



Class 9 Maths – Chapter 7



Exercise 7.2 – Questions with Answer Key

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Exercise 7.2 contains **6 questions** covering **experimental probability, statistical probability and theoretical probability**.

1. Sweets and Sampling

A sample of 30 sweets contains:

- 10 red
- 8 green
- 7 yellow
- 5 blue

(i) Find the probability of selecting a green sweet.

$$P(\text{Green}) = 8/30$$

$$= 4/15$$

$$\approx 0.267$$

(ii) If the large bag contains 600 sweets, estimate the number of yellow sweets.

Probability of yellow:

$$7/30$$

Estimated yellow sweets:

$$= 7/30 \times 600$$

$$= 140$$



Answers:

(i) $4/15 \approx 0.267$

(ii) 140 sweets

2. School Club Survey

A random sample of 40 students gives:

- Science Club = 14
- Arts Club = 11
- Sports Club = 9
- Debate Club = 6

Total school population = 800.

(i) Probability that a randomly chosen student from the sample prefers Arts Club

$$P(\text{Arts}) = 11/40$$

$$= 0.275$$

(ii) Estimate the number of students in the whole school who prefer Sports Club.

Sports proportion:

$$9/40$$

Estimated number:

$$= 9/40 \times 800$$

$$= 180$$

 **Answers:**

(i) $11/40 = 0.275$

(ii) 180 students

3. Toss a Coin 20 Times

Toss a coin **20 times** and record the result.

(i) How many times did you get heads?

(ii) How many times did you get tails?

(iii) Calculate the experimental probability of getting heads.

(iv) If you toss the coin once more, what is the probability of getting tails?

 **Answer:**

For (i)–(iii), you should perform the experiment yourself because the textbook asks you to record your actual results.

If you get **H heads** in 20 tosses:

Experimental $P(\text{Heads}) = H/20$

Number of tails:

$20 - H$

For the next toss, assuming a fair coin:

$P(\text{Tails}) = 1/2$

 **Answer:**

(i)–(iii): **Depends on your experiment**

(iv) **$1/2$**

The textbook uses experimental probability as the relative frequency obtained from actual trials.

4. Paper Cup Experiment

Toss a paper cup into the air **100 times**.

Record whether it lands:

- Bottom
- Top
- Side

Assign probabilities using experimental probability.

 **Formula:**

Experimental Probability = Number of times event occurs / Total number of trials

Since there are 100 trials:

$P(\text{Bottom}) = \text{Number of bottom landings} / 100$

$P(\text{Top}) = \text{Number of top landings} / 100$

$P(\text{Side}) = \text{Number of side landings} / 100$

 **Answer:**

The numerical probabilities **depend on the results of your 100 tosses**.

 Do not use invented results—the textbook specifically asks students to perform the experiment.

5. Even Number on a Die

What is the probability of getting an even number when rolling a fair 6-sided die?

Sample space:

$S = \{1, 2, 3, 4, 5, 6\}$

Even outcomes:

$\{2, 4, 6\}$

Favourable outcomes = 3

Total outcomes = 6

Therefore:

$$P(\text{Even}) = 3/6$$

$$= 1/2$$

✓ Answer:

$$1/2$$

6. Experimental vs Theoretical Probability

A 6-sided die is rolled **12 times** and the number **3** appears **3 times**.

(i) Find the experimental probability of getting 3.

Experimental probability:

$$= 3/12$$

$$= 1/4$$

(ii) Find the theoretical probability of getting 3.

A die has 6 equally likely outcomes.

Therefore:

$$P(3) = 1/6$$

(iii) Why are the two probabilities different?

Experimental probability is based on a **small number of actual trials**, so random variation can make it different from the theoretical probability.

As the number of trials increases, experimental probability generally gets closer to theoretical probability. This is the **Law of Large Numbers**.

✓ Answers:

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

(ii) $\frac{1}{6}$

(iii) They differ because only 12 trials were performed; random variation affects the experimental result.



COMPLETE ANSWER KEY

Q.	Answer
1(i)	$\frac{4}{15} \approx 0.267$
1(ii)	140 sweets
2(i)	$\frac{11}{40} = 0.275$
2(ii)	180 students
3(i)	Depends on experiment
3(ii)	Depends on experiment
3(iii)	Heads/20
3(iv)	$\frac{1}{2}$
4	Depends on 100 experimental results
5	$\frac{1}{2}$
6(i)	$\frac{1}{4}$
6(ii)	$\frac{1}{6}$
6(iii)	Small number of trials causes random variation

★ Must Remember

Experimental Probability

= Number of times event occurs $\div$ Total number of trials

Theoretical Probability

= Number of favourable outcomes $\div$ Total number of equally likely outcomes

$$0 \leq P(E) \leq 1$$

 **Important:** Exercise 7.2 Questions **1, 2 and 6** are especially useful for exam preparation because they test the difference between **experimental/statistical probability and theoretical probability**.