

# Unit 8: Conditional Probability

## PRACTICE · SET 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Show all work. Write each answer as an exact fraction in lowest terms (e.g.,  $\frac{3}{4}$ ), a decimal, or a short value like "yes" or "no".

1. In a class of 30 students, 18 play a sport and 12 of those sport-players are also in band. Find  $P(\text{in band} \mid \text{plays a sport})$ .

Answer: \_\_\_\_\_

3. A two-way table of 100 people: 40 own a dog, and 15 of the dog owners also own a cat. Find  $P(\text{owns a cat} \mid \text{owns a dog})$  as a fraction in lowest terms.

Answer: \_\_\_\_\_

5. Of 200 survey responses, 120 are from adults; 80 of those adults answered 'yes'. Find  $P(\text{answered 'yes'} \mid \text{adult})$  as a fraction in lowest terms.

Answer: \_\_\_\_\_

7. Events C and D satisfy  $P(C) = 0.6$ ,  $P(D) = 0.3$ , and  $P(C \text{ and } D) = 0.12$ . Are C and D independent? Answer yes or no.

Answer: \_\_\_\_\_

9. In a two-way table: 25 students take Spanish, 15 take French, 5 take both, and 10 take neither. Using the total of all students, find  $P(\text{takes French} \mid \text{takes Spanish})$  as a fraction in lowest terms. (Spanish total = 25, both = 5.)

Answer: \_\_\_\_\_

2. A survey shows  $P(A \text{ and } B) = 0.24$  and  $P(B) = 0.4$ . Find  $P(A \mid B)$ .

Answer: \_\_\_\_\_

4.  $P(\text{rain}) = 0.3$  and  $P(\text{traffic} \mid \text{rain}) = 0.5$ . Find  $P(\text{rain and traffic})$ .

Answer: \_\_\_\_\_

6. Events A and B satisfy  $P(A) = 0.5$ ,  $P(B) = 0.4$ , and  $P(A \text{ and } B) = 0.2$ . Are A and B independent? Answer yes or no.

Answer: \_\_\_\_\_

8. A bag has 5 red and 3 blue marbles. Two are drawn without replacement. Find  $P(\text{second is red} \mid \text{first is red})$  as a fraction in lowest terms.

Answer: \_\_\_\_\_

10.  $P(A \mid B) = 0.7$  and  $P(B) = 0.2$ . Find  $P(A \text{ and } B)$ .

Answer: \_\_\_\_\_

11. A tree diagram:  $P(\text{pass first test}) = 0.8$ , and  $P(\text{pass second} \mid \text{passed first}) = 0.75$ . Find  $P(\text{pass both tests})$ .

Answer: \_\_\_\_\_

12. Out of 50 games, a team won 30. Of the wins, 18 were home games. Find  $P(\text{home game} \mid \text{won})$  as a fraction in lowest terms.

Answer: \_\_\_\_\_