

Data Handling, Graphs and Probability

Mathematics · Class 8 · Topic-wise Practice Worksheet

TIME 45 minutes	QUESTIONS 18	TOTAL MARKS 24	MAX. SCORE ___ / 24
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

- There are **18 questions** in this worksheet. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–15 carry **1 mark** each. Questions 16–18 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Use of a calculator is **not** allowed.
- Read every graph and table carefully before answering.

Section A — Mathematical Reasoning

Q1–Q8 · 1 mark each

- The observation that occurs most often in a set of data is called the _____.
 (A) Mode (B) Median
 (C) Mean (D) Range
- The probability of getting a head when a fair coin is tossed once is _____.
 (A) 0 (B) $\frac{1}{4}$
 (C) 1 (D) $\frac{1}{2}$
- The probability of getting an even number when a fair die is rolled once is _____.
 (A) $\frac{1}{2}$ (B) $\frac{1}{3}$
 (C) $\frac{1}{6}$ (D) $\frac{2}{3}$
- The sum of the probabilities of all the possible outcomes of an experiment is _____.
 (A) 0 (B) $\frac{1}{2}$
 (C) 1 (D) It depends on the experiment
- In a pie chart, a category that accounts for 25% of the total is drawn as a sector of angle _____.
 (A) 25° (B) 45°
 (C) 180° (D) 90°
- The range of the data 4, 9, 12, 3, 15 is _____.
 (A) 3 (B) 11
 (C) 12 (D) 15
- The mean of 5, 10, 15 and 20 is _____.
 (A) 12.5 (B) 10
 (C) 15 (D) 50

8. The class size of the interval 10–20 is _____.

- (A) 5 (B) 10
(C) 15 (D) 20

Section B — Everyday Mathematics and Reasoning

Q9–Q15 · 1 mark each

9. The bar graph shows the number of books issued from a school library on five days. On how many days were **more than 35 books** issued?

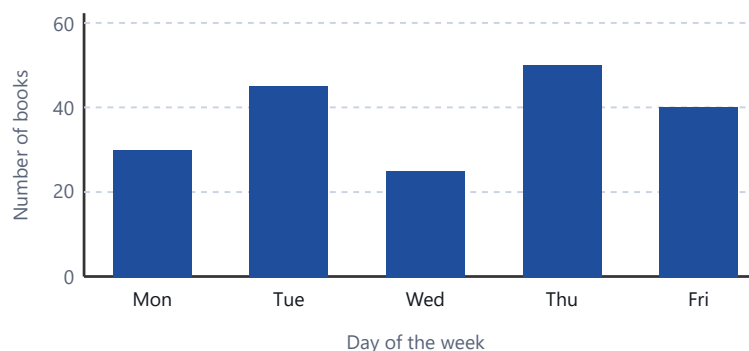


Fig. 9.1 — Books issued from the library

- (A) 1 (B) 2
(C) 3 (D) 4

10. A bag contains 5 red, 3 blue and 2 green balls of the same size. One ball is drawn at random. What is the probability that it is red?

- (A) $\frac{1}{5}$ (B) $\frac{3}{10}$
(C) $\frac{5}{3}$ (D) $\frac{1}{2}$

11. The frequency table shows the marks scored by 40 students. Which class interval has the **highest** frequency?

Marks	0–10	10–20	20–30	30–40	40–50
Number of students	4	7	12	9	8

Table 11.1 — Marks scored by 40 students

- (A) 20–30 (B) 10–20
(C) 30–40 (D) 40–50

12. A fair die is rolled once. What is the probability of getting a number greater than 4?

- (A) $\frac{1}{6}$ (B) $\frac{1}{3}$
(C) $\frac{1}{2}$ (D) $\frac{2}{3}$

13. The median of the data 3, 7, 9, 5, 11 is _____.

- (A) 5 (B) 7
(C) 9 (D) 35

14. Two fair coins are tossed together. What is the probability of getting **exactly one** head?

(A) $\frac{1}{4}$

(B) $\frac{1}{3}$

(C) $\frac{3}{4}$

(D) $\frac{1}{2}$

15. In a survey of 120 students, 30 chose mango as their favourite fruit. In a pie chart of this data, what would be the angle of the mango sector?

(A) 90°

(B) 60°

(C) 30°

(D) 120°

Achievers Section

Q16–Q18 · 3 marks each

16. Consider the following statements.

(i) The probability of an event can never be greater than 1.

(ii) The mean of a set of data is always one of the observations in that set.

(iii) In the class interval 20–30, the observation 30 is counted in the class 30–40.

Which of the statements is/are correct?

(A) (i) and (ii) only

(B) (i) and (iii) only

(C) (ii) and (iii) only

(D) All three

17. Using the frequency table of Question 11, how many students scored **less than 30** marks?

(A) 12

(B) 19

(C) 23

(D) 29

18. One card is drawn at random from a well-shuffled pack of 52 playing cards. What is the probability that it is a **red king**?

(A) $\frac{1}{13}$

(B) $\frac{1}{26}$

(C) $\frac{1}{52}$

(D) $\frac{2}{13}$

Answer Key

1	A	2	D	3	A	4	C	5	D
6	C	7	A	8	B	9	C	10	D
11	A	12	B	13	B	14	D	15	A
16	B	17	C	18	B				

Solutions

1. Answer: (A) Mode

The **mode** is the most frequently occurring observation. The mean is the average, the median is the middle value when the data are arranged in order, and the range is the difference between the largest and smallest values.

2. Answer: (D) $\frac{1}{2}$

There are 2 equally likely outcomes — head and tail — and 1 of them is favourable.

$$P(\text{head}) = \frac{1}{2}.$$

3. Answer: (A) $\frac{1}{2}$

The even numbers on a die are 2, 4 and 6 — that is 3 favourable outcomes out of 6.

$$P(\text{even}) = \frac{3}{6} = \frac{1}{2}.$$

4. Answer: (C) 1

Some outcome is certain to happen, and the probability of a certain event is **1**. So all the individual probabilities must add up to 1.

5. Answer: (D) 90°

A full circle is 360°, so the angle = 25% of 360° = $(25 \div 100) \times 360^\circ = \mathbf{90^\circ}$.

6. Answer: (C) 12

Range = largest value – smallest value = $15 - 3 = \mathbf{12}$.

7. Answer: (A) 12.5

Mean = sum $\div$ number of observations = $(5 + 10 + 15 + 20) \div 4 = 50 \div 4 = \mathbf{12.5}$.

8. Answer: (B) 10

Class size = upper limit – lower limit = $20 - 10 = \mathbf{10}$.

9. Answer: (C) 3

Reading the bars: Monday 30, Tuesday 45, Wednesday 25, Thursday 50, Friday 40.

The days with more than 35 books are Tuesday, Thursday and Friday, that is **3** days.

10. Answer: (D) $\frac{1}{2}$

Total balls = $5 + 3 + 2 = 10$, of which 5 are red.

$$P(\text{red}) = \frac{5}{10} = \frac{1}{2}.$$

11. Answer: (A) 20–30

The frequencies are 4, 7, 12, 9 and 8. The largest of these is 12, which belongs to the class **20–30**. (The frequencies add up to 40, as they should. ✓)

12. Answer: (B) $\frac{1}{3}$

The numbers greater than 4 are 5 and 6 — that is 2 favourable outcomes out of 6.

$$P = \frac{2}{6} = \frac{1}{3}.$$

13. Answer: (B) 7

First arrange the data in ascending order: 3, 5, 7, 9, 11.

There are 5 observations, so the median is the 3rd one, which is **7**.

14. Answer: (D) $\frac{1}{2}$

The equally likely outcomes are HH, HT, TH and TT — four in all. Exactly one head occurs in HT and TH, that is 2 outcomes.

$$P = \frac{2}{4} = \frac{1}{2}.$$

15. Answer: (A) 90°

$$\text{Fraction choosing mango} = \frac{30}{120} = \frac{1}{4}.$$

$$\text{Angle} = \frac{1}{4} \times 360^\circ = \mathbf{90^\circ}.$$

16. Answer: (B) (i) and (iii) only

Statement (i) is true — probability always lies between 0 and 1. Statement (ii) is false; the mean of 5 and 10 is 7.5, which is neither observation. Statement (iii) is true; in the continuous form used here, the upper limit belongs to the next class, so each observation is counted only once. Hence **(i) and (iii)**.

17. Answer: (C) 23

Add the frequencies of all the classes below 30:

0–10: 4, 10–20: 7, 20–30: 12

Total = $4 + 7 + 12 = \mathbf{23}$ students.

(The remaining $9 + 8 = 17$ scored 30 or more, and $23 + 17 = 40$. ✓)

18. Answer: (B) $\frac{1}{26}$

A pack has 4 kings, of which 2 are red (the king of hearts and the king of diamonds).

$$P(\text{red king}) = \frac{2}{52} = \frac{1}{26}.$$