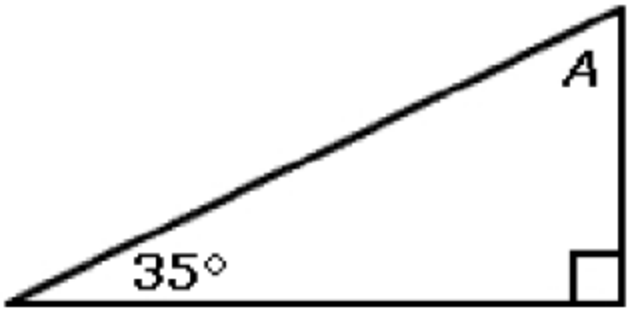
What is the measure of $\angle A$?



A) 40°

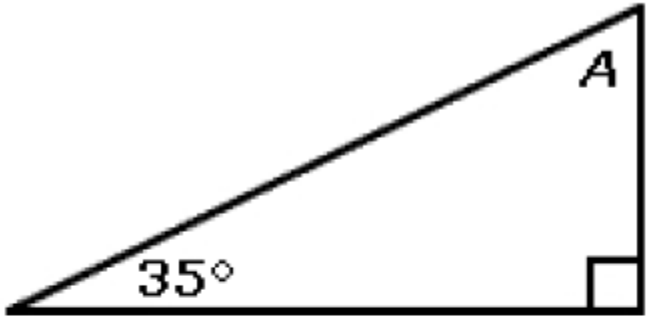
B) 45°

C) 50°

D) 55°

Lesson 11.1 Probability of Compound Events

What is the measure of $\angle A$?



A) 40°

B) 45°

C) 50°

✔ D) 55°

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 suing 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*

Lesson 11.3 Probability of Independent Events

11.3 Probability of Independent Events Day 1

TSW understand concept of probability *understand independent events *use the multiplication rule and the addition rule of probability to solve problems with independent events
Vocabulary- **Multiplication Rule of Probability**

Lesson 11.3 Probability of Independent Events

11.3 Probability of Independent Events Day 1

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

Vocabulary-
Multiplication Rule of Probability

In general, for two independent events A and B, the multiplication rule of probability states that:

$$P(A \text{ and } B) = P(A) \cdot P(B)$$

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

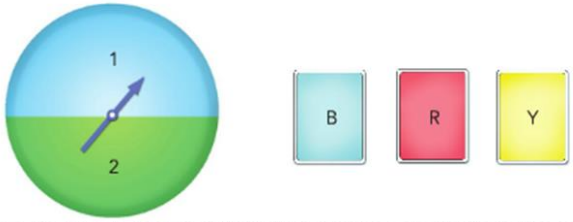
Suppose you are playing a game. You have a spinner with two congruent sections and some color cards as shown below. Your goal is to randomly spin a 2 and draw a red card.

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

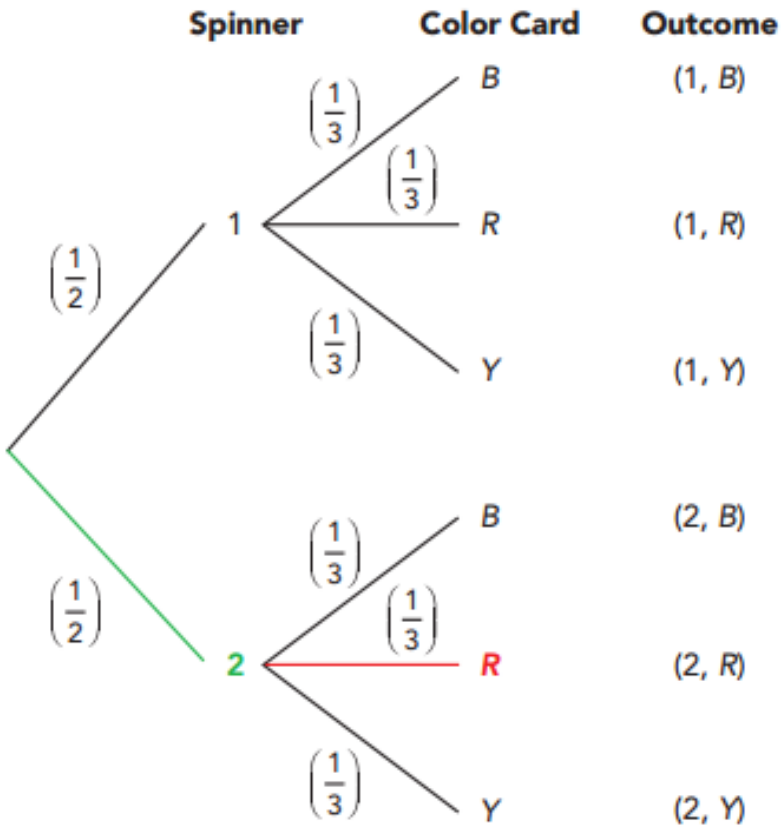
Lesson 11.3

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

Suppose you are playing a game. You have a spinner with two congruent sections and some color cards as shown below. Your goal is to randomly spin a 2 and draw a red card.



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



$$P(2, R) = P(2) \cdot P(R)$$

$$= \frac{1}{2} \cdot \frac{1}{3}$$ Multiply P(2) and P(*R*).

$$= \frac{1}{6}$$ Simplify.

B represents blue
R represents red
Y represents yellow

Example 6 Solve probability problems involving two independent events.

A game is played with a fair coin and a fair six-sided number die. To win the game, you need to randomly obtain heads on a fair coin and a 3 on a fair number die.

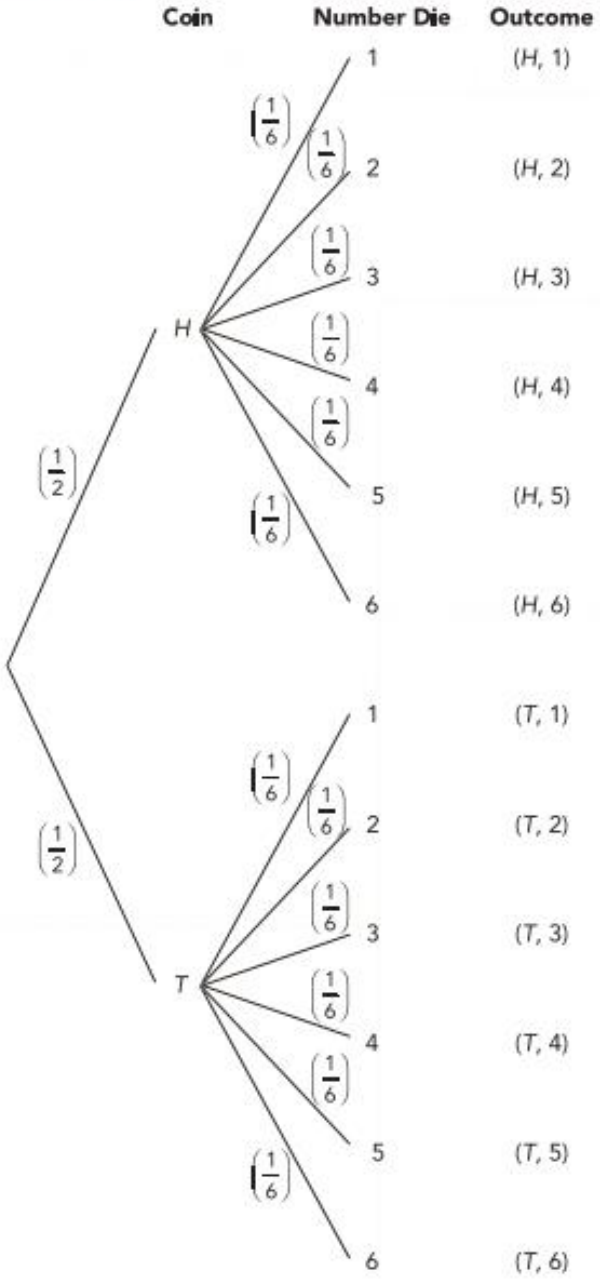
a) Draw a tree diagram to represent this compound event.

Example 6 **Solve probability problems involving two independent events.**

A game is played with a fair coin and a fair six-sided number die. To win the game, you need to randomly obtain heads on a fair coin and a 3 on a fair number die.

a) Draw a tree diagram to represent this compound event.

Solution



The events are independent since throwing a coin and a number die do not affect the results of each other.

H represents heads
T represents tails

b) Use the multiplication rule of probability to find the probability of winning the game in one try.

b) Use the multiplication rule of probability to find the probability of winning the game in one try.

Solution

$$\begin{aligned} \text{P(winning the game)} &= \text{P}(H, 3) \\ &= \text{P}(H) \cdot \text{P}(3) \\ &= \frac{1}{2} \cdot \frac{1}{6} \\ &= \frac{1}{12} \end{aligned}$$

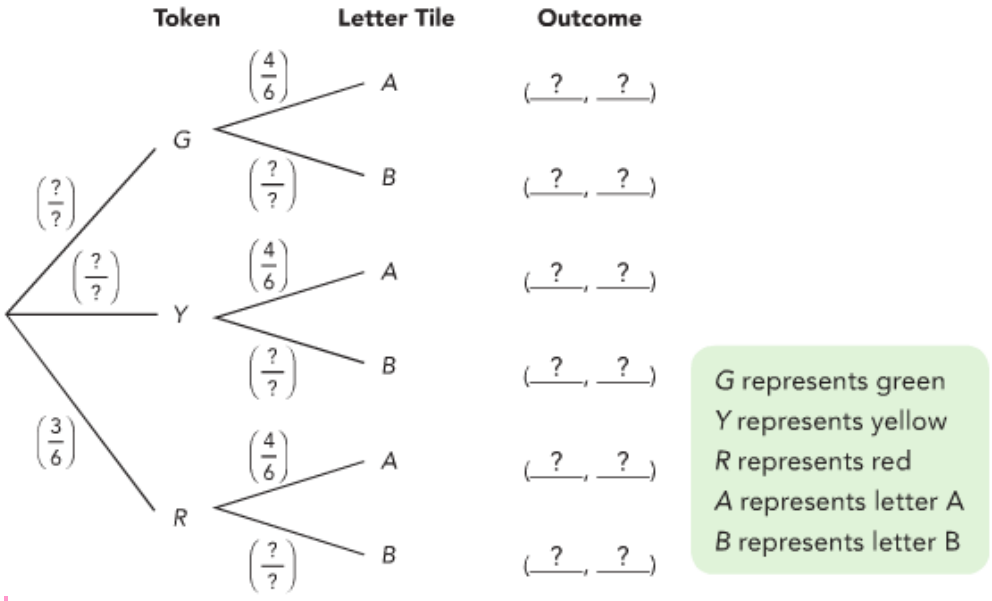
The probability of winning the game in one try is $\frac{1}{12}$.

Guided Practice

Solve. Show your work.

1 A game is played with a bag of 6 color tokens and a bag of 6 letter tiles. The 6 tokens consist of 2 green tokens, 1 yellow token, and 3 red tokens. The 6 letter tiles consist of 4 tiles of letter A and 2 tiles of letter B. To win the game, you need to get a yellow token and a tile of letter B from each bag.

a) Copy and complete the tree diagram.



b) Use the multiplication rule of probability to find the probability of winning the game in one try.

P(winning the game) = P(*Y*, *B*)

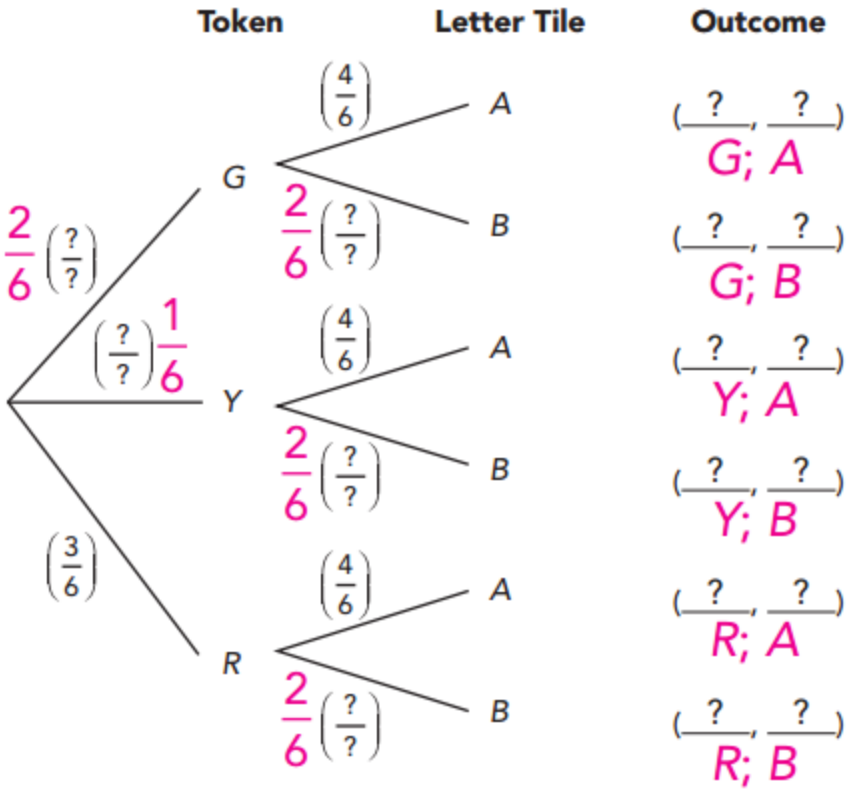
= P(*Y*) · P(*B*)

= ? · ?

= ?

The probability of winning the game in one try is ?.

a) Copy and complete the tree diagram.



G represents green
Y represents yellow
R represents red
A represents letter A
B represents letter B

b) Use the multiplication rule of probability to find the probability of winning the game in one try.

P(winning the game) = P(*Y*, *B*)

$= P(Y) \cdot P(B)$

$= \frac{?}{?} \cdot \frac{?}{1}$ $\frac{1}{6}; \frac{2}{6}$

$= \frac{?}{18}$ $\frac{1}{18}$

The probability of winning the game in one try is $\frac{?}{}$. $\frac{1}{18}$

Lesson 11.3 Probability of Independent Events

Practice 11.3 #1-6

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 #1 & 5 -can draw tree diagram to represent outcomes and probabilities of independent events

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?