MATH 7:
Week of June 1

- Go through the slides (notes) and work through the examples on a separate piece of paper.
- Do the given practice problems (again, on a separate piece of paper).
- Check your answers with the key given (last slide).
- Take a photo or scan in your work and submit it in Google Classroom. If you have questions or would like feedback on your work, add that as a comment with your submitted work.
- The other option for turn in is to send it in on Monday when turning in your packet(s).
- Zoom help session invites will be sent to your school email address.

Day 1: Slides 2-8 Day 2: Slides 9-17
Answers on Slide 18

Day 1: Lesson 2-G

Compound Probabilities Using Lists, Tree Diagrams and Tables

Target: Find compound probabilities using lists, tree diagrams and tables.

Vocabulary

Compound Probability
The probability of two or more events occurring.

Independent Events
Events that do not affect each other.

Example:
Rolling a number cube and tossing a coin are independent events.

Dependent Events
Events that depend on each other.

Example:
Choosing one card from a deck of cards, keeping it and then choosing a second card.

Compound Probability

$$P(\text{events}) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

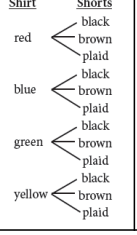
Use a list, tree diagram or table to find the number of favorable outcomes and the number of possible outcomes in the sample space.

Example 1

You are packing for a trip. You decide to take four shirts (red, blue, green and yellow) and three shorts (black, brown and plaid). How many outfits are possible?

Choose one of the methods below to organize the information and see all the possible outfits.

Tree Diagram



List

Shirt, Shorts
red, black
red, brown
red, plaid
blue, black
blue, brown
blue, plaid
green, black
green, brown
green, plaid
yellow, black
yellow, brown
yellow, plaid

Table

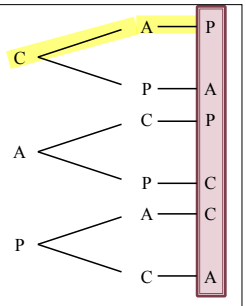
	Black	Brown	Plaid
Red	Red Black	Red Brown	Red Plaid
Blue	Blue Black	Blue Brown	Blue Plaid
Green	Green Black	Green Brown	Green Plaid
Yellow	Yellow Black	Yellow Brown	Yellow Plaid

There are 12 different outfits possible.

Example 2

Cindy has three letter cards that spell out the word CAP. Cindy picks three cards, one at a time, without replacing them. What is the probability that she spells the word CAP in the correct order?

Create a tree diagram showing the possible combinations.



Count the number of possible outcomes. 6 total outcomes

Count the number of favorable outcomes. C, A, P → 1 favorable outcome

Find the probability. $P(C, A, P) = \frac{1}{6}$

Example 3

LaSean spins the spinner at the right two times. Find the probability that he spins a 3 and then a number greater than 1.

Organize the information by making a list.

1, 1	2, 1	3, 1	4, 1
1, 2	2, 2	3, 2	4, 2
1, 3	2, 3	3, 3	4, 3
1, 4	2, 4	3, 4	4, 4

Count the number of possible outcomes in the sample space. There are 16 possible outcomes in the list.

Count the number of favorable outcomes in the sample space. 3, 2 3, 3 3, 4
There are three favorable outcomes.

Find the probability. $P(3,\ \text{number} > 1) = \frac{3}{16}$

L2-G Practice Problems:

Find the number of possible outcomes for each situation using a list, tree diagram or table. Show your work.

1. You roll a number cube two times. How many outcomes are possible?

2. Carmen has a deck of cards numbered 1 – 10. She picks one card and flips a coin. How many outcomes are possible?

3. Kendall has three jars of golf balls. One jar has a white and pink golf ball. The second jar has an orange and purple golf ball. The third jar has a yellow and red golf ball. She chooses one golf ball from each jar. How many outcomes are possible?

4. Natalia owns a restaurant. Each customer chooses from a main dish (hamburger or hot dog), a side dish (french fries, apple slices or veggie sticks), and a drink (soda, tea or juice). How many different meals are possible?

L2-G Practice Problems:

Find each probability. Use a list, tree diagram or table to identify the favorable outcomes and the sample space.

5. You roll a number cube and toss two coins. What is the probability of rolling a 2 and tossing two heads?

6. Manny packed three pairs of shorts (brown, white and blue), five shirts (green, blue, white, black and striped) and four pairs of shoes (tennis, flip-flops, sandals and boots). What is the probability he will randomly choose his brown shorts, blue shirt and boots as an outfit?

7. Jeremy has a deck of cards numbered 1 – 12. He picks one card and then replaces it. Then he picks another card. What is the probability he picks a 1 and then a 12?

8. Sebastian tosses three coins. What is the probability he tosses two heads and one tail?

END DAY 1

Day 2:
Lesson 2-H

Compound Probabilities Using Multiplication & Simulation

Target: Find compound probabilities using multiplication and simulations.

Vocabulary

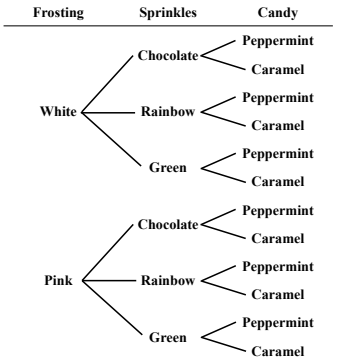
Simulation

An experiment used to model a situation.

- ✓ Simulations can give a good estimate for a probability when it is difficult to determine.
- ✓ Coins, number cubes, random number generators or other objects can be used to simulate events.
- ✓ The more trials you simulate, the better your estimate for a probability.

Multiplication Counting Principle

MULTIPLY the number of ways each event can occur to find the number of outcomes.



2 × 3 × 2 = 12 different combinations

Possible Outcomes

White, Chocolate, Peppermint
White, Chocolate, Caramel
White, Rainbow, Peppermint
White, Rainbow, Caramel
White, Green, Peppermint
White, Green, Caramel
Pink, Chocolate, Peppermint
Pink, Chocolate, Caramel
Pink, Rainbow, Peppermint
Pink, Rainbow, Caramel
Pink, Green, Peppermint
Pink, Green, Caramel

Example 1

Oregon issues license plates consisting of three letters and three numbers. There are 26 letters and the letters may be repeated. There are ten digits and the digits may be repeated.

How many possible license plates can be issued with three letters followed by three numbers?

The license plate has six total letters and numbers. The first three are letters (A – Z) followed by three numbers (0 – 9).

Multiply the possibilities. $26 \cdot 26 \cdot 26 \cdot 10 \cdot 10 \cdot 10 = 17{,}576{,}000$

There are a total of 17,576,000 license plate options.

Example 2

There are five students running a race. How many possible ways can they finish first, second and third?

There are five students to choose from for first place. There will then only be four left to choose from for second place and three to choose from for third place.

Multiply the possibilities. $5 \cdot 4 \cdot 3 = 60$

There are a total of 60 different ways the students could finish first, second and third.

Example 3

Ross has a bag of marbles that has three red, four blue and five green marbles. He chooses one marble, replaces it and then chooses a second marble.

What is the probability he chose a red marble and then a green marble?

Multiply to find the total number of outcome possible. There are 12 marbles to choose from each draw. $12 \cdot 12 = 144$

Multiply to find the number of favorable outcomes. There are 3 possible red marbles to choose from in the first draw and 5 possible green marbles to choose from in the second draw. $3 \cdot 5 = 15$

Example 3 (Cont.)

Ross has a bag of marbles that has three red, four blue and five green marbles. He chooses one marble, replaces it and then chooses a second marble.

What is the probability he chose a red marble and then a green marble?

Find the probability. $P(\text{red then green}) = \frac{15}{144} = \frac{5}{48}$

The probability Ross chose a red marble and then a green marble is $\frac{5}{48}$ **.**

Example 4

A multiple choice test has five questions. Each question has four options to choose from. Marty randomly guesses on every problem. What is the probability he guessed correctly on each problem?

Multiply to find the total number of outcomes possible. There are 4 choices on each of the 5 questions. $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 = 1024$

Multiply to find the number of favorable outcomes. There is 1 correct answer for each of the 5 questions. $1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 = 1$

Find the probability. $P(\text{guess correctly}) = \frac{1}{1024} \approx 0.00098$

The probability Marty guessed correctly on all the questions is about 0.00098 or 0.098%

L2-H Practice Problems:

Find the number of possible outcomes for each situation.

1. You roll a number cube four times. How many outcomes are possible?

2. Martin takes a test that has five multiple choice questions. Each question has three possible answers. If Martin guesses on each question, in how many different ways can he answer the questions on the test?

3. A sandwich shop has wheat, white and oat bread on their menu. Their meats include turkey, roast beef and ham and they serve tomatoes and lettuce for vegetables. Customers can also order a side of potato chips or cole slaw. How many different lunch orders are possible if a person chooses one type of bread, one type of meat, one vegetable and one type of side?

L2-H Practice Problems:

Find each probability.

4. Kyle has a deck of cards numbered 1 – 10. He randomly picks one card, replaces it and then shuffles the cards. He repeats this two more times. What is the probability Kyle picks the cards 5, 5 and 5?

5. Petra has a jar full of marbles. It has 30 blue marbles and 70 red marbles. She randomly chooses one marble, replaces it and then chooses a second marble.
a. What is the probability Petra chose two blue marbles?
b. What is the probability Petra chose two red marbles?

6. Genevieve has to pick a two-digit or three-digit code for her locker combination. The digits can be repeated. Use probability to explain why she should choose a three-digit code instead of a two- digit code.

END DAY 2

ANSWER PAGE Reminder: ALL work must be shown for EVERY problem!

Day 1: EVERY problem needs a tree diagram, table, or list!!!

1. 36
2. 20
3. 8
4. 18
5. $\frac{1}{24}$
6. $\frac{1}{60}$
7. $\frac{1}{144}$
8. $\frac{1}{12}$

Day 2:

1. 1,296
2. 243
3. 36
4. $\frac{1}{1000}$
5. a. $\frac{9}{100}$ b. $\frac{49}{100}$
6. There are 100 possible two-digit codes and 1,000 possible three-digit codes so the probability someone guesses the correct code is less with a three-digit code.

MATH 7: LAST SLIDE!