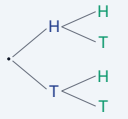
Probability of Compound Events

Name: _____	Date: _____	Score: _____ / 18

Quick Review and Helpful Hints

For *independent* events, $P(A \text{ and } B) = P(A) \cdot P(B)$ – multiply. For *mutually exclusive* events, $P(A \text{ or } B) = P(A) + P(B)$ – add. Every probability is a number between 0 and 1, often written as a fraction.

▷ **Example:** A coin is flipped twice. Find $P(\text{heads and heads})$.
Work: Each flip has $P(H) = \frac{1}{2}$. Multiply: $\frac{1}{2} \cdot \frac{1}{2}$. ★ **Answer:** $\frac{1}{4}$



Multiply along the branches.

Practice Problems

Find each probability.

1. Two coins, $P(H \text{ and } H)$ _____
2. Roll a die twice, $P(6 \text{ and } 6)$ _____
3. $P(\text{red}) = \frac{1}{2}$, $P(\text{blue}) = \frac{1}{3}$: $P(\text{red and blue})$ _____
4. Coin and die: $P(H \text{ and } 4)$ _____
5. $P(1 \text{ or } 2)$ on a die _____
6. $P(\text{even})$ on a die _____
7. Two coins, $P(T \text{ and } T)$ _____
8. $P(\text{red or blue})$ if each is $\frac{1}{4}$ _____
9. Roll a die, $P(\text{odd})$ _____
10. Spinner of 4 equal parts, $P(\text{one part})$ _____
11. Two draws, $P(\text{ace and ace})$ if $P(\text{ace}) = \frac{1}{13}$ _____
12. $P(3 \text{ or } 5)$ on a die _____
13. Two coins, $P(H \text{ then } T)$ _____
14. $P(\text{not } 6)$ on a die _____

Word Problems

15. Flip a coin and roll a die. Find $P(\text{tails and a } 3)$. _____
16. A bag is $\frac{1}{2}$ red. Draw twice with replacement. Find $P(\text{red then red})$. _____
17. Roll two dice. Find $P(\text{both show } 1)$. _____
18. On one die, find $P(\text{rolling a } 2 \text{ or a } 5)$. _____

Answer Keys

1. $\frac{1}{4}$	**7.** $\frac{1}{4}$	**13.** $\frac{1}{4}$
2. $\frac{1}{36}$	**8.** $\frac{1}{2}$	**14.** $\frac{5}{6}$
3. $\frac{1}{6}$	**9.** $\frac{1}{2}$	**15.** $\frac{1}{12}$
4. $\frac{1}{12}$	**10.** $\frac{1}{4}$	**16.** $\frac{1}{4}$
5. $\frac{1}{3}$	**11.** $\frac{1}{169}$	**17.** $\frac{1}{36}$
6. $\frac{1}{2}$	**12.** $\frac{1}{3}$	**18.** $\frac{1}{3}$

Step-by-Step Explanations

1. Start by naming the process: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$. So the final answer is $\frac{1}{4}$.

2. A good way to think about this is: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$. So the final answer is $\frac{1}{36}$.

3. Step by step: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{2} \cdot \frac{1}{3} = \frac{1}{6}$. So the final answer is $\frac{1}{6}$.

4. Take it one move at a time: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{2} \cdot \frac{1}{6} = \frac{1}{12}$. So the final answer is $\frac{1}{12}$.

5. Start by naming the process: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{6} + \frac{1}{6} = \frac{2}{6} = \frac{1}{3}$. So the final answer is $\frac{1}{3}$.

6. A good way to think about this is: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\{2, 4, 6\}$: $\frac{3}{6} = \frac{1}{2}$. So the final answer is $\frac{1}{2}$.

7. Step by step: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$. So the final answer is $\frac{1}{4}$.

8. Take it one move at a time: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$. So the final answer is $\frac{1}{2}$.

9. Start by naming the process: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\{1, 3, 5\}$: $\frac{3}{6} = \frac{1}{2}$. So the final answer is $\frac{1}{2}$.

10. A good way to think about this is: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is One of four equal parts: $\frac{1}{4}$. So the final answer is $\frac{1}{4}$.

11. Step by step: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{13} \cdot \frac{1}{13} = \frac{1}{169}$. So the final answer is $\frac{1}{169}$.

12. Take it one move at a time: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{6} + \frac{1}{6} = \frac{1}{3}$. So the final answer is $\frac{1}{3}$.

13. Start by naming the process: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$. So the final answer is $\frac{1}{4}$.

14. A good way to think about this is: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is 5 faces are not 6: $\frac{5}{6}$. So the final answer is $\frac{5}{6}$.

15. Step by step: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{2} \cdot \frac{1}{6} = \frac{1}{12}$. So the final answer is $\frac{1}{12}$.

16. Take it one move at a time: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$. So the final answer is $\frac{1}{4}$.

17. Start by naming the process: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$. So the final answer is $\frac{1}{36}$.

18. A good way to think about this is: For compound probability, find each probability first and multiply them when the events happen together. The setup/work is $\frac{1}{6} + \frac{1}{6} = \frac{1}{3}$. So the final answer is $\frac{1}{3}$.

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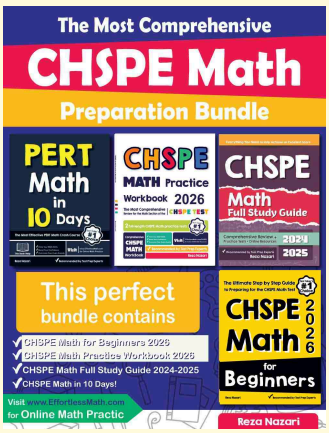

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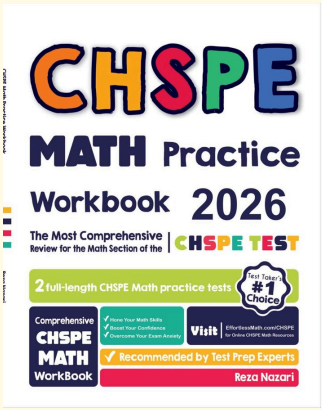

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