

Probability and Counting Principles

Algebra 1 • Section 10.5

Name: _____

Date: _____

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Quick Review and Helpful Hints

Data questions are about choosing the right summary. Read the labels carefully, identify the total or condition being used, and connect each statistic to what it tells about the data.

Q Example: Find the mean of 6, 8, 10, 12.

Work: Add the values to get 36, then divide by 4 values.

Answer: 9

Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

- A bag has 3 red and 5 blue marbles. Find $P(\text{red})$.

- Flip a coin and roll a die. How many outcomes?

- How many ways to arrange 4 different books?

- Choose 2 students from 6. How many groups?

- Find $P(\text{even})$ on a fair die.

- Find $P(\text{not red})$ if $P(\text{red}) = \frac{2}{5}$.

- Two independent events have probabilities $\frac{1}{2}$ and $\frac{3}{4}$. Find both.

- A code has 3 letters then 2 digits. Repeats allowed. How many?

- Roll two dice. Find probability of sum 7.

- Pick one card from 10 numbered cards. Find $P(\text{multiple of 3})$.

Word Problems

- A menu has 4 entrees, 3 drinks, and 2 desserts. How many meals?

- A spinner has 8 equal sections, 2 green. Find probability not green.



Answer Keys

1. $\frac{3}{8}$

2. 12

3. 24

4. 15

5. $\frac{1}{2}$

6. $\frac{3}{5}$

7. $\frac{3}{8}$

8. $26^3 \cdot 10^2$

9. $\frac{1}{6}$

10. $\frac{3}{10}$

11. 24

12. $\frac{3}{4}$

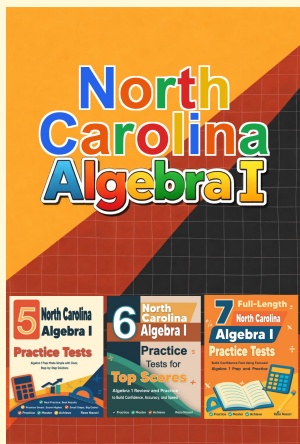
Step-by-Step Explanations

- There are 3 favorable outcomes out of 8 total.
- There are 2 coin outcomes and 6 die outcomes, so $2 \cdot 6 = 12$.
- There are $4! = 24$ permutations.
- Combinations: $\binom{6}{2} = 15$.
- The even outcomes are 2, 4, 6, so $3/6 = 1/2$.
- Complement probability is $1 - \frac{2}{5} = \frac{3}{5}$.

- Multiply independent probabilities.
- Use the multiplication principle for each slot.
- There are 6 favorable pairs out of 36.
- Multiples of 3 from 1 to 10 are 3, 6, 9.
- Multiply choices: $4 \cdot 3 \cdot 2 = 24$.
- Not green has 6 sections out of 8, so $6/8 = 3/4$.



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