Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

UNIT 7 LESSON 9

**AIM**: SWBAT determine the sample space and total number of outcomes of a compound event

**THINK ABOUT IT!**

The diagram below is a tree diagram that is used to determine all the outcomes (sample space) of flipping a coin followed by spinning the spinner shown.

Coin = 2 outcomes (heads and tails) Spinner = 3 Outcomes (white, red, and blue)





**Outcomes (Sample Space)**

Heads and White

Heads and Red

Heads and Blue

Tails and White

Tails and Red

Tails and Blue

Total Outcomes = 6

Create your own tree diagram that shows the sample space of rolling a six-sided number cube and flipping a coin.

Coin = \_\_\_\_\_ Outcomes Dice = \_\_\_\_\_ Outcomes



Test the Conjecture #1) What are the total number of outcomes of flipping a coin twice and spinning the spinner?



Test the Conjecture #2) A sandwich shop offers different styles of bread, meat, cheese, and condiment listed in the table below. How many different types of sandwich could be made if someone ordered one of each column?

|  |  |  |  |
| --- | --- | --- | --- |
| **Bread** | **Meat** | **Cheese** | **Condiment** |
| WhiteWheatRye | TurkeyHamChickenRoast Beef | AmericanSwiss | MayoMustard |

Conjecture

|  |
| --- |
|  |

**PARTNER PRACTICE**

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| *Bachelor Level* |

1. Sarah spins a spinner with equal sections labeled A, B, C, and rolls a six-sided die. What is the total number of outcomes in her experiment? Prove your answer using a tree diagram.



B

A

C

1. Ms. Glass is going to choose a scholar to help her write the aim on the board (either a girl or a boy), and she’s then going to choose the color marker the scholar will use (either purple, green, light blue, or red). Create a tree diagram to help you list the sample space for this situation.

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| *Master Level* |

1. Cynthia is thinking of a two-digit number. Use the fundamental counting principal to prove the total number of two-digit numbers she could pick from. Explain why your answer makes sense.

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**INDEPENDENT PRACTICE**

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| *Bachelor Level* |

1. Alice spun a spinner with 3 sections (Red, Yellow, Blue), then flipped a coin, then rolled a six sided dice.



Step A: Determine the number of possible outcomes for each of the three events.

Step B: What is the total number of possible outcomes?

Step C: Prove your answer is correct by drawing a tree diagram

1. Fred is taking a summer program at NYU and he attends classes for 3 periods each day. He gets to choose one class to take during each period, and his options are shown below. How many combinations of classes does he have to choose from?

|  |  |  |
| --- | --- | --- |
| Period 1 | Period 2 | Period 3 |
| * The History of Film-Making
* The Adolescent Novel
* What You Never Knew about the US Presidents
* Geography and Travel
 | * The Psychology of a Teenager
* Writing the Novella
* TV Production
 | * Poetry Loves Club
* Baseball in World War II
* Beginning Chinese
* Beginning Arabic
* Beginning Japanese
* Beginning Spanish
* Beginning French
* Beginning Swahili
 |

|  |
| --- |
| *Master Level* |

1. Javier is going to toss 5 pennies. How many total outcomes are there for this experiment? Confirm your answer with a tree diagram.
2. Margo goes to the Salad Shack and can pick one item from each category to create her own salad. Margo looks at the menu and exclaims “There are thousands of options!”. Do you agree with Margo? Explain.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Greens** | **Protein** | **Veggies** | **Extras** | **Dressings** |
| RomaineSpinachMixed greensArugula | ChickenShrimpSalmonSteakTofu | Carrots CeleryPeppersOnionsMushroomsArtichokeAsparagusAvocado | Parmesan cheeseBlue cheeseChopped eggBacon bits | Balsamic vinaigretteRanchBlue cheeseThousand islandRussianRaspberry vinaigrette |

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1. A while back, Mr. Tejada made a friendly bet with Lilliana that he could “crack the code” on her iPhone. Her code is 4 digits long and only uses numbers. How many different codes would Mr. Tejada have to try to be certain that he named the correct one?

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| *PhD Level* |

1. Michael is trying to guess Marcelis’ passcode, which contains 4 vowels. What are the chances that he gets the code right on his first try?
2. Marcelis is trying to guess Michael’s passcode, which contains 4 consonants. What are the chances that Marcelis guesses Michael’s code on the first try?
3. Whose passcode is less likely to be broken into – Michael’s, or Marcelis’? Explain your answer.

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**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**EXIT TICKET**

|  |  |  |  |
| --- | --- | --- | --- |
| Self-assessment | I mastered the learning objective today. | I am almost there.  | Need more practice and feedback. |
| Teacher feedback | You mastered the learning objective today. | You are almost there.  | You need more practice and feedback. |

1. Javier is going to toss 3 pennies. Use a tree diagram to determine the sample space of the probability experiment.

2. Tiyana is making an ice cream sundae, using the options below. Her mom says she’s allowed to pick one item from each category listed on the menu. How many different combinations does she have to choose from? Explain.

|  |  |  |  |
| --- | --- | --- | --- |
| **Ice Cream Flavors** | **Cold Toppings** | **Hot Toppings** | **Syrup** |
| ChocolateVanillaCoffeeCookie doughMint chocolate chipCoffee  | SnickersSprinklesButterfingerBlueberriesStrawberriesReesesM & MsRaspberries | Hot fudgeHot caramel sauce | Peanut ButterHoneyWhite ChocolateDark ChocolateStrawberry |

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