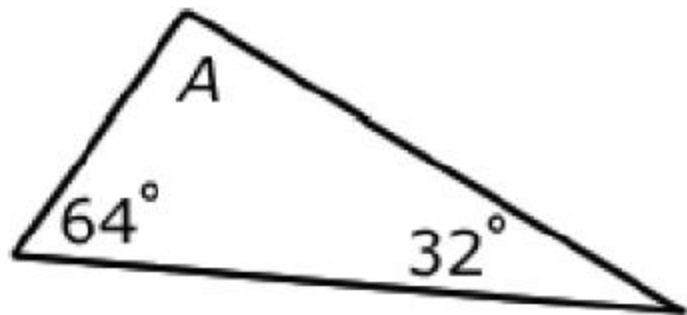


What is the measure of angle A?

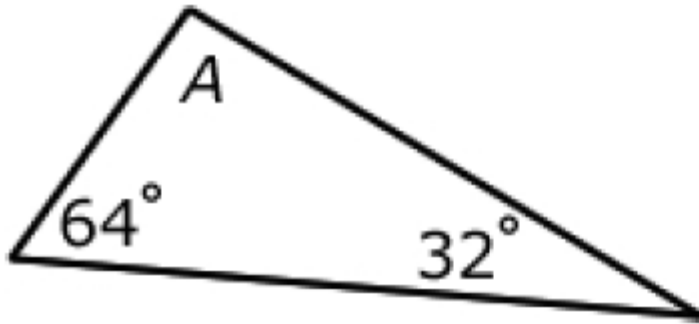


- A) 84°
- B) 86°
- C) 88°
- D) 90°



Lesson 11.1 Probability of Compound Events

What is the measure of angle A ?



- ✓ A) 84°
- B) 86°
- C) 88°
- D) 90°

Lesson 11.3 Probability of Compound Events

Objective

TSW understand concept of probability

*understand independent events


*use the multiplication rule and the addition rule of probability to solve problems with independent events.

Common Core State Standards

Extend 7 SP 8b- Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams.

Extend 7 SP 8a- Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.

Mathematical Practices *MP3 Construct arguments MP 4 Model Mathematics MP8 Express regularity in reasoning*



▶ The probability of simple events can be used to compute the probability of compound events, either dependent or independent.

TSW understand concept of probability

*understand independent events

*use the multiplication rule and the addition rule of probability to solve problems with independent events

Use the Multiplication Rule of Probability to Solve Problems with Independent Events With Replacement

Create a tree diagram to represent the independent events that form the compound event and the corresponding probabilities after replacement

Example 7 Solve probability problems involving independent events with replacement.

A jar contains 8 green marbles and 4 red marbles. One marble is randomly drawn and the color of the marble is noted. The marble is then put back into the jar and a second marble is randomly drawn. The color of the second marble is also noted.

- a) Find the probability of first drawing a green marble followed by a red marble.

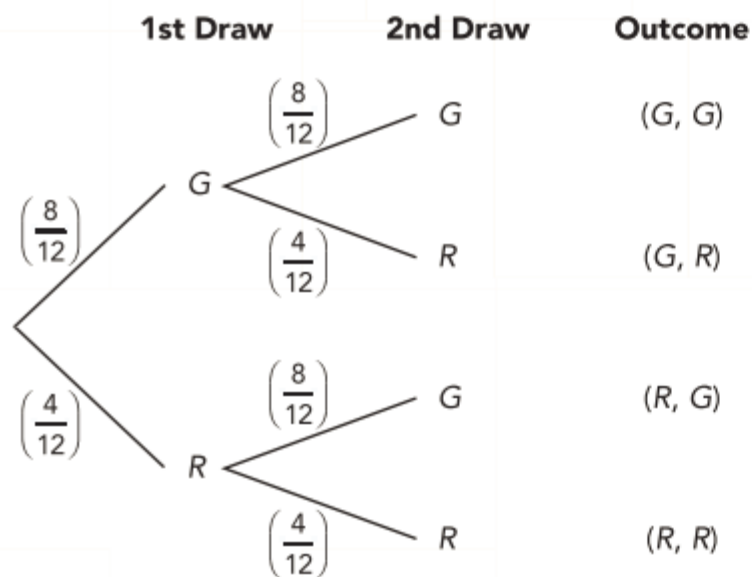
A jar contains 8 green marbles and 4 red marbles. One marble is randomly drawn and the color of the marble is noted. The marble is then put back into the jar and a second marble is randomly drawn. The color of the second marble is also noted.

- a) Find the probability of first drawing a green marble followed by a red marble.

A jar contains 8 green marbles and 4 red marbles. One marble is randomly drawn and the color of the marble is noted. The marble is then put back into the jar and a second marble is randomly drawn. The color of the second marble is also noted.

a) Find the probability of first drawing a green marble followed by a red marble.

Solution



Since the first marble is drawn and replaced, the probability of drawing the second marble remains unchanged.



G represents green
R represents red

$$\begin{aligned} P(G, R) &= P(G) \cdot P(R) \\ &= \frac{8}{12} \cdot \frac{4}{12} = \frac{2}{9} \end{aligned}$$

The probability of first drawing a green marble followed by a red marble is $\frac{2}{9}$.

Lesson 11.3 Probability of Independent Events Day 2

b) Find the probability of first drawing a red marble followed by a green marble.

Lesson 11.3 Probability of Independent Events Day 2

b) Find the probability of first drawing a red marble followed by a green marble.

Solution

$$\begin{aligned} P(R, G) &= P(R) \cdot P(G) \\ &= \frac{4}{12} \cdot \frac{8}{12} = \frac{2}{9} \end{aligned}$$

The probability of first drawing a red marble followed by a green marble is $\frac{2}{9}$.

Lesson 11.3 Probability of Independent Events Day 2

c) Find the probability of drawing two green marbles.

Lesson 11.3 Probability of Independent Events Day 2

c) Find the probability of drawing two green marbles.

Solution

$$\begin{aligned} P(G, G) &= P(G) \cdot P(G) \\ &= \frac{8}{12} \cdot \frac{8}{12} = \frac{4}{9} \end{aligned}$$

The probability of drawing two green marbles is $\frac{4}{9}$.

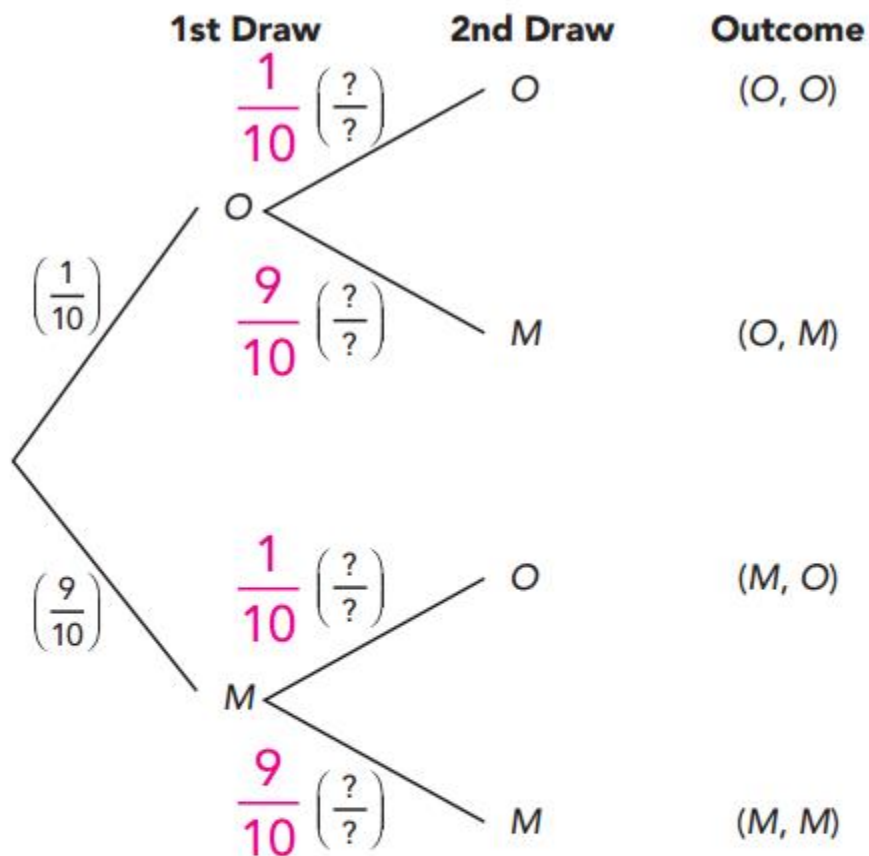
Guided Practice

Solve. Show your work.

2 In a bag, there are 9 magenta balls and 1 orange ball. Two balls are randomly drawn, one at a time with replacement.

a) Find the probability of drawing two magenta balls.

a) Find the probability of drawing two magenta balls.



O represents orange
M represents magenta

$$\begin{aligned} P(M, M) &= P(M) \cdot P(M) \\ &= \frac{?}{?} \cdot \frac{?}{?} \frac{9}{10}; \frac{9}{10} \\ &= \frac{?}{?} \frac{81}{100} \end{aligned}$$

The probability of drawing two magenta balls is $\frac{?}{?}$. $\frac{81}{100}$

b) Find the probability of drawing an orange ball followed by a magenta ball. _____

b) Find the probability of drawing an orange ball followed by a magenta ball.

$$P(O, M) = P(O) \cdot P(M)$$

$$= \frac{?}{?} \cdot \frac{?}{?} \quad \frac{1}{10}; \frac{9}{10}$$

$$= \frac{?}{?} \quad \frac{9}{100}$$

The probability of drawing an orange ball followed by a magenta ball is $\frac{?}{?} \cdot \frac{9}{100}$

c) Find the probability of drawing an orange ball both times. _____

- c) Find the probability of drawing an orange ball both times.

$$P(O, O) = P(O) \cdot P(O)$$

$$= \frac{?}{?} \cdot \frac{?}{?} \frac{1}{10}; \frac{1}{10}$$

$$= \frac{?}{?} \frac{1}{100}$$

The probability of drawing an orange ball both times is $\frac{?}{?} \cdot \frac{1}{100}$

Lesson 11.3 Probability of Independent Events

Practice 11.3 #7-8 & 11

Practice 11.3

Draw a tree diagram to represent each situation.

- 1 Tossing a fair coin followed by drawing a marble from a bag of 3 marbles: 1 yellow, 1 green, and 1 blue
- 2 Drawing two balls randomly with replacement from a bag with 1 green ball and 1 purple ball
- 3 Drawing a ball randomly from a bag containing 1 red ball and 1 blue ball, followed by tossing a fair six-sided number die
- 4 Tossing a fair coin twice
- 5 Reading or playing on each day of a weekend
- 6 On time or tardy for school for two consecutive days

Solve. Show your work.

- 7 Mindy is playing a game that uses the spinner shown below and a fair coin. An outcome of 3 on the spinner and heads on the coin wins the game.


Challenge-

*Solve created equations
“Challenge your brain”

*BuzzMath

*MangaHigh



 **Lesson Check #7 & 8** -can use the multiplication rule of probability to find probability of a favorable outcome

Probability of Compound Events

Ticket Out the Door- Connect, Extend, Challenge

1. How are the ideas and information presented **CONNECTED** to what you already knew?
2. What new ideas did you get that **EXTENDED** or pushed your thinking in new directions?
3. What is still **CHALLENGING** or confusing for you to get your mind around? What questions, wonderings or puzzles do you now have?