central tendency is



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20. Krishna wrote 1 to 100 numbers, the frequency of the digit 9 is _____

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21. Find the mean of the following data. 4, 6, 7, 13, 25, and 35 _____

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22. Find the median of the following data. 24, 14, 13, 26, 12, 18, and 9 _____

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23. If Mean = 24 and Median = 26, then find the Mode.



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24. Find the mode of the following data.

11, 12, 11, 12, 13, 11, 12, 13, and 14.



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25. Find the mean of the following data.

23, 24, 27, 31, 37, 46, and 78.



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26. Find the median of the following data.

72, 93, 48, 36, 79, 23, 41, and 81.



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27. Find the mode of the following

data. 2, 4, 2, 3, 3, 4, 6, 8, 6, 2, 2, and 3



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28. Find the class marks and class size of the following distribution.

Class Interval	0–10	10–20	20–30	30–40	40–50
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29. Percentage of marks of 35 students is given in the following grouped frequency distribution table.

Marks (in %)	40-50	50-60	60-70	70-80	80-90	90-100
Number of students	5	4	7	8	6	5

Which class has highest frequency?



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30. If Median = 29 and Mode = 31, then find the Mean.



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Test Your Concepts Short Answer Types Questions

1. Find the mean of the following data.

Digit on the dice	1	2	3	4	5	6
Frequency	2	2	4	3	4	5

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2. Percentage of marks of 35 students is given in the following grouped frequency distribution table.

Marks (in %)	40-50	50-60	60-70	70-80	80-90	90-100
Number of students	5	4	7	8	6	5

How many students scored 70% and more than 70% of marks?

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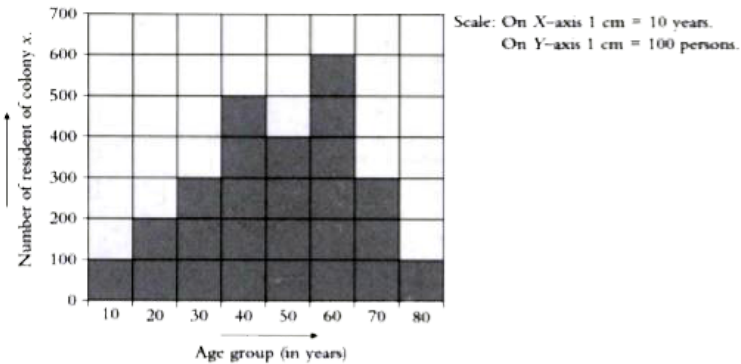
3. Percentage of marks of 35 students is given in the following grouped frequency distribution table.

Marks (in %)	40-50	50-60	60-70	70-80	80-90	90-100
Number of students	5	4	7	8	6	5

How many students scored less than 90% of marks?

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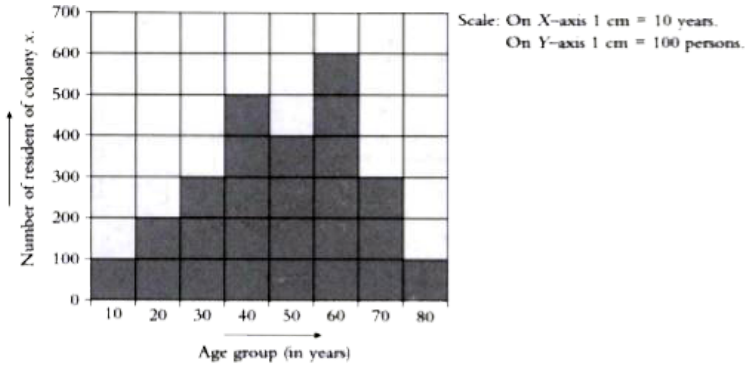
4. Read the adjacent histogram and answer the following questions.



Find the group in which number of persons is more.

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5. Read the adjacent histogram and answer the following questions.

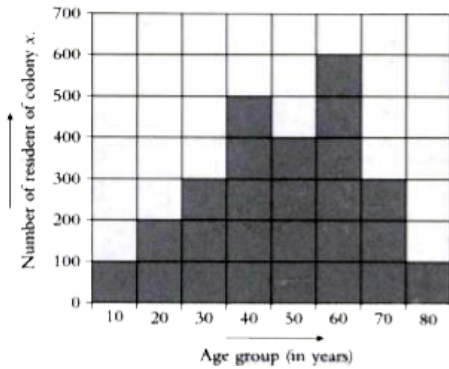


How many persons are there below 40 years?



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6. Read the adjacent histogram and answer the following questions.



Scale: On X-axis 1 cm = 10 years.
On Y-axis 1 cm = 100 persons.

Number of persons in two groups are same. What are they?



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7. Find the mean, median, and mode for the following data.

Scores	1	2	3	4
Frequency	4	6	6	4



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8. Find the median for the following data.

Scores	20	21	22	23	24	25
Frequency	2	4	10	8	2	2

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9. Find the mode for the following data.

Scores	0	1	2	3	4	5
Frequency	1	4	9	7	3	1

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10. The mode of the observations 11, 12, 13, 12, and 12 is

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11. If median - mean = mode - mean, then relation between median and mode is _____

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12. The mean of the following data is 2.

x	1	k	4	3
f	4	3	1	2

Find the value of k .

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13. If a bar graph is drawn to the scale 1 cm = 100 units, then a bar of length $\frac{P}{10}$ cm represents _____

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Test Your Concepts Essay Types Questions

1. Mean of n observations is \bar{x} . If each of these observations is increased by 1, 2, 3, 4... n , respectively, then what will be their mean?

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2. In a class, the average marks of boys is 520 and that of the girls is 420. If the average marks per student is 500, the percentage of boys in the class is

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3. If the mode of the observations 4, 5, 6, 6, 5, 4, 4, 5, x, 6, 6, 5, 4, 6, 5, γ is 6 and $x \neq \gamma$, then find the values of x and γ .



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4. If the difference between the mean and the mode of certain observations is 93, then the difference between the mean and the median is _____



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5. If the median of $\frac{a}{2}$, a , $\frac{a}{3}$, $\frac{a}{5}$ and $\frac{a}{4}$ is 6, then find the value of a ($a > 0$).



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Concept Application Level 1

1. The range of x , 14, 17, 23, 26, and 46 is 33. Which of the following can be the value of x ?

A. 32

B. 74

C. 48

D. 26

Answer: B



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2. If the mean of 2, x , and y is 8, then the mean of x , y and 8 is _____

A. 8

B. 9

C. 12

D. 10

Answer: D



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3. The median of $x, y, z, p, q,$ and r ($x > y > z > p > q > r$) is m , then find the median of $2q, 2p, 2z,$ and $2y$.

A. $\frac{m}{2}$

B. m

C. $2m$

D. 2

Answer: C



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4. A bar graph is drawn to the scale of $1 \text{ cm} = k \text{ units}$. The length of the bar representing a quantity 405 units is 5.4 cm. Find k .

A. 100

B. 70

C. 80

D. 75

Answer: D



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5. The range of 9, 13, 18, 21, 33, 46, and x is 39. Which of the following can be the value of x ?

A. 47

B. 50

C. 8

D. 7

Answer:



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6. A bar graph is drawn to the scale of $1 \text{ cm} = 2m \text{ units}$. The length of the bar representing a quantity of 875 units is 1.75 cm. Find m .

A. 200

B. 175

C. 250

D. 275

Answer: C



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7. The mean of a , b , and c is same as the mean of b , c , and d . Then which of the following is correct?

A. $a = b = c$

B. $b = c = a$

C. $b = c$

D. $a = d$

Answer: D



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8. In a pie graph, a component is represented as a sector with sector angle 96° , then find the percentage of the component value in total.

A. $23\frac{1}{3}\%$

B. $28\frac{1}{3}\%$

C. $25\frac{1}{3}\%$

D. $\frac{26^2}{3}\%$

Answer: D



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9. If the median of $a, b, c, d,$ and e ($a < b < c < d < e$) is k , then find the median of $\frac{b}{2}, \frac{c}{2},$ and $\frac{d}{2}$.

A. $\frac{k}{2}$

B. k

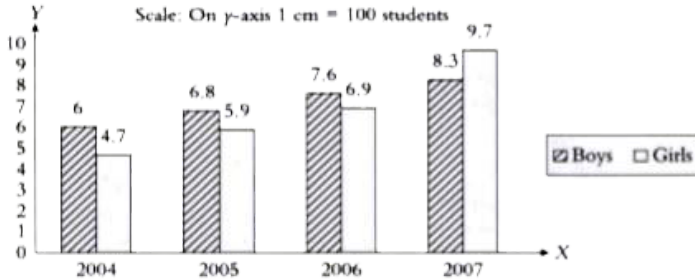
C. 2

D. $2k$

Answer: A



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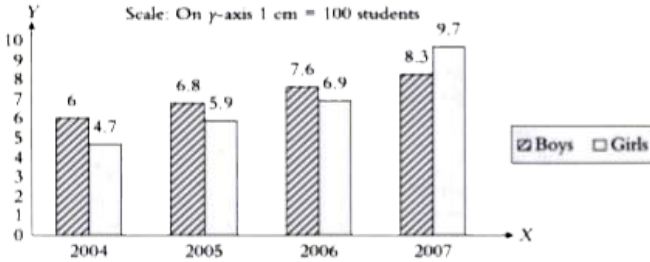
Bar graph of number of boys and number of girls in school A from 2004 to 2007.

10.

In which year the difference between the number of boys and the number of girls is more?

- A. 2004
- B. 2005
- C. 2006
- D. 2007

Answer: D



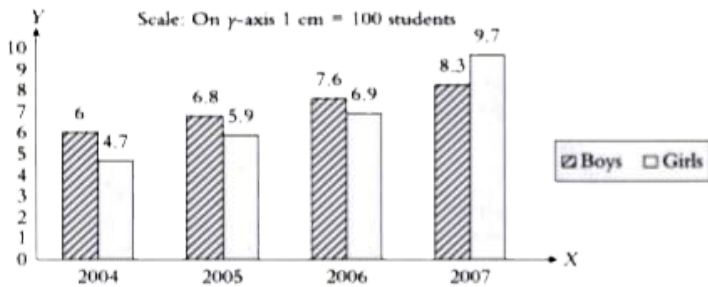
Bar graph of number of boys and number of girls in school A from 2004 to 2007.

11.

Total number of students in the year 2005 is _____

- A. 1160
- B. 1270
- C. 1380
- D. 1490

Answer: B



Bar graph of number of boys and number of girls in school A from 2004 to 2007.

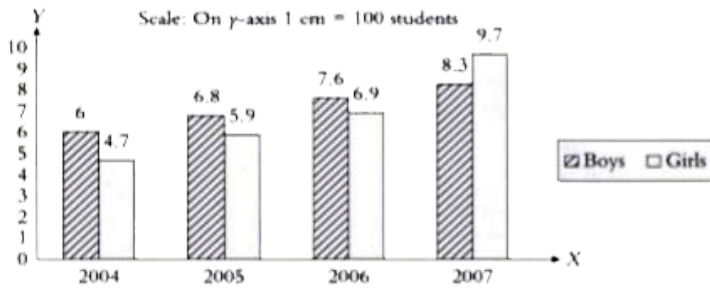
12. Find the minimum difference between the number of boys and girls in any year in the given period.

- A. 90
- B. 70
- C. 50
- D. 30

Answer: B



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Bar graph of number of boys and number of girls in school A from 2004 to 2007.

13.

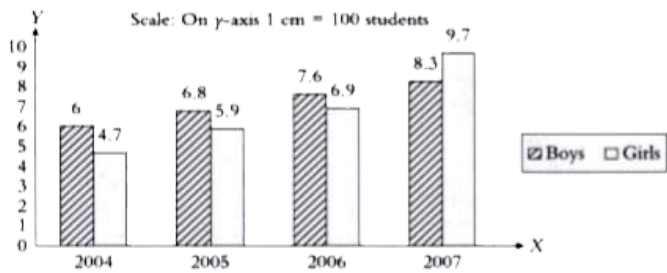
In which year the number of girls is more than the number of boys?

- A. 2004
- B. 2005
- C. 2006
- D. 2007

Answer: D



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Bar graph of number of boys and number of girls in school A from 2004 to 2007.

14.

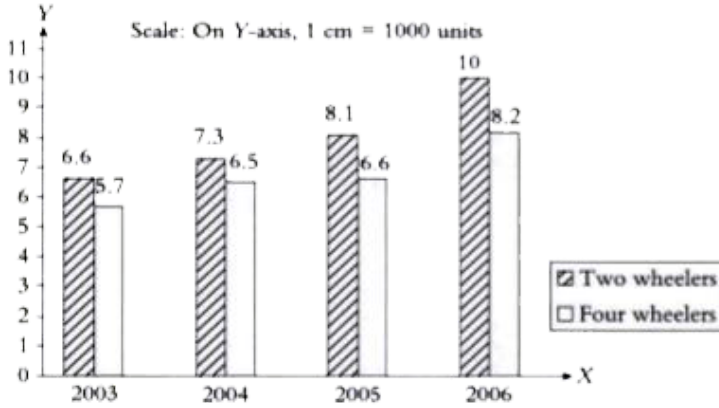
Find the ratio between the number of students in the year 2006 and in 2007.

- A. 107 : 145
- B. 127 : 145
- C. 29 : 36
- D. 107 : 127

Answer: C



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Bar graph represents sales of two wheelers and four wheelers in a mega city from 2003 to 2006.

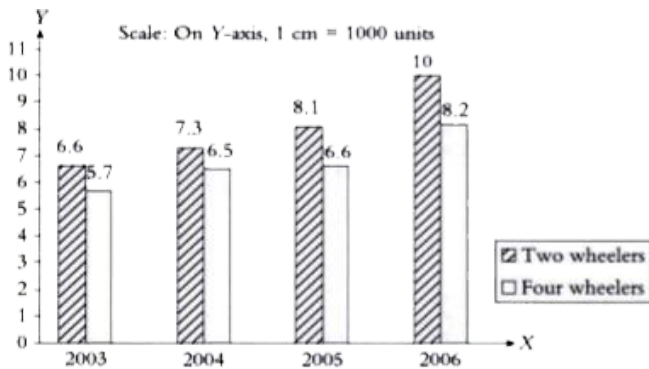
15. In which year the difference between sales of two wheelers and four wheelers is less?

- A. 2003
- B. 2004
- C. 2005
- D. 2006

Answer: B



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Bar graph represents sales of two wheelers and four wheelers in a mega city from 2003 to 2006.

16.

Total number of vehicles (two wheelers and four wheelers) sold in the years 2003 and 2004 is _____

- A. 26100
- B. 28500
- C. 25100
- D. 27500

Answer: A



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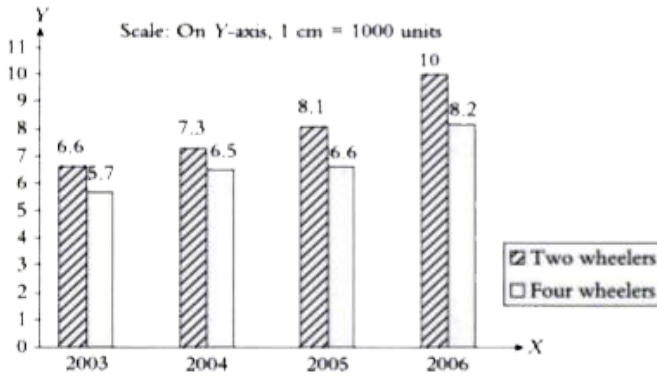


Figure 14.7 Bar graph represents sales of two wheelers and four wheelers in a mega city from 2003 to 2006.

17.

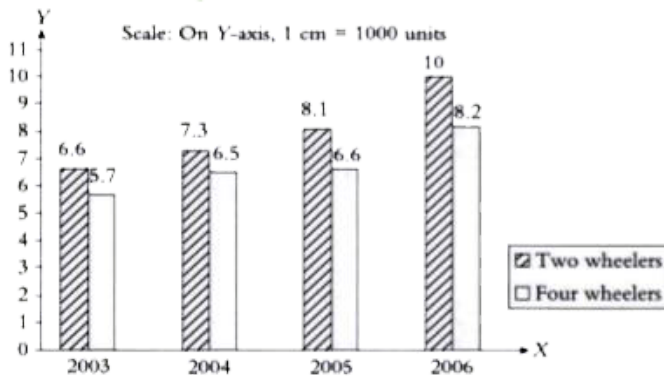
Find the maximum difference between sales of two wheelers and that of four wheelers, in any year, in the given period.

- A. 1500
- B. 1700
- C. 1800
- D. 2000

Answer: C



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Bar graph represents sales of two wheelers and four wheelers in a mega city from 2003 to 2006.

18.

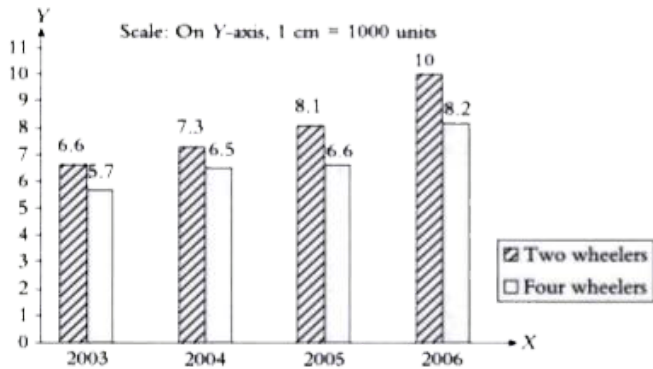
Find the total number of two wheelers sold in four years.

- A. 26000
- B. 27000
- C. 31000
- D. 32000

Answer: D



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Bar graph represents sales of two wheelers and four wheelers in a mega city from 2003 to 2006.

19.

Find the ratio between number of vehicles sold in the year 2004 and in the year 2006.

- A. 41 : 46
- B. 69 : 91
- C. 147 : 182
- D. 46 : 49

Answer: B



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20. If median of $p, q, r, s, t, u, v,$ and w is k , then find the value of $(p - k) + (q - k) + (-k) + (s - k) + (t - k) + (u - k) + (v - k) + (w - k)$.

A. 8

B. k

C. 0

D. Cannot be determined

Answer: D



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21. If the ratio of mode and median is $9:7$, then find the ratio of mean and mode.

A. $2:3$

B. 4: 5

C. 5: 9

D. 8: 9

Answer: A



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22. The mean of 17 observations is 30, three observations 20, 30, and 40 are deleted and one observation 90 is included. Then, find the mean of the final observations.

A. 33

B. 34

C. 35

D. 36

Answer: B



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23. The mean of 19 observations is 20, two observations 30 and 20 are deleted, and three observations 15, 25, and 10 are included. Then, find the mean of the final observations.

A. 19

B. 20

C. 21

D. 22

Answer: A



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24. If x and y are two distinct positive integers, then mean of x and y is always greater than _____

A. $\frac{4xy}{x + y}$

B. $\frac{3xy}{x + y}$

C. $\frac{3xy}{x + y}$

D. $\frac{5xy}{x + y}$

Answer: C



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25. If the ratio of mode and mean is 8: 5, then the ratio of mode and median is _____

A. 8: 7

B. 3: 2

C. 4: 3

D. 7: 6

Answer: C



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26. If mean of the following data is 6, then which of the following can be the value of a?

x	2	4	6	8	10
f	1	2	a	2	1

A. 4

B. 5

C. 8

D. All the above

Answer: D



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27. If the mean of $a, b, c, d, e, f, \dots, x, y, z$ (26 terms) is β , then $(a - \beta) + (b - \beta) + (c - \beta) + \dots + (x - \beta) + (y - \beta) + (z - \beta)$ is equal to _____

A. 26

B. β

C. 0

D. 25

Answer: C



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28. The average weight of 20 students of a class is 33 kg. If the average weight of all the boys is 35 kg and the average weight of all the eight girls is y kg, then find y

A. 28

B. 39

C. 30

D. 31

Answer: C



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29. In a pie diagram, a certain component is represented by 60° and the total value of the components is 2160, find the value of the component. The following steps are involved in solving the above problem. Arrange them in sequential order.

(A) $\frac{x}{2160} \times 360^\circ = 60^\circ$

(B) Degree of the component = $\frac{\text{Component value}}{\text{Total value}} \times 360^\circ$

(C) Let the component value of be x.

(D) $x = 360$

A. ABCD

B. BCAD

C. CABD

D. CBAD

Answer: D



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30. P, Q, R, S, and T are five numbers in ascending order. Their median is M . Find the median of $Q/3$, $R/3$, and $S/3$.

A. $M/3$

B. $3M$

C. M

D. 3 / M

Answer: A



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31. A bar graph is drawn to the scale of $1 \text{ cm} = x$ units. In it, the length of a bar representing a quantity of 702 units is 3.6 cm. Find x .

A. 165

B. 175

C. 185

D. 195

Answer: D



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Concept Application Level II

1. If x and y are two distinct positive integers, then mean of x and y is always greater than _____

A. xy

B. $\sqrt{2xy}$

C. $2\sqrt{xy}$

D. \sqrt{xy}

Answer: D



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2. If the mean of the following data is 5, then which of the following is the value of p .

x	1	3	5	7	p
f	4	2	6	4	4

A. 9

B. 8

C. 11

D. 12

Answer: B



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3. A person distributed his total property among his three sons. The ratio of total property, share of first son, second son and share of third son is 24 : 7: 8. Find the central angle of sector, which represents the share of the third son.

A. $72\frac{1}{2}^\circ$

B. 135°

C. 105°

D. $67\frac{1}{2}^\circ$

Answer: B



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4. If the mean of first y natural numbers is 28, then find y .

A. 28

B. 27

C. 56

D. 55

Answer: D



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5. Anand's income and expenditure are in the ratio 5: 2. Find the central angle of the sector, which represents Anand's savings.

A. 144°

B. 108°

C. 90°

D. 216°

Answer: D



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6. If the mode of the following data is 8, then find the median of the data.

x	2	4	6	p	10
f	1	3	5	7	2

A. 4

B. 6

C. 8

D. 10

Answer:



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7. The mean of x and $\frac{1}{x}$ is N then the mean of x^2 and $\frac{1}{x^2}$ is

A. $k^2 - 1$

B. $2k^2 - 1$

C. $k^2 - 2$

D. $2k^2 - 1$

Answer: D



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8. In a data a is repeated a times, b is repeated b times, and c is repeated c times, where a , b , and c are distinct positive integers. For the minimum possible value of mean of the data, find the mode.

A. 1

B. 2

C. 3

D. 4

Answer: C



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9. If the mean of first x natural numbers is 26, then find the sum of the first x natural numbers.

A. 1320

B. 1362

C. 1632

D. 1326

Answer: D



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10. If $\text{mode} - \text{mean} = \text{mean} - \text{mode}$, then which of the following is necessarily true?

A. Mean = Median

B. Median = Mode

C. Mean = Mode

D. All of these

Answer: C



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11. The mode of the observations 4, 1, 2, 3, 1, 3, 1, 2, and x cannot be

A. 2

B. 3

C. 4

D. x

Answer: C



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12. The mean of the following data is 4.

x	2	4	6	8
f	8	a	4	2

Which of the following can the value of a be?

A. 6

B. 2

C. 4

D. All of these

Answer: D

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13. A bar graph is drawn to the scale $1 \text{ cm} = k \text{ units}$, then a bar of length $k \text{ cm}$ represents

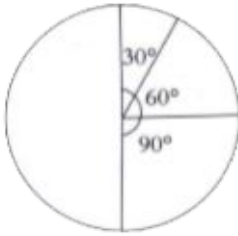
- A. 1 unit
- B. k units
- C. $2k$ units
- D. k^2 units

Answer: D

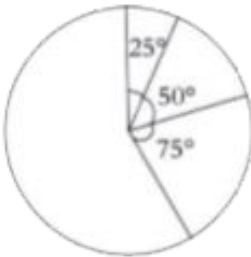
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14. A pie-diagram representing the following data is_____

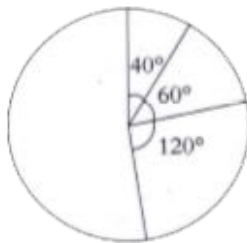
Component	A	B	C	D
Component value	10	20	30	40



A.



B.



C.



D.

Answer: D



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15. The mean of the first n natural numbers is 32, find n .

A. 64

B. 63

C. 65

D. 62

Answer: B



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16. If the difference between the mode and the median of certain observations is 54, then the difference between the median and the mean is _____

A. 36

B. 18

C. 27

D. 81

Answer: C



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17. The mean of the following data is 9. Find the value of a.

x	2	4	5	8	a
f	3	1	6	4	6

A. 12

B. 10

C. 9

D. 18

Answer: D



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18. The mean of 5, 7, 8, 10, and $2x$ is x , then find the value of x .

A. 8

B. 9

C. 10

D. 11

Answer: C



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19. The mean of p , q , and r is same as the mean of q , $2r$, and s .

then which of the following is correct ?

A. $p = q = r$

B. $q = r = s$

C. $q = r$

D. $p = s$

Answer: D



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20. If the range of 16, 15, 21, 28, 48, and λ is 34, then λ can be

A. 14

B. 49

C. Either (a) or (b)

D. λ

Answer: C



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21. If mean = 28 and median = 30, then find the mode.

A. 32

B. 34

C. 36

D. 38

Answer: B



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22. If the mode of the following data is 9, then find the median of the data.

x	7	8	y	10	11
f	2	3	6	5	5

A. 8

B. 9

C. 10

D. 11

Answer: B



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23. If the difference between the mode and the median of certain observations is 54, then the difference between the median and the mean is _____

A. 36

B. 18

C. 27

D. 81

Answer: *C*



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24. If the median of $\frac{a}{3}, \frac{a}{2}, \frac{a}{4}, \frac{2a}{5}, \frac{a}{6}$ is 12, then find the value of a ($a > 0$).

A. 36

B. 48

C. 30

D. 24

Answer: **A**



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25. Mean of n observations is \bar{x} . If each of these n observations is increased by 2, 4, 6, 8, ..., n , respectively, then which of the following is the new mean?

A. $\bar{x} + \frac{n+1}{2}$

B. $\bar{x} + n + 1$

C. $\bar{x} + n$

D. $\bar{x} + \frac{n}{2}$

Answer: B



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26. In a company, the average salary of male employees is Rs 8200 and that of female employees is Rs 7200. If the average salary per employee is Rs 7900, then the percentage of female employees of the total employees is _____

A. 30 %

B. 40 %

C. 50 %

D. 25 %

Answer: A



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27. If the mode of the observations 4, 2, 3, 3, 3, 2, 2, 4, 2, 4, x, 3, 4, 4, 2, 3, 4 is 4, then x cannot be _____

A. 2

B. 4

C. 3

D. both (a) and (b)

Answer: D



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28. The mean of 15 observations is 30. Two observations 28 and 38 are deleted and three observations 33, 39, and 48 are included. Find the mean of new set of observations.

A. 31

B. 31.5

C. 32

D. 33.4

Answer: B



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29. $v_{49_newFlow}$

A. a

B. 0

C. $2a$

D. $2/a$

Answer: B



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