Data Handling

| **7.1** Pictograph | **7.2** Bar graph |

7.1 PICTOGRAPH

Pictograph is a method of representing data with the help of pictures.

A pictograph uses pictures or symbols to represent information.

For example :

Consider the data that shows the number of books bought by students of class-3 at a book fair.

> 💡 **Olympiad Bite**
>
> Pictograph is also known as picture graph.

Type of Books	Story Books	Science fiction Books	Activity Books	History Books
Number of Books	20	16	12	8

Books bought by Class 3 students at the book fair
Story Books
Science fiction Books
Activity Books
History Books
Each stands for 4 books.

You can answer the following questions using the above pictograph.

(a) Which kind of books were the most popular? | Story Books |

(b) How many activity books were bought? | 12 |

(c) How many more story books than activity books were bought? | 8 |

(d) How many less history books than science fiction books were bought? | 8 |

7.2 BAR GRAPH

In bar graphs, we represent the data in bars. Bars can be of different height but should be of same width.

For example : Consider the data collected that shows the number of candies sold by Smriti during 5 days of a particular week.

| Days	Monday	Tuesday	Wednesday	Thursday	Friday
Number of candies sold	50	30	20	40	10

Representation of this data in bar graph:
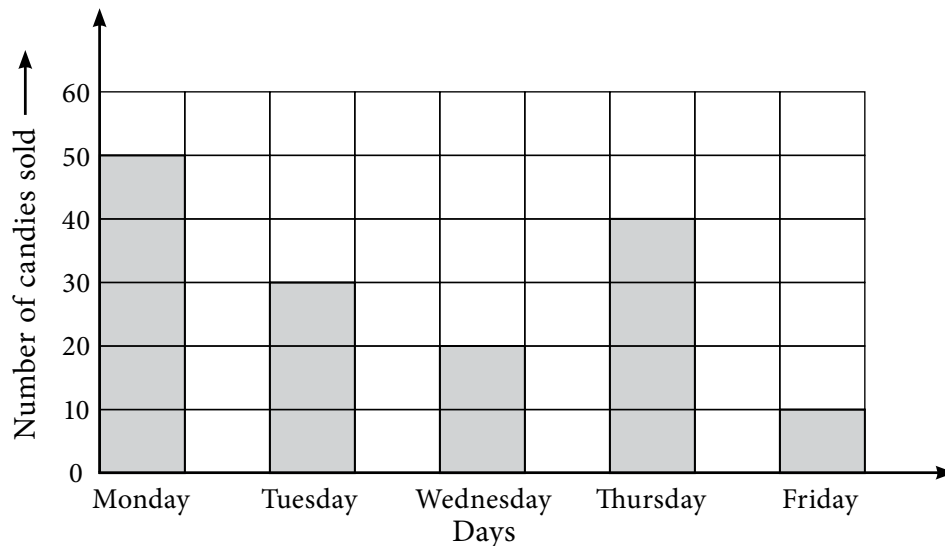
Using the above bar graph following questions can be answered easily.

(a) On which day minimum candies were sold?

(b) How many candies sold on Tuesday and Thursday together?

(c) On which day 20 candies were sold?

(d) How many more candies were sold on Monday than on Friday?

Friday
70
Wednesday
40

SELF TEST - 1

Direction (1-3) : The given picture graph shows the number of umbrellas sold by three shops during a week. Study the graph carefully and answer the following questions.

Each ☂ stands for 50 umbrellas.
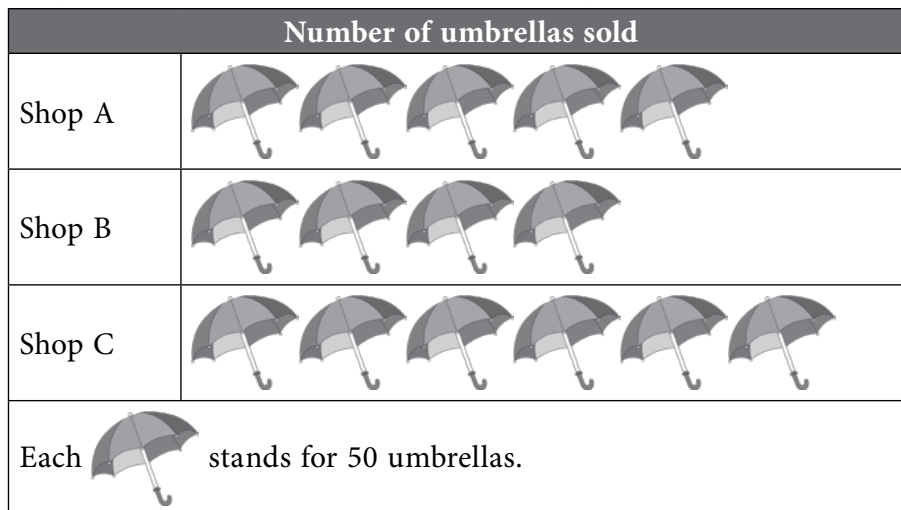
1. Which shop sold the least number of umbrellas?

(A) Shop A

(B) Shop B
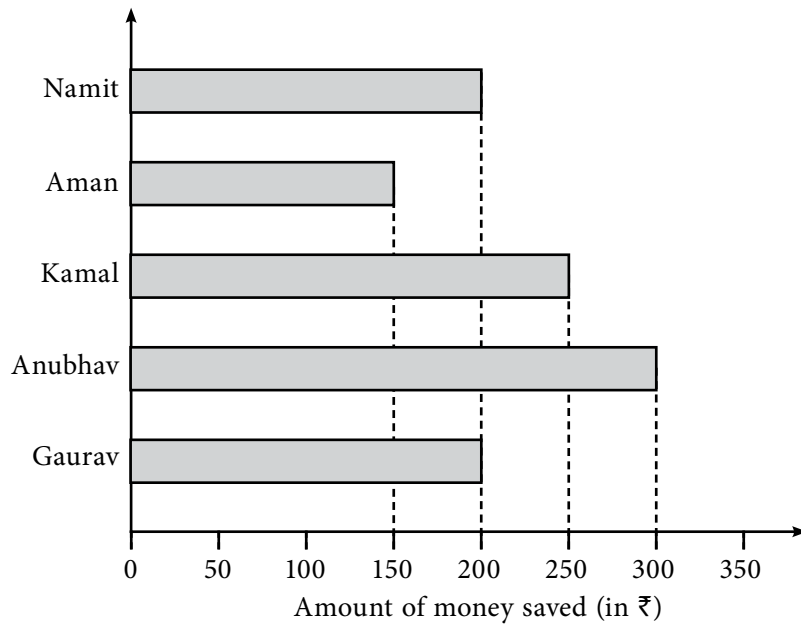
(C) Shop C

(D) Can't be determined

2. Shop B sold _____ less umbrellas than shop C.

(A) 100   (B) 50

(C) 80   (D) 40

3. If an umbrella costs ₹ 50, then how much amount is earned by shop A?

(A) ₹ 12500   (B) ₹ 11500

(C) ₹ 15000   (D) ₹ 10000

Direction (4-5) : Consider the bar graph showing the savings of 5 boys and answer the following questions.

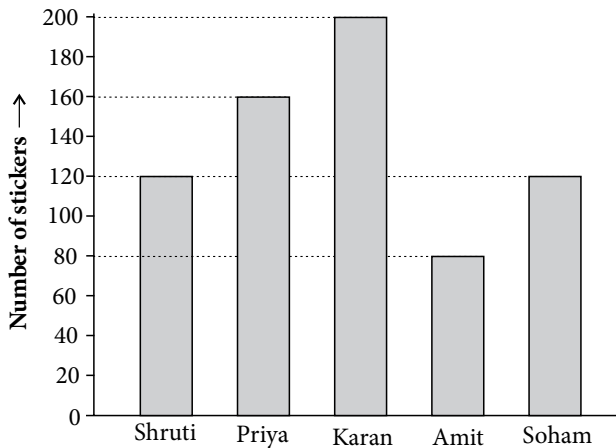Amount of money saved (in ₹)

4. Aman saved _____ less than Gaurav.

(A) ₹ 50

(B) ₹ 20

(C) ₹ 100

(D) ₹ 200

5. If Kamal spends ₹ 120 on shopping, then he has left _____ with him.

(A) ₹ 100

(B) ₹ 200

(C) ₹ 130

(D) ₹ 50

EXERCISE

Direction (1-3): The given bar graph shows the number of stickers owned by five students. Study it carefully and answer the following questions.

1. Find the number of stickers owned by Soham, Karan and Priya altogether.

(A) 360   (B) 250

(C) 480   (D) 490

2. Find the fraction of number of stickers owned by Amit to the number of stickers owned by Shruti.

(A) 80/120   (B) 120/80

(C) 80/60   (D) 60/70

3. How many more stickers does Karan owned than Soham?

(A) 120   (B) 200

(C) 80   (D) 140

Direction (4 and 5) : Consider the picture graph showing number of different flowers in a garden and answer the following questions.

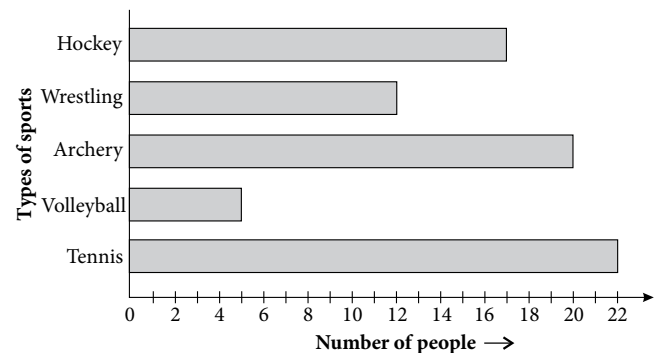| Flower	Number of flowers
Rose	🕯️ 🕯️ 🕯️ 🕯️ 🕯️
Lily	🕯️ 🕯️
Lotus	🕯️ 🕯️ 🕯️ 🕯️
Sunflower	🕯️ 🕯️ 🕯️
Each 🕯️ stands for 3 flowers.	

4. There are _____ more lotus than sunflowers in the garden.

(A) 2   (B) 3

(C) 1   (D) 4

5. How many total flowers are there in the garden?

(A) 28   (B) 42

(C) 14   (D) 32

Direction (6-8) : The given bar graph shows the types of sports people like. Study it carefully and answer the questions.

6. 5 less people prefer Hockey than _____.

(A) Archery   (B) Tennis

(C) Volleyball   (D) Wrestling

7. The total number of people who like wrestling and _____ is 17.

(A) Volleyball

(B) Tennis

(C) Hockey

(D) Archery

8. How many more number of people like Volleyball and Hockey together than the number of people like Archery?

(A) 10   (B) 0

(C) 8   (D) 2

Direction (9-11) : The number of kites made by a company in the four years is represented by the given pictograph. Study it carefully and answer the following questions.

| Years	Number of Kites
2016	
2017	
2018	
2019	
Each represents 1000 kites.	

9. How many kites were made in the year 2017?

(A) 2000 (B) 400
(C) 4000 (D) 3000

10. In which year, maximum number of kites made?

(A) 2019 (B) 2018
(C) 2016 (D) 2017

11. The total number of kites made in 2016 and 2017 together is _____.

(A) 7000 (B) 9500
(C) 9000 (D) 7500

Direction (12 and 13) : The given bar graph shows the total collection of books in a school library. Study it carefully and answer the following questions.
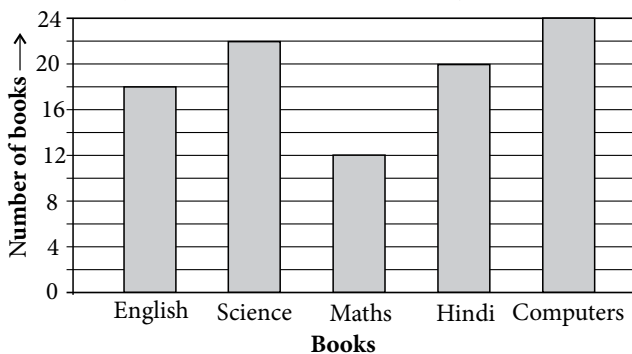
12. Which subject has maximum number of books?

(A) Science (B) Maths
(C) Computers (D) English

13. Find the total number of Science and Maths books together.

(A) 30 (B) 32
(C) 34 (D) 40

Direction (14-16) : Consider the bar graph showing four different types of cars sold by Priya in a week and answer the following questions.
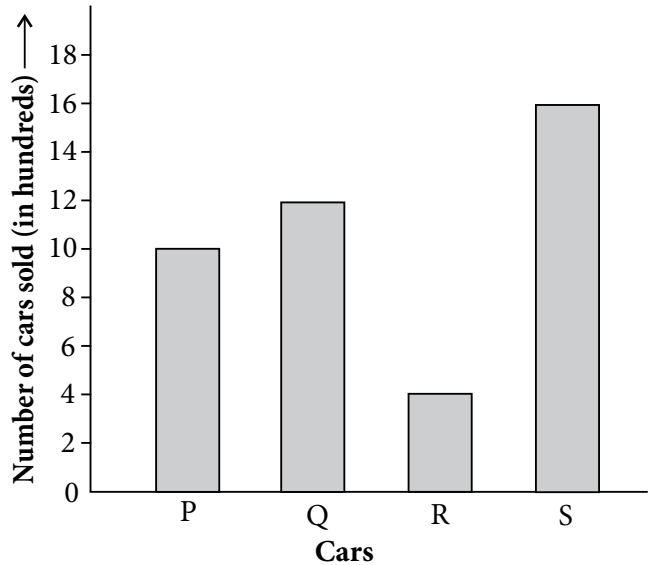
14. The most popular car is _____.

(A) Car P (B) Car R
(C) Car S (D) Car Q

15. Priya sold _____ more car S than car Q.

(A) 200 (B) 300
(C) 400 (D) 500

16. She has to sell _____ more car R so that the number of car R sold is same as the number of car P sold.

(A) 500 (B) 400
(C) 300 (D) 600

Direction (17-19) : The given pictograph shows the number of teddy bears sold by Mr Ahooja in four months. Study it carefully and answer the following questions.

Months	Number of Teddy bears sold
January	
February	
March	
April	
Each represents 10 teddy bears.	

17. What is the total number of teddy bears sold during February and April together?

(A) 100   (B) 150

(C) 50   (D) 40

18. In which two months, the same number of teddy bears were sold?

(A) February and March

(B) January and March

(C) March and April

(D) January and April

19. How many teddy bears were sold in March?

(A) 28   (B) 20

(C) 50   (D) 55

Direction (20 and 21) : The given bar graph shows the number of children of class 3 who would like to go for different places for holidays. Study the given graph carefully and answer the following questions.
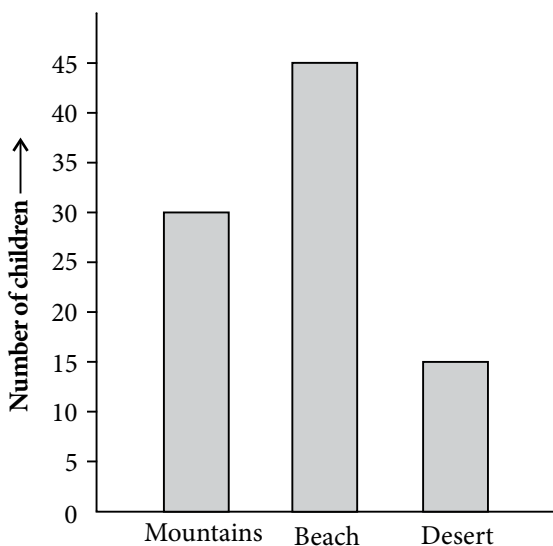
20. How many less children like to go for Desert than Mountains?

(A) 30   (B) 15

(C) 40   (D) 25

21. The number of children like to go for _____ is three times the number of children like to go for Desert.

(A) Mountain

(B) Beach

(C) Both (A) and (B)

(D) Neither (A) nor (B)

Direction (22-24) : The following pictograph shows the number of people having four different types of transportation modes. Study the graph carefully and answer the following questions.

Transportation mode	Number of people
Cycle	
Scooty	
Scooter	
Car	

Each stands for 5 people.

22. Most of the people preferred _____.

(A) Cycle   (B) Scooter

(C) Car   (D) Scooty

23. What is difference between the number of people having car and the number of people having cycle?

(A) 15   (B) 5

(C) 10   (D) 20

24. What is the fraction of the number of people having scooter to the total number of people?

(A) $\dfrac{15}{45}$ (B) $\dfrac{10}{45}$

(C) $\dfrac{15}{75}$ (D) $\dfrac{10}{75}$

Direction (25-27) : The given bar graph shows the number of each type of products that Puneet sold in a day. Study the graph carefully and answer the following questions.
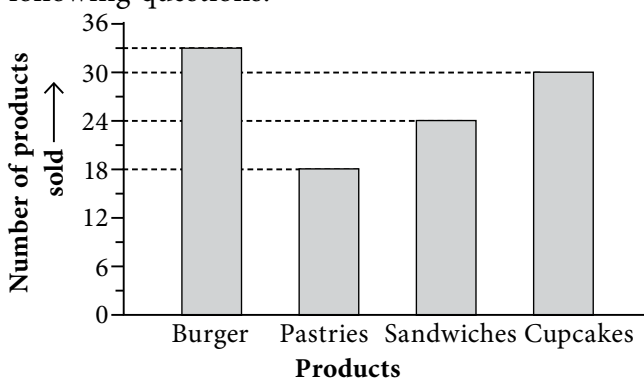
25. Find the total number of burgers and pastries sold together.

(A) 51 (B) 48
(C) 35 (D) 40

26. How many less sandwiches were sold than cupcakes?

(A) 6 (B) 18
(C) 12 (D) 4

27. If each product was sold for ₹ 10, then how much money did Puneet collect?

(A) ₹ 1500 (B) ₹ 1050
(C) ₹ 1800 (D) ₹ 1200

Direction (28-30) : The given bar graph shows the number of bananas eaten by 5 friends. Study it carefully and answer the following questions.

28. Who ate three times as many bananas as Raghav ate?

(A) Vinesh (B) Sahil
(C) Ronak (D) Vishal

29. _____ eats less bananas than Ronak but more than Raghav.

(A) Sahil (B) Vishal
(C) Vinesh (D) Both (A) and (B)

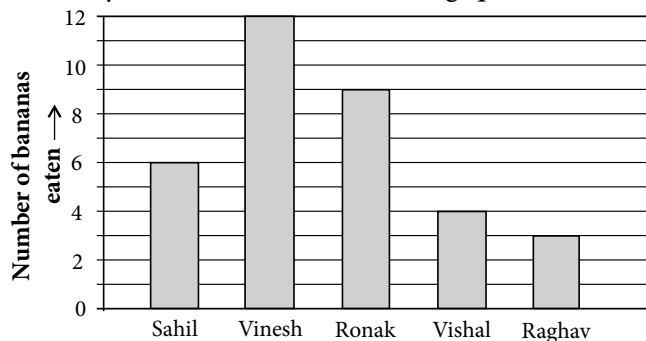**30.** If a banana costs ₹ 5, then how much money will be paid by Ronak?

(A) ₹ 65 (B) ₹ 90
(C) ₹ 45 (D) ₹ 70

Achievers Section (HOTS)

31. The given picture graph shows the number of basketballs 5 girls have. Study it carefully and answer the following question.

| Priya | Nidhi | Rashi | Sukriti | Sneha |

Each 🏀 stands for 8 basketballs.
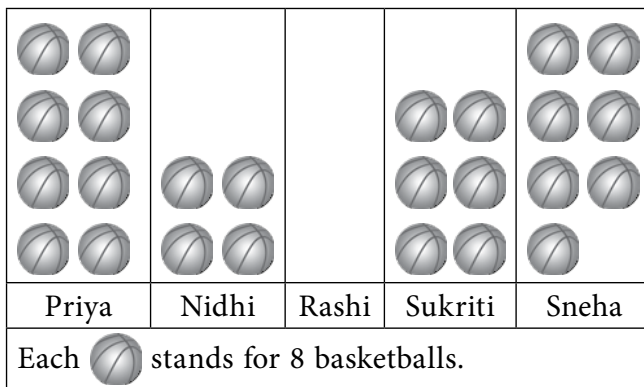
If there are total 240 basketballs, then Rashi has _____ basketballs.

(A) 45 (B) 32
(C) 40 (D) 56

32. The given pictograph shows the colours of the shirts that children of a class like to wear. If there are 168 children in the class, then find the number of ⭐ for blue colour shirts.

| Black | White | Blue | Green |

Each ⭐ represents 4 children.
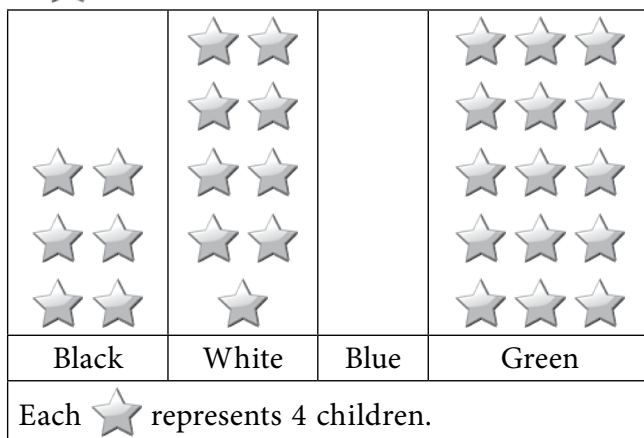
(A) 5 (B) 6
(C) 7 (D) 12

33. The given pictograph shows the number of ladoos five friends have. Study it carefully and answer the following question.
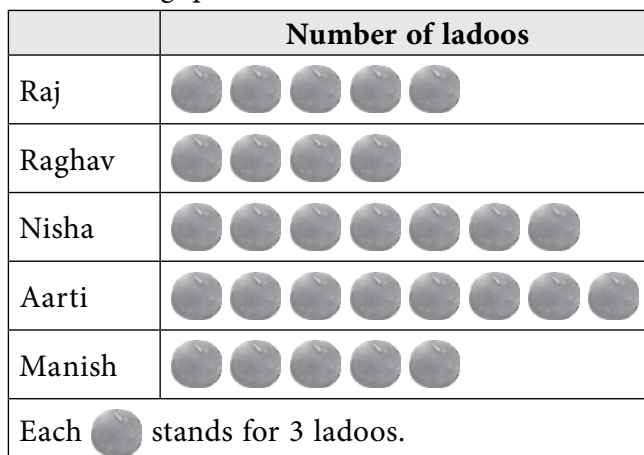
	Number of ladoos
Raj	⚫⚫⚫⚫⚫
Raghav	⚫⚫⚫
Nisha	⚫⚫⚫⚫⚫⚫
Aarti	⚫⚫⚫⚫⚫⚫⚫
Manish	⚫⚫⚫⚫
Each ⚫ stands for 3 ladoos.	

If Nisha gave 6 ladoos to Raghav, then he will have _____ more ladoos than Raj.

(A) 9   (B) 0

(C) 6   (D) 3

34. The given bar graph shows the number of ice-cream cones of different flavours sold. Study the graph carefully and answer the given question.
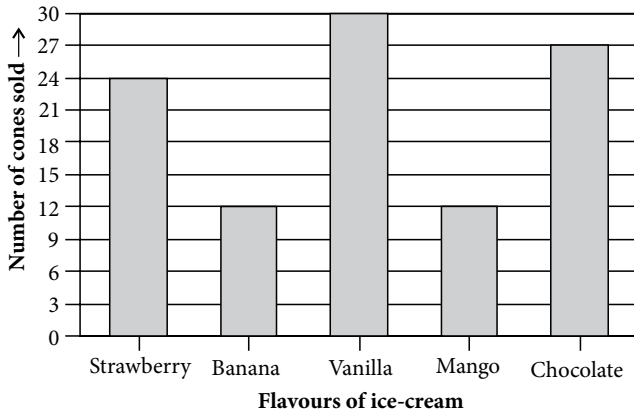
How many less cones of strawberry ice-cream were sold than chocolate and banana ice-cream cones together?

(A) 15

(B) 10

(C) 12

(D) 8

35. Which of the following statements is true for the information given in the graph?

(A) Q has the least number of cows.

(B) P has 1500 less cows than T.

(C) R and S have total 5000 cows.

(D) Q has 2000 more cows than S.

1. The given picture graph shows the favourite colours of a group of students. Find the total number of students in the group.

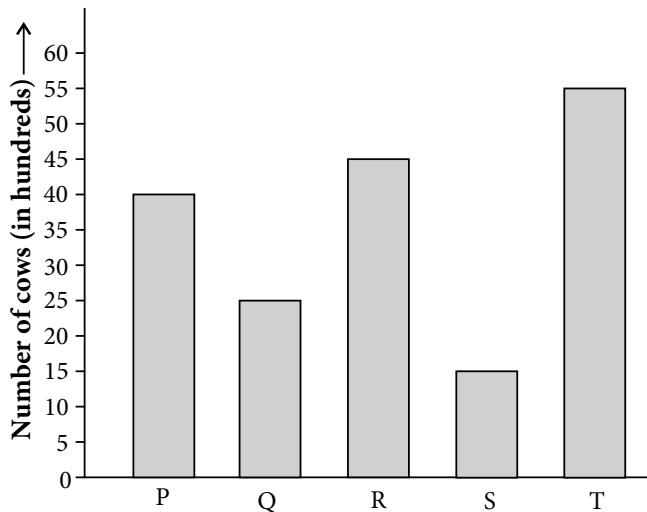| Red	Pink	Orange	Yellow
★★ ★★ ★	★★	★★ ★	★★ ★★

Each ★ stands for 5 students.
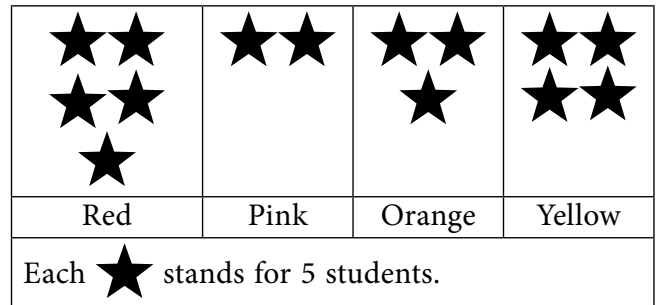
(A) 70   (B) 96

(C) 60   (D) 84   *(Level-1)*

2. The given bar graph shows the number of bicycles sold by a shop in 6 days of a week. Study the graph carefully and fill in the blanks.
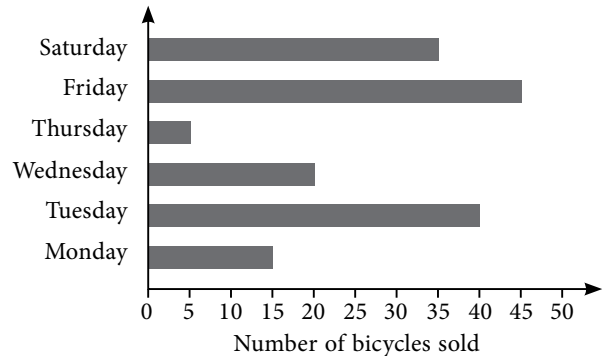
(1) There were _____ more bicycles sold on Friday than on Thursday.

(2) There were _____ bicycles sold on Tuesday, Friday and Saturday altogether.

	(1)	**(2)**
(A)	30	100
(B)	40	120
(C)	35	95
(D)	40	100

                      (Level-1)

3. The given pictograph shows the number of hair clips 5 friends have. Study the pictograph carefully and answer the following question.

Priya	Ekta	Riya	Pihu	Pooja

Each stands for 6 hair clips.

What is the difference between the number of hair clips Priya and Pihu have?

(A) 5   (B) 10

(C) 6   (D) 15   *(Level-1)*

4. The data in the given pictograph shows the number of cups sold by Pranav in 6 days. Study the graph carefully and answer the given question.

Monday	🍵 🍵 🍵 🍵 🍵 🍵
Tuesday	🍵 🍵 🍵 🍵
Wednesday	🍵 🍵 🍵 🍵 🍵 🍵 🍵 🍵

Thursday	
Friday	🍵 🍵 🍵 🍵 🍵
Saturday	🍵 🍵 🍵 🍵 🍵 🍵

1 🍵 = 5 cups

If Pranav sold 175 cups in 6 days, then how many cups did he sell on Thursday?

(A) 30

(B) 6

(C) 5

(D) 10   *(Level-2)*

HINTS & EXPLANATIONS

1. **(B):** Shop B sold least number of umbrellas.

2. **(A):** Number of umbrellas sold by shop B
= 4 × 50 = 200
Number of umbrellas sold by shop C = 6 × 50 = 300
So, shop B sold 300 – 200 = 100 less umbrellas than shop C.

3. **(A):** Number of umbrellas sold by shop A
= 5 × 50 = 250
Cost of 1 umbrella = ₹ 50
∴ Cost of 250 umbrellas = ₹ 50 × 250 = ₹ 12500

(4-5):

Boys	Amount of money saved
Namit	₹ 200
Aman	₹ 150
Kamal	₹ 250
Anubhav	₹ 300
Gaurav	₹ 200

4. **(A):** Aman saved ₹ 200 – ₹ 150 = ₹ 50 less than Gaurav.

5. **(C):** Amount left with Kamal = ₹ 250 – ₹ 120 = ₹ 130

EXERCISE

1. **(C):** Number of stickers owned by Soham, Karan and Priya altogether = 120 + 200 + 160
= 480

2. **(A):** Number of stickers owned by Amit = 80
Number of stickers owned by Shruti = 120

So, required fraction = $\dfrac{80}{120}$

3. **(C):** Karan owned 200 – 120 = 80 more stickers than Soham.

4. **(B):** Number of lotus = 4 × 3 = 12
Number of sunflowers = 3 × 3 = 9
So, required difference = 12 – 9 = 3

5. **(B):** Number of Roses = 5 × 3 = 15
Number of Lilys = 2 × 3 = 6
Number of Lotus = 4 × 3 = 12
Number of Sunflowers = 3 × 3 = 9

Total number of flowers in the garden
= 15 + 6 + 12 + 9 = 42

6. **(B):** Number of people prefer Hockey = 17
5 more than 17 = 17 + 5 = 22 and 22 people like Tennis.

7. **(A):** Number of people like Wrestling = 12
Number of people like Volleyball = 5
So, total number of people who like Wrestling and Volleyball = 12 + 5 = 17

8. **(D):** Number of people like Volleyball and Hockey together = 5 + 17 = 22
Number of people like Archery = 20
∴ Required difference = 22 – 20 = 2

(9-11):

Year	Number of kites made
2016	5 × 1000 = 5000
2017	4 × 1000 = 4000
2018	7 × 1000 = 7000
2019	1 × 1000 = 1000

9. **(C)** **10.** **(B)**

11. **(C):** Total number of kites made in 2016 and 2017 together = 5000 + 4000 = 9000

12. **(C):** Computers has maximum number of books.

13. **(C):** Number of Science books = 22
Number of Maths books = 12
So, total number of Science and Maths books together = 22 + 12 = 34

(14-16):

Cars	Number of cars sold
P	10 × 100 = 1000
Q	12 × 100 = 1200
R	4 × 100 = 400
S	16 × 100 = 1600

14. **(C)**

15. **(C):** Priya sold 1600 – 1200 = 400 more car S than car Q.

16. **(D):** Number of car P sold = 1000
Number of car R sold = 400
So, she has to sell 1000 – 400 = 600 more car R.

(17-19):

Month	Number of teddy bears sold
January	5 × 10 = 50
February	3 × 10 = 30
March	5 × 10 = 50
April	7 × 10 = 70

17. (A): Number of teddy bears sold during February and April = 30 + 70 = 100

18. (B)   19. (C)

20. (B): Number of children like to go for Desert = 15
Number of children like to go for Mountains = 30
So, required difference = 30 – 15 = 15

21. (B): Number of children like to go for Desert = 15
As 3 times of 15 = 15 × 3 = 45
And, number of children like to go for beach = 45
So, number of children like to go for Beach is three times the number of children like to go for Desert.

(22-24):

Transportation mode	Number of people
Cycle	3 × 5 = 15
Scooty	4 × 5 = 20
Scooter	3 × 5 = 15
Car	5 × 5 = 25

22. (C)

23. (C): Required difference = 25 – 15 = 10

24. (C): Total number of people = 15 + 20 + 15 + 25 = 75

∴ Required fraction = $\dfrac{15}{75}$

25. (A): Number of burgers sold = 33
Number of pastries sold = 18
Total number of burgers and pastries sold together = 33 + 18 = 51

26. (A): Number of sandwiches sold = 24
Number of cupcakes sold = 30
So, required difference = 30 – 24 = 6

27. (B): Total number of products sold
= 33 + 18 + 24 + 30 = 105
Cost of each product = ₹ 10
∴ Cost of 105 products = ₹ 10 × 105 = ₹ 1050

28. (C): Raghav ate 3 bananas.
Three times of 3 = 3 × 3 = 9 bananas
And, Ronak ate 9 bananas.

29. (D): Both Sahil and Vishal eat less bananas than Ronak but more than Raghav.

30. (C): Number of bananas eaten by Ronak = 9
Cost of 1 banana = ₹ 5
So, cost of 9 bananas = ₹ 5 × 9 = ₹ 45

31. (C):

	Number of basketballs
Priya	8 × 8 = 64
Nidhi	4 × 8 = 32
Rashi	
Sukriti	6 × 8 = 48
Sneha	7 × 8 = 56

Since, total number of basketballs = 240
⇒ Number of basketballs Rashi has + 64 + 32 + 48 + 56 = 240
Number of basketballs Rashi has
= 240 – (64 + 32 + 48 + 56)
= 240 – 200 = 40

32. (D):

Colour	Number of children
Black	6 × 4 = 24
White	9 × 4 = 36
Blue	
Green	15 × 4 = 60

Since, total number of children = 168
So, number of children like to wear blue shirt
= 168 – (24 + 36 + 60) = 168 – 120 = 48
So, number of ⭐ for Blue colour shirts
= 48 ÷ 4 = 12

33. (D):

	Number of ladoos
Raj	5 × 3 = 15
Raghav	4 × 3 = 12
Nisha	7 × 3 = 21
Aarti	8 × 3 = 24
Manish	5 × 3 = 15

Since, Nisha gave 6 ladoos to Raghav.
So, number of ladoos Raghav have now = 12 + 6 = 18
Also, number of ladoos Raj have = 15
So, Raghav will have 18 – 15 = 3 more ladoos than Raj.

34. (A): Number of strawberry ice-cream cones sold = 24

Total number of chocolate and banana ice-cream cones sold = 27 + 12 = 39

So, required difference = 39 – 24 = 15

35. (B):

	Number of cows
P	40 × 100 = 4000
Q	25 × 100 = 2500
R	45 × 100 = 4500
S	15 × 100 = 1500
T	55 × 100 = 5500

(A) False; S has the least number of cows.

(B) True; P has (5500 – 4000) = 1500 less cows than T.

(C) False; Total number of cows R and S have together = 4500 + 1500 = 6000

(D) False; Q has (2500 – 1500) = 1000 more cows than S.

SOF IMO 2019 QUESTIONS

1. (A): Number of students like red colour = 5 × 5 = 25

Number of students like pink colour = 2 × 5 = 10

Number of students like orange colour = 3 × 5 = 15

Number of students like yellow colour = 4 × 5 = 20

So, total number of students in the group = 25 + 10 + 15 + 20 = 70.

2. (B): (1) Number of bicycles sold on Friday = 45

Number of bicycles sold on Thursday = 5

So, there were 45 – 5 = 40 more bicycles sold on Friday than on Thursday.

(2) Number of bicycles sold on Tuesday = 40

Number of bicycles sold on Friday = 45

Number of bicycles sold on Saturday = 35

So, total number of bicycles sold in these 3 days = 40 + 45 + 35 = 120.

3. (C): Number of hair clips Priya have = 5 × 6 = 30

Number of hair clips Pihu have = 4 × 6 = 24

So, required difference = 30 – 24 = 6

4. (A):

Day	Number of cups sold
Monday	6 × 5 = 30
Tuesday	4 × 5 = 20
Wednesday	8 × 5 = 40
Thursday	
Friday	5 × 5 = 25
Saturday	6 × 5 = 30

Total number of cups sold = 175

So, number of cups sold on Thursday
= 175 – (30 + 20 + 40 + 25 + 30)
= 175 – 145 = 30