1. An experiment consists of rolling a red die and a green die. Let \( x \) be the number on the red die and \( y \) be the number on the green die. Find the probability that \( x - y = 1 \). Circle your answer.

There are \( 6 \cdot 6 = 36 \) possible combinations.

There are \( 5 \cdot 1 = 5 \) ways for \( x - y = 1 \).

\[
\Pr[E] = \frac{5}{36}
\]

2. A teacher needs to select 3 books out of 5 different books to give to Nick, Martha and Josh. In how many ways can the teacher do that? Compute the number explicitly. Circle your answer.

\[
5 \cdot 4 \cdot 3 = 60
\]
1. A box has six balls numbered 1 through 6. Two balls are selected at random in succession, without replacement, and the number on each ball is noted. What is the probability that at least one ball has an even number? Circle your answer.

The event is the complement of the event that both balls are odd.

There are $6 \cdot 5 = 30$ ways to select 2 balls.

There are $3 \cdot 2 = 6$ ways for both to be odd.

So, $Pr[E] = 1 - \frac{6}{30} = \frac{24}{30} = \frac{4}{5}$.

2. In how many ways can a committee of three people be selected out of five people, if each committee member has a specific task to do? Compute the number explicitly. Circle your answer.

$5 \cdot 4 \cdot 3 = 60$
1. A box has five balls numbered 1 through 5. Two balls are selected at random in succession without replacement, and the number on each ball is noted. What is the probability that the first ball has an even number and the second ball has an odd number? Circle your answer.

There are \(5\cdot 4 = 20\) ways to select two balls.

There are \(2\cdot 3 = 6\) ways to select an even number then an odd number.

\[ P[E] = \frac{6}{20} = \frac{3}{10} \]

2. A mother buys five different books. She wants to give one book to Martha and one to Josh. In how many ways can she do that? Compute the number explicitly. Circle your answer.

\[ 5\cdot 4 = 20 \]
1. An experiment consists of rolling a red die and a green die. Let x be the number on the red die and y be the number on the green die. Find the probability that \( x + y = 7 \).

Circle your answer.

There are \( 6 \times 6 = 36 \) possible combinations.

There are \( 6 \times 1 = 6 \) combinations that add to 7

\[
\Pr[E] = \frac{6}{36} = \frac{1}{6}
\]

2. A mother has six different candies. She wants to give three candies to her three children, one to each Nick, Martha and Josh. In how many ways can she do that? Compute the number explicitly. Circle your answer.

\[
6 \times 5 \times 4 = 120 \text{ ways}
\]
1. A box has six balls numbered 1 through 6. Two balls are selected at random in succession without replacement, and the number on each ball is noted. What is the probability that both balls have odd numbers? Circle your answer.

There are $6 \cdot 5 = 30$ ways of choosing two balls.

There are $3 \cdot 2 = 6$ ways for both balls to be odd.

$$P(\text{E}) = \frac{6}{30} = \frac{1}{5}$$

2. In how many ways can five people stand in line? Compute the number explicitly. Circle your answer.

$$5! = 120 \text{ ways}$$
1. An experiment consists of rolling a red die and a green die. Let $x$ be the number on the red die and $y$ be the number on the green die. Find the probability that $xy = 12$.

Circle your answer.

There are $6 \cdot 6 = 36$ possible combinations.

There are $4 \cdot 1 = 4$ ways of $xy = 12$.

So, $P(E) = \frac{4}{36} = \frac{1}{9}$

2. In how many ways can a committee of three people be selected out of six people, if each committee member has a specific task to do? Compute the number explicitly.

Circle your answer.

$6 \cdot 5 \cdot 4 = 120$ ways