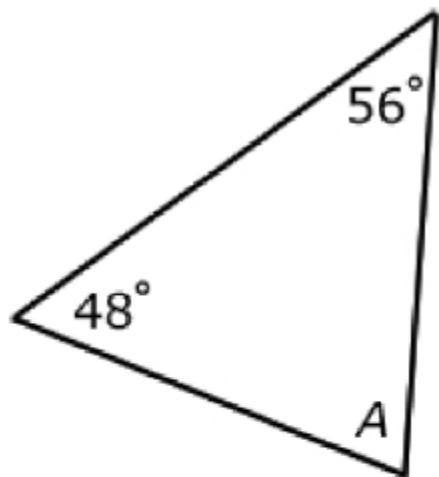


Week 7 Wednesday Course 3 Warm-up

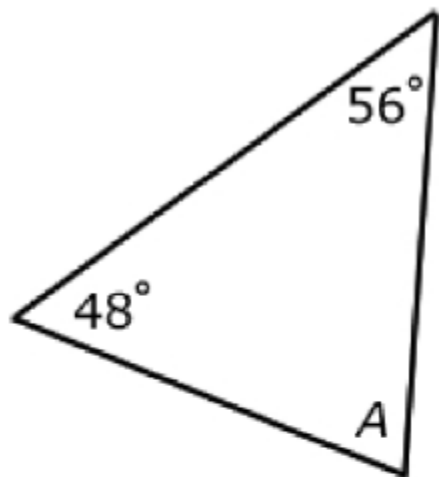
What is the measure of angle A?



- A) 48°
- B) 63°
- C) 76°
- D) 82°



What is the measure of angle A?



- A) 48°
- B) 63°
- ✓ C) 76°
- D) 82°



Lesson 11.2 Probability of Compound Events

Objective

TSW understand concept of probability


*use possibility diagrams to find probability of compound 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.

Lesson 11.2 Probability of Compound Events

Solve. Show your work.

1. Bag A contains 1 blue marble and 3 green marbles. Bag B contains 3 blue marbles and 1 green marble. Charlie randomly draws a marble from Bag A and another marble from Bag B. Use a possibility diagram to find the probability that the marbles are of different colors.

Solve. Show your work.

1. Bag A contains 1 blue marble and 3 green marbles. Bag B contains 3 blue marbles and 1 green marble. Charlie randomly draws a marble from Bag A and another marble from Bag B. Use a possibility diagram to find the probability that the marbles are of different colors.

a)

		Bag A			
		B	G	G	G
Bag B	G	(B, G)	G, G	G, G	G, G
	B	B, B	(G, B)	(G, B)	(G, B)
	B	B, B	(G, B)	(G, B)	(G, B)
	B	B, B	(G, B)	(G, B)	(G, B)

Key: B represents blue
G represents green

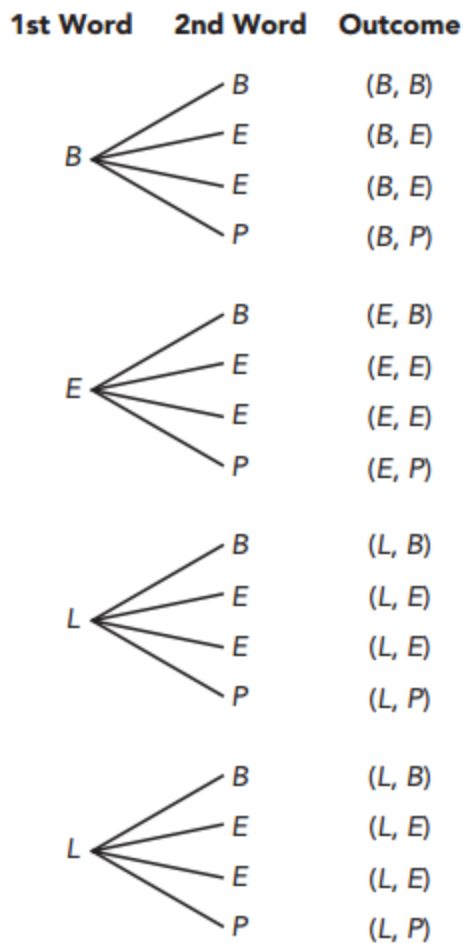
- b) There is a total of 16 outcomes.
The number of favorable outcomes is 10.
P(marbles are of different colors)

$$= \frac{10}{16}$$
$$= \frac{5}{8}$$

2. A letter is randomly chosen from the word BELL, and another letter is chosen randomly from the word BEEP. Draw a tree diagram to represent all the possible outcomes. Then find the probability that both letters chosen are the same.

A blank sheet of lined paper with a vertical red margin line on the left and horizontal blue lines for writing. The paper is intended for drawing a tree diagram and calculating a probability.

2. A letter is randomly chosen from the word BELL, and another letter is chosen randomly from the word BEEP. Draw a tree diagram to represent all the possible outcomes. Then find the probability that both letters chosen are the same.



The outcomes for both letters chosen to be the same is 3.

3. Three colored pens are placed in a backpack, 1 pen with black ink and 2 pens with green ink. First, Peter randomly selects a pen from the backpack. Then he rolls a fair six-sided number die labeled from 1 to 6. The result recorded is the number facing up. Draw a possibility diagram to represent all the possible outcomes. Then find the probability of selecting a green pen and getting an even number.

3. Three colored pens are placed in a backpack, 1 pen with black ink and 2 pens with green ink. First, Peter randomly selects a pen from the backpack. Then he rolls a fair six-sided number die labeled from 1 to 6. The result recorded is the number facing up. Draw a possibility diagram to represent all the possible outcomes. Then find the probability of selecting a green pen and getting an even number.

		Die					
		1	2	3	4	5	6
Pens	B	B1	B2	B3	B4	B5	B6
	G	G1	G2	G3	G4	G5	G6
	G	G1	G2	G3	G4	G5	G6

Key: B represents blue
G represents green

There are 18 outcomes.

The number of favorable outcomes, green and even, is 6.

$$\begin{aligned} P(\text{green and even}) &= \frac{6}{18} \\ &= \frac{1}{3} \end{aligned}$$

4. Tina rolled a red fair four-sided number die and a yellow fair four-sided number die, each with faces labeled 1 to 4. The results recorded are the numbers facing down. Draw a possibility diagram to represent all the possible outcomes. Then find the probability that the sum of the numbers is at least 6.

4. Tina rolled a red fair four-sided number die and a yellow fair four-sided number die, each with faces labeled 1 to 4. The results recorded are the numbers facing down. Draw a possibility diagram to represent all the possible outcomes. Then find the probability that the sum of the numbers is at least 6.

		Red Die				
		+	1	2	3	4
Yellow Die	1	2	3	4	5	
	2	3	4	5	6	
	3	4	5	6	7	
	4	5	6	7	8	

There are 16 outcomes.

The number of favorable outcomes, sum is at least 6, is 6.

$$\begin{aligned} P(\text{sum at least } 6) &= \frac{6}{16} \\ &= \frac{3}{8} \end{aligned}$$

5. A shop sells 3 brands of apple juice, 2 brands of grape juice, and 1 brand of orange juice. The juices are sold in small, medium, and large bottles. A customer randomly selects a bottle of fruit juice. Draw a possibility diagram to represent all the possible outcomes. Then find the probability that the customer selects a small bottle of apple juice.

The diagram is a grid for a possibility diagram. It features a vertical red line on the left side and horizontal blue lines extending to the right. The grid is currently empty, intended for the student to draw the possible outcomes of selecting a bottle of fruit juice.

5. A shop sells 3 brands of apple juice, 2 brands of grape juice, and 1 brand of orange juice. The juices are sold in small, medium, and large bottles. A customer randomly selects a bottle of fruit juice. Draw a possibility diagram to represent all the possible outcomes. Then find the probability that the customer selects a small bottle of apple juice.

		Type of Juice					
		A	A	A	G	G	O
Tin Size	S	SA	SA	SA	SG	SG	SO
	M	MA	MA	MA	MG	MG	MO
	L	LA	LA	LA	LG	LG	LO

Key: A represents apple
G represents grape
O represents orange
S represents small
M represents medium
L represents large

Total number of possible outcomes = 18
The number of favorable outcomes, small bottle of apple juice, is 3.

$$\begin{aligned} P(\text{small bottle of apple juice}) &= \frac{3}{18} \\ &= \frac{1}{6} \end{aligned}$$

6. Anna draws a bead from three numbered beads: 1, 3, and 5. Then she randomly selects a card from four number cards: 1, 2, 4, and 6. The product of the numbers drawn is recorded.

a) Draw a possibility diagram to represent all the possible outcomes.

b) Find the probability of getting a product that is greater than or equal to 5, and less than or equal to 10.

6. Anna draws a bead from three numbered beads: 1, 3, and 5. Then she randomly selects a card from four number cards: 1, 2, 4, and 6. The product of the numbers drawn is recorded.

a) Draw a possibility diagram to represent all the possible outcomes.

		Cards			
		1	2	4	6
Beads	1	1	2	4	6
	3	3	6	12	18
	5	5	10	20	30

b) Find the probability of getting a product greater than or equal to 5 and less than or equal to 10.

Total number of possible outcomes = 12
 The number of favorable outcomes, product greater than or equal to 5 and less than or equal to 10, is 4.
 $P(\text{product greater than or equal to 5 and less than or equal to 10})$
 $= \frac{4}{12}$
 $= \frac{1}{3}$

to 5,

6. Anna draws a bead from three numbered beads: 1, 3, and 5. Then she randomly selects a card from four number cards: 1, 2, 4, and 6. The product of the numbers drawn is recorded.

- b) Find the probability of getting a product that is greater than or equal to 5, and less than or equal to 10.

Total number of possible outcomes = 12

The number of favorable outcomes, product greater than or equal to 5 and less than or equal to 10, is 4.

$P(\text{product greater than or equal to 5 and less than or equal to 10})$

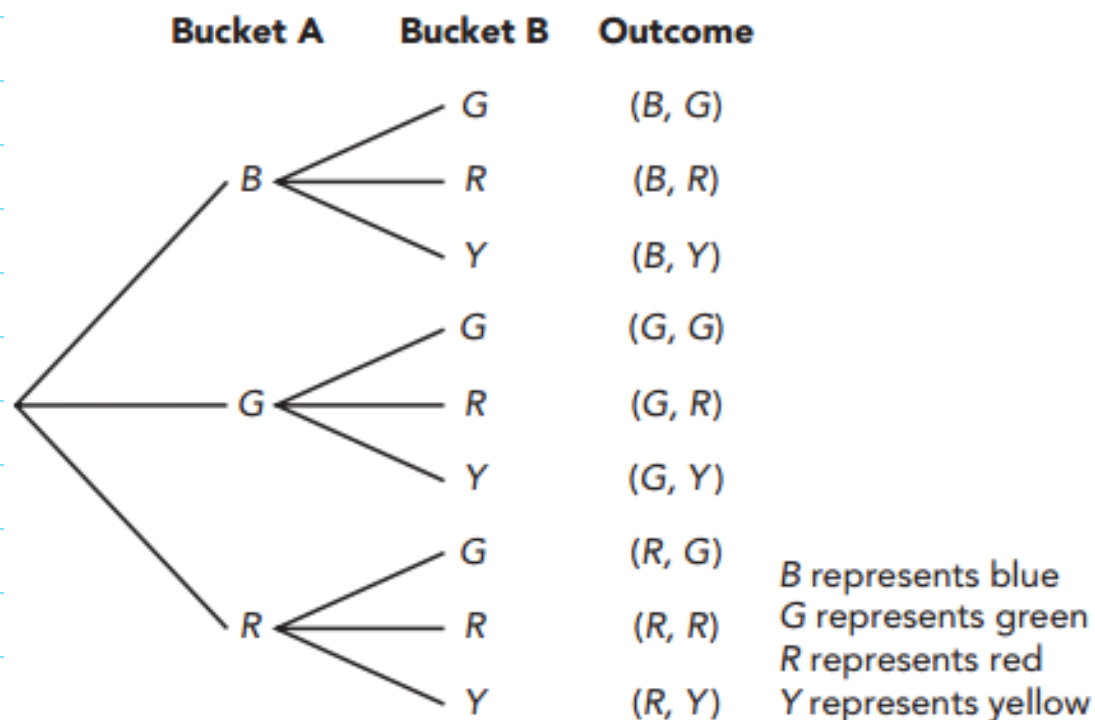
$$= \frac{4}{12}$$

$$= \frac{1}{3}$$

7. Bucket A contains a blue hermit crab, a green hermit crab, and a red hermit crab. Bucket B contains a green pebble, a red pebble, and a yellow pebble. Paulette randomly selects a hermit crab from Bucket A and a pebble from Bucket B. Draw a possibility diagram to represent all the possible outcomes. Then find the probability that the crab and the pebble are the same color.

A grid of blue horizontal lines for writing, with a vertical red margin line on the left side.

7. Bucket A contains a blue hermit crab, a green hermit crab, and a red hermit crab. Bucket B contains a green pebble, a red pebble, and a yellow pebble. Paulette randomly selects a hermit crab from Bucket A and a pebble from Bucket B. Draw a possibility diagram to represent all the possible outcomes. Then find the probability that the crab and the pebble are the same color.



Total number of possible outcomes = 9

The number of favorable outcomes, both of the same color, is 2.

$$P(\text{both of the same color}) = \frac{2}{9}$$

8. Jimmy randomly draws a disc from a bag containing 2 blue discs and 1 red disc. He then rolls a fair four-sided number die labeled 1, 1, 3, and 4, and records the result. The result recorded is the number facing down. Draw a possibility diagram to represent all the possible outcomes. Then find the probability of drawing a blue disc and getting a 1.

The diagram is a grid for a possibility diagram. It features a vertical red line on the left side and several horizontal blue lines extending to the right, creating a series of empty rectangular boxes for drawing outcomes.

8. Jimmy randomly draws a disc from a bag containing 2 blue discs and 1 red disc. He then rolls a fair four-sided number die labeled 1, 1, 3, and 4, and records the result. The result recorded is the number facing down. Draw a possibility diagram to represent all the possible outcomes. Then find the probability of drawing a blue disc and getting a 1.

		Die			
		1	1	3	4
Disc	B	(B1)	(B1)	B3	B4
	B	(B1)	(B1)	B3	B4
	R	R1	R1	R3	R4

Key: B represents blue
R represents red

Total number of possible outcomes = 12

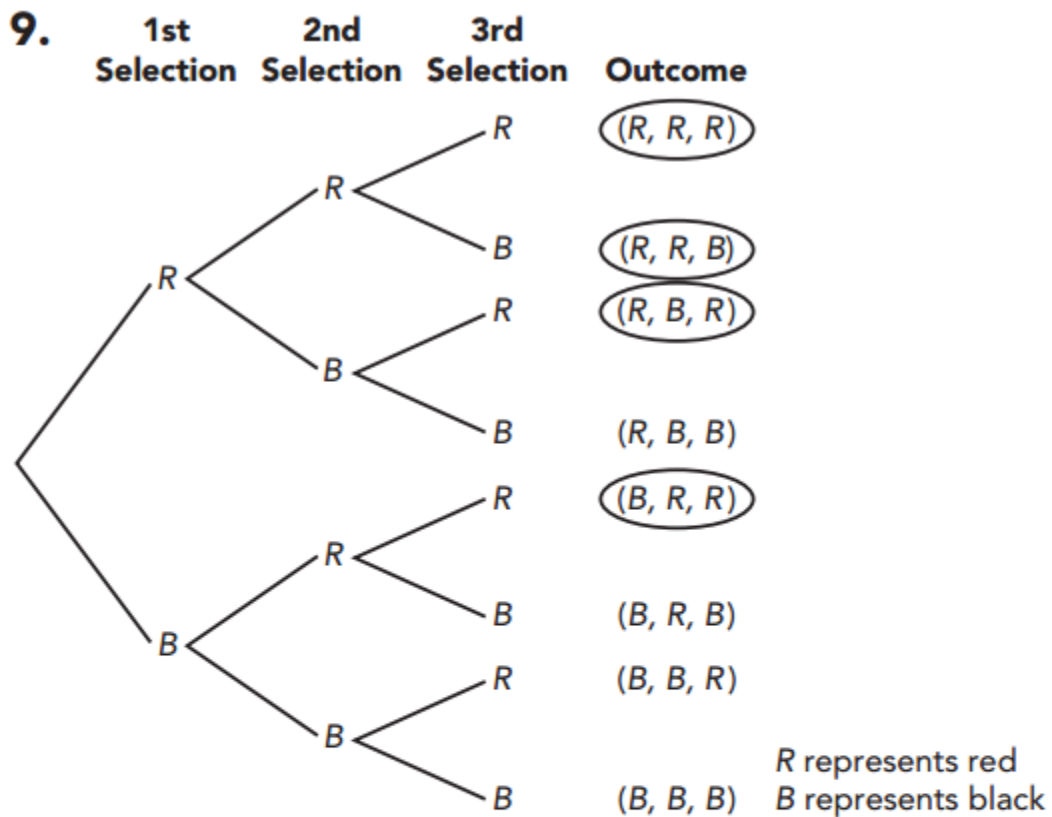
The number of favorable outcomes, drawing a blue disc and getting a 1, is 4.

$$\begin{aligned} P(\text{a blue disc and } 1) &= \frac{4}{12} \\ &= \frac{1}{3} \end{aligned}$$

9. One red tissue and one black tissue are placed in a basket. Rudy randomly selects a tissue and notes its color. After replacing the tissue, Rudy randomly selects another tissue and notes its color. This process is repeated a third time. Draw a tree diagram to represent all the possible outcomes. Then find the probability that Rudy selected the red tissue more times than the black tissue.



9. One red tissue and one black tissue are placed in a basket. Rudy randomly selects a tissue and notes its color. After replacing the tissue, Rudy randomly selects another tissue and notes its color. This process is repeated a third time. Draw a tree diagram to represent all the possible outcomes. Then find the probability that Rudy selected the red tissue more times than the black tissue.



Total number of possible outcomes = 8
The number of favorable outcomes, more red tissue than black, is 4.

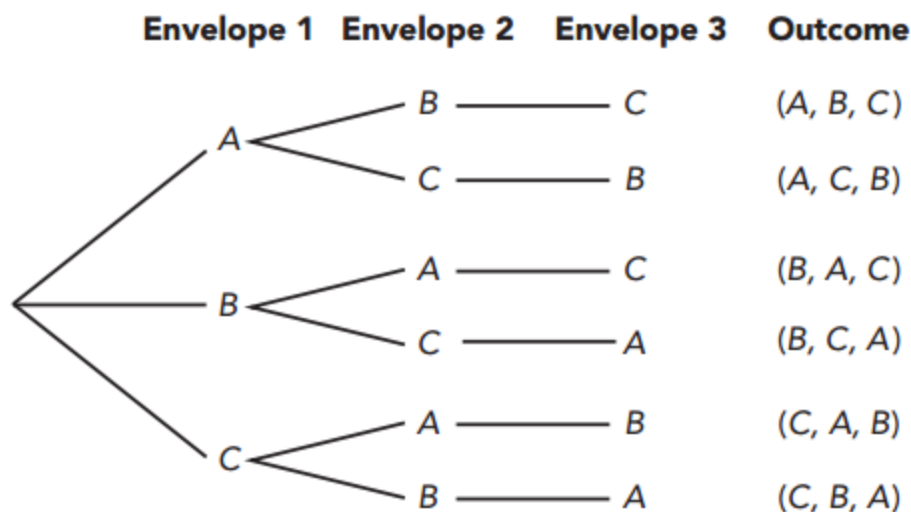
$$\begin{aligned} P(\text{more red tissue than black}) &= \frac{4}{8} \\ &= \frac{1}{2} \end{aligned}$$

- 10.** Jessica writes a letter to each of her three friends. She writes each address on three different envelopes. She then randomly inserts the letters into the three different envelopes. Draw a possibility diagram to represent all the possible outcomes. Then find the probability that all of the letters correspond to the correct envelope.

A grid of blue horizontal lines for drawing a possibility diagram. The grid consists of 15 horizontal lines. A vertical red line is drawn on the left side of the grid, starting from the top of the first horizontal line and extending to the bottom of the last horizontal line.

10. Jessica writes a letter to each of her three friends. She writes each address on three different envelopes. She then randomly inserts the letters into the three different envelopes. Draw a possibility diagram to represent all the possible outcomes. Then find the probability that all of the letters correspond to the correct envelope.

Let the letters be A, B, and C.



P(correct letters in the correct envelopes) = $\frac{1}{6}$

Lesson 11.2 Probability of Compound Events

Extra Practice 11.2 #1-10

Name: _____ Date: _____

Lesson 11.2 Probability of Compound Events

Solve. Show your work.

1. Bag A contains 1 blue marble and 3 green marbles. Bag B contains 3 blue marbles and 1 green marble. Charlie randomly draws a marble from Bag A and another marble from Bag B. Use a possibility diagram to find the probability that the marbles are of different colors.
2. A letter is randomly chosen from the word BELL, and another letter is chosen randomly from the word BEEP. Draw a tree diagram to represent all the possible outcomes. Then find the probability that both letters chosen are the same.

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120 Chapter 11 Lesson 11.2

Challenge-

*Solve created equations

“Challenge your brain”

*BuzzMath

*MangaHigh



✓ **Lesson Check #9** -can use a possibility diagram to represent and find the number of possible outcomes for a compound event

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?