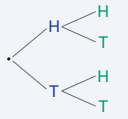
# Probability of Compound Events

| 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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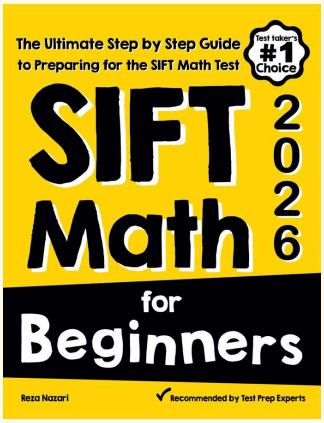


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