

INDEPENDENT EVENTS

Review the process for multiplying fractions.

$$\frac{1}{2} \cdot \frac{3}{4} = \frac{3}{8}$$

$$\frac{1}{8} \cdot \frac{4}{5} = \frac{1}{10}$$

$$\frac{2}{9} \cdot \frac{3}{5} = \frac{2}{15}$$

Replacement: returning the event so the total possibility does not change

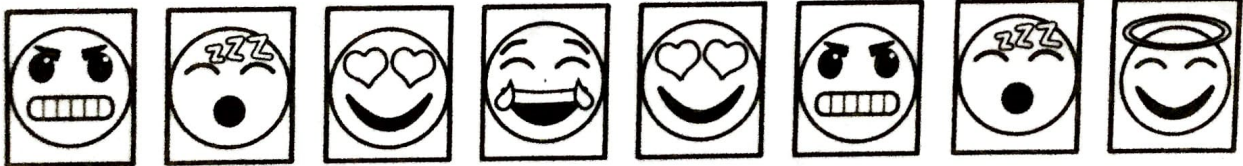
INDEPENDENT PROBABILITY

- When the outcome of one event does not impact the outcome of the second event, the events are called independent.
- Independent probability can be determined by multiplying the probability of each event happening, or $P(A \text{ and } B) = P(A) \cdot P(B)$

This means "probability of A and B"

Use your understanding of probability and independent events to answer the questions below.

In a board game, students draw a card, replace it, and then draw a second card. Determine the probability of each event.



1. To earn 50 points, a student must draw a heart-eyed card and then an angel card.

$$\frac{1}{8} \cdot \frac{1}{32} = \frac{1}{256}$$

heart-eyed angel

2. To earn 20 points, a student must draw a sleeping card and then an angry card.

$$\frac{2}{84} \cdot \frac{2}{84} = \frac{1}{1764}$$

sleeping angry

3. To earn 15 points, a student must draw an angry card or a laughing card and then an angel.

$$\frac{3}{8} \cdot \frac{1}{8} = \frac{3}{64}$$

angry or laughing angel

4. To earn 5 points, a student must draw a sleeping card or a heart-eyed card and then an angry card.

$$\frac{4}{82} \cdot \frac{2}{84} = \frac{1}{1066}$$

sleeping or heart-eyed angry

Carefully read each problem and solve.

Kylee has a coin and a number cube. She flips the coin once and rolls the number cube once. What is the probability that the coin lands tails-up and the cube lands on a 4?

$$\frac{1}{2} \times \frac{1}{6} = \boxed{\frac{1}{12}}$$



There are six marbles in a bag. Three are green, and three are yellow. If you draw a marble, replace it, and then draw another, then what is the probability of choosing two yellow marbles?

$$\frac{3}{6} \times \frac{3}{6} = \boxed{\frac{1}{4}}$$

One card from a deck of cards is selected, it is replaced, and another card is chosen. What is the probability that the first card is a red card and the second is a diamond?

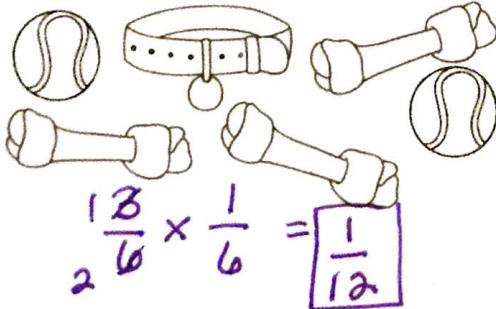
$$\frac{26}{52} \times \frac{13}{52} = \boxed{\frac{1}{8}}$$



What is the probability of flipping three heads in a row?

$$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \boxed{\frac{1}{8}}$$

Neil goes to the pet shop and selects a treat for his dog. He chooses one, returns it to the bunch, and then chooses another. What is the probability that Neil selects a bone and then a collar?



$$\frac{3}{6} \times \frac{1}{6} = \boxed{\frac{1}{12}}$$

Dexter has four different coins in his pocket. He randomly selects a coin from his pocket, replaces it, and selects another coin. What is the probability that both coins are dimes?

$$\frac{1}{4} \times \frac{1}{4} = \boxed{\frac{1}{16}}$$

The letters of the alphabet are written on cards and placed in a brown paper bag. What is the probability of drawing a vowel, replacing it, and then drawing another vowel?

$$\frac{5}{26} \times \frac{5}{26} = \frac{25}{676}$$

Two number cubes are rolled sequentially. What is the probability that the first number cube shows a two or a three and the other number cube shows an even number?

$$\frac{2}{6} \times \frac{3}{6} = \boxed{\frac{1}{6}}$$

Mackenzie chooses one candle, returns it to the bunch, and then chooses another candle. What is the probability that Mackenzie selects a polka dot candle both times?



$$\frac{2}{5} \times \frac{2}{5} = \boxed{\frac{4}{25}}$$