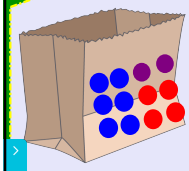
## Warm-Up Questions: Simple Probability



**You have a bag of marbles with 6 blue marbles, 4 red marbles and 2 purple marbles.**

1) What is the probability of getting a blue marble?
$\frac{6}{12} = \frac{1}{2} = 1 \div 2 = .5 = 50\%$

2) What is the probability of getting a red marble?
$\frac{4}{12} = \frac{1}{3} = 33\%$

3) What is P(purple marble)?
$\frac{2}{12} = \frac{1}{6} = .1\bar{6} = 16.7\%$ 17%

4) What is the P(~blue)?
$\frac{6}{12} = \frac{1}{2}$

Teacher Note

Lesson Set: Connection

## Questions on Homework?

Mar 10-12:50 PM

## Learning Targets

I can find the probability of compound events

I can compute probabilities for situations with and without replacement

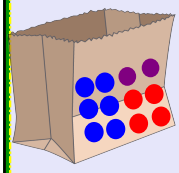
I understand when events are independent or dependent

I can identify when two events are independent

I can compute the probability of two independent or dependent events

Aug 26-1:59 PM

**You have a bag of marbles with 6 blue marbles, 4 red marbles and 2 purple marbles.**



What is the probability of getting a blue marble and then a red marble if you get to keep the blue marble?

?

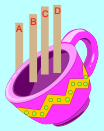
**Compound Events** - A situation that involves 2 or more events or steps

Lesson Set: Hook

Let's say that a teacher calls on students by drawing names from a cup.

### Independent Probability

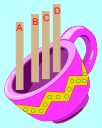
The teacher calls on a student by drawing a stick, after the student has answered the question **their name goes back in the cup with the rest of the students.**




Answers Question

### Dependent Probability

The teacher calls on a student by drawing a stick, after the student has answered the question **their name stays out of the cup until everyone else has been called on.**




Answers Question

Skill D: Explain & Model

### Independent Probability

- Pick something, then return it
- Denominator stays the same each "pick"
- Item has the same probability of being "picked" each time.
- Key words: replaced, returned, put back.
- There can be multiple picks, as long as one item is picked at a time.

### Dependent Probability

- Pick something, keep it out.
- Denominator decreases after each "pick"
- Item has a better probability of being "picked" each time until 1/1.
- Key words: Keep it, do not return.
- There can be multiple picks, as long as one item is picked at a time.

Skill Development: Explain

Determine whether each situation is Independent or Dependent Probability. Drag the correct type of probability to each question.

A jar contains 6 blue, 3 red, 5 green, and 2 yellow candies. Once a candy is drawn it is *not* replaced. Find the probability of getting 2 greens? Dependent

A jar contains 6 blue, 3 red, 5 green, and 2 yellow candies. Once a candy is drawn it is returned to the jar. Find the probability of getting a green then a blue? I

A card is drawn from a deck of eight cards with letters A, B, C, D, E, F, G, H. The card is replaced and a second card is drawn. What is the probability of getting a B and a F? I

A card is drawn from a deck of eight cards with letters A, B, C, D, E, F, G, H. The card is *not* replaced and a second card is drawn. What is the probability of getting a B and a F? D

Skill Development: Model

# Multiplication Rule

When 2 or more events are independent,

P (A and B) = P(A)*P(B)

P(A ∩ B) = P(A)*P(B)

When 2 or more events are dependent,

P(A and B) = P(A)*P[B (following A)]

P(A ∩ B) = P(A)*P[B (following A)]

Independent Practice

To solve for independent/dependent probability multiply the simple probability of each pick. Make sure to take into account if the item is *replaced* or *kept*.

**Independent Probability**

A jar contains 6 blue, 3 red, 5 green and 2 yellow candies. Once a candy is drawn it is replaced. Find the probability of getting 2 greens. (16)

$\frac{5}{16} \cdot \frac{5}{16} = \frac{25}{256}$

$= .09765625$

$9.8\%$

**Dependent Probability**

A jar contains 6 blue, 3 red, 5 green and 2 yellow candies. Once a candy is drawn it is not returned to the jar. Find the probability of getting 2 greens.

$\frac{5}{16} \cdot \frac{4}{15} = \frac{1}{12}$

$= .083$

$= 8.3\%$

Skill Development: Demonstrate

**Guided Practice:**

A B C D E F G H

A card is drawn from a deck of eight cards with letters A, B, C, D, E, F, G, H. The card is replaced and a second card is drawn. What is the probability of getting a B and a F? I

$\frac{1}{8} \cdot \frac{1}{8}$

Solution

$\frac{1}{64}$

A card is drawn from a deck of eight cards with letters A, B, C, D, E, F, G, H. The card is *not* replaced and a second card is drawn. What is the probability of getting a B and a F? D

$\frac{1}{8} \cdot \frac{1}{7}$

Solution

$\frac{1}{56}$

Guided Practice

**Work with your shoulder partner to solve for the independent or dependent probability as appropriate.**

A jar contains 6 blue, 3 red, 5 green, and 2 yellow candies.

1. P(two red candies) if replaced.

$3/16 \cdot 3/16 = 3.5\%$

2. P(a yellow then a blue) if replaced.

$\frac{2}{16} \cdot \frac{6}{16} = \frac{12}{256} = \frac{3}{64}$

3. P(two greens then a red) if replaced.

$\frac{5}{16} \cdot \frac{5}{16} \cdot \frac{3}{16} = \frac{75}{4096} = 1.8\%$

4. P(two blue candies) if not replaced.

$\frac{6}{16} \cdot \frac{5}{15} = 12.5\%$ NL

5. P(a red then green) if not replaced.

$\frac{3}{16} \cdot \frac{5}{15} = \frac{1}{16}$

6. P(three greens) if not replaced.

$5/16 \cdot 4/15 \cdot 3/14 = 1/56$

Guided Practice

Janie has a .7 chance that her Lacrosse team will win each of their games this weekend. If they play 3 games, what is the probability that Janie's team wins the first game and loses the other two?

P(win) = .7

P(lose) = .3

$\frac{.7}{W} \cdot \frac{.3}{L} \cdot \frac{.3}{L} = .063$

$6.3\%$

Independent Practice

Approximately 20% of all American smoke. Suppose that 2 Americans are selected at random. What is the probability that both Americans are smokers?

$\frac{20\%}{.2} \cdot \frac{20\%}{.2} = .04 = 4\%$

What is the probability that both Americans are non-smokers?

$.8 \cdot .8 = 64\%$

If 5 Americans are chosen, what is the probability that all 5 are smokers?

$.2 \cdot .2 \cdot .2 \cdot .2 \cdot .2$

$= 32E-4 = .00032$

$= .032\%$

Independent Practice

## Homework:

2.2: 1-7, 9-16

**Learning Targets**

I can find the probability of compound events

I can compute probabilities for situations with and without replacement

I understand when events are independent or dependent

I can identify when two events are independent

I can compute the probability of two independent or dependent events

Independent Practice

## Attachments

Probability Extra Practice.pdf