Probability

Name: _____	Date: _____	Score: _____ / 24

Quick Review

Probability compares favorable outcomes to total possible outcomes: $P = \frac{\text{favorable}}{\text{total}}$. Probabilities range from 0 to 1. Use complements for "not" questions: $P(\text{not } A) = 1 - P(A)$. For independent events, multiply probabilities. For simple either/or events that do not overlap, add probabilities.

PRACTICE

Find each probability.

1. $P(\text{heads on one coin flip})$ _____
2. $P(\text{rolling a } 4 \text{ on a die})$ _____
3. $P(\text{rolling an even number})$ _____
4. $P(\text{rolling greater than } 4)$ _____
5. $P(\text{not rolling } 1)$ _____
6. $P(\text{red from } 3 \text{ red}, 5 \text{ blue})$ _____
7. $P(\text{blue from } 3 \text{ red}, 5 \text{ blue})$ _____
8. $P(\text{two heads in two coin flips})$ _____
9. $P(\text{heads then tails})$ _____
10. $P(\text{rolling } 6 \text{ twice})$ _____
11. $P(\text{sum } 7 \text{ with two dice})$ _____
12. $P(\text{at least one heads in two flips})$ _____
13. $P(\text{heart from a standard deck})$ _____
14. $P(\text{ace from a standard deck})$ _____
15. $P(\text{not ace})$ _____
16. $P(\text{spinner } 1\text{–}8 \text{ lands on multiple of } 3)$ _____
17. $P(\text{random month has } 31 \text{ days})$ _____
18. $P(\text{choosing a vowel from A,E,I,O,U,B,C})$ _____
19. $P(A) = 0.35;\ P(\text{not } A)$ _____
20. $P(A) = \frac{2}{5},\ P(B) = \frac{3}{4}$ independent; $P(A \text{ and } B)$ _____

Word Problems

21. A bag has 4 green marbles, 6 yellow marbles, and 10 purple marbles. What is the probability of drawing a yellow marble?

_____

22. A weather app says the chance of rain is 30%. What is the probability it does not rain?

_____

23. A student guesses on two true/false questions. What is the probability both answers are correct?

_____

24. A spinner has 10 equal sections numbered 1 through 10. Find the probability of landing on an even number or a number greater than 8.

_____

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Answer Keys

1. $\frac{1}{2}$
2. $\frac{1}{6}$
3. $\frac{1}{2}$
4. $\frac{1}{3}$
5. $\frac{5}{6}$
6. $\frac{3}{8}$
7. $\frac{5}{8}$
8. $\frac{1}{4}$
9. $\frac{1}{4}$
10. $\frac{1}{36}$
11. $\frac{1}{6}$
12. $\frac{3}{4}$
13. $\frac{1}{4}$
14. $\frac{1}{13}$
15. $\frac{12}{13}$
16. $\frac{1}{4}$
17. $\frac{7}{12}$
18. $\frac{5}{7}$
19. 0.65
20. $\frac{3}{10}$
21. $\frac{3}{10}$
22. 70%
23. $\frac{1}{4}$
24. $\frac{3}{5}$

Step-by-Step Tutor Notes

1. This is a good place to slow down, check the notation, and simplify cleanly. One favorable outcome out of two equally likely outcomes. So the answer is $\frac{1}{2}$.
2. Focus on the main idea of the problem, then simplify carefully. One favorable face out of six. So the answer is $\frac{1}{6}$.
3. Focus on the main idea of the problem, then simplify carefully. Even outcomes are $2, 4, 6$, so $3/6 = 1/2$. So the answer is $\frac{1}{2}$.
4. Take it one clear step at a time and keep the original question in mind. Outcomes $5, 6$ give $2/6 = 1/3$. So the answer is $\frac{1}{3}$.
5. Use the clue in the question first, then let the arithmetic finish the job. Use complement: $1 - \frac{1}{6} = \frac{5}{6}$. So the answer is $\frac{5}{6}$.
6. Start with the definition the problem is testing, then apply it directly. There are 3 red out of 8 total. So the answer is $\frac{3}{8}$.
7. Use the clue in the question first, then let the arithmetic finish the job. There are 5 blue out of 8 total. So the answer is $\frac{5}{8}$.
8. Start with the definition the problem is testing, then apply it directly. $\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$. So the answer is $\frac{1}{4}$.
9. Start with the definition the problem is testing, then apply it directly. Each specified flip has probability $\frac{1}{2}$. So the answer is $\frac{1}{4}$.
10. Use the clue in the question first, then let the arithmetic finish the job. $\frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$. So the answer is $\frac{1}{36}$.
11. Focus on the main idea of the problem, then simplify carefully. There are 6 favorable sums out of 36. So the answer is $\frac{1}{6}$.
12. Take it one clear step at a time and keep the original question in mind. Use complement: not at least one head means both tails, probability $\frac{1}{4}$. So the answer is $\frac{3}{4}$.
13. This is a good place to slow down, check the notation, and simplify cleanly. There are 13 hearts out of 52 cards. So the answer is $\frac{1}{4}$.
14. Use the clue in the question first, then let the arithmetic finish the job. There are 4 aces out of 52. So the answer is $\frac{1}{13}$.
15. Focus on the main idea of the problem, then simplify carefully. Complement of ace: $1 - \frac{1}{13} = \frac{12}{13}$. So the answer is $\frac{12}{13}$.
16. This is a good place to slow down, check the notation, and simplify cleanly. The multiples are 3 and 6, so $2/8 = 1/4$. So the answer is $\frac{1}{4}$.
17. Use the clue in the question first, then let the arithmetic finish the job. Seven months have 31 days. So the answer is $\frac{7}{12}$.
18. Focus on the main idea of the problem, then simplify carefully. There are 5 vowels out of 7 letters. So the answer is $\frac{5}{7}$.
19. Use the clue in the question first, then let the arithmetic finish the job. Complement: $1 - 0.35 = 0.65$. So the answer is 0.65.
20. Work one inverse operation at a time and keep both sides balanced. Multiply independent probabilities: $\frac{2}{5} \cdot \frac{3}{4} = \frac{3}{10}$. After simplifying, the answer is $\frac{3}{10}$.
21. Use the given numbers to build the model, then finish the calculation. There are 20 marbles total and 6 are yellow, so $6/20 = 3/10$.
22. Set up the model from the story, then calculate carefully. Use the complement: $100\% - 30\% = 70\%$.
23. Name the quantities first so the model is easy to read. Each guess has probability $1/2$, and the guesses are independent: $\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$.
24. Even numbers are $2, 4, 6, 8, 10$. Numbers greater than 8 are $9, 10$. The union is $2, 4, 6, 8, 9, 10$, so $6/10 = 3/5$.

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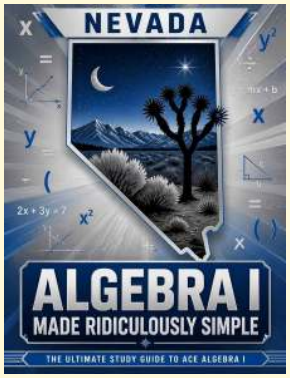

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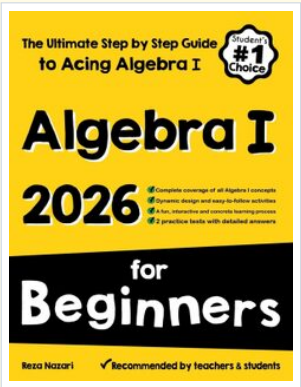

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