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UNIT 7 LESSON 12

**AIM**: SWBAT determine the probability of compound events

**THINK ABOUT IT!**

Yenni is playing a card game where she is trying to collect one of each suit (heart, diamond, spade, club). She needs a heart and a club to win. There are 3 hearts, 2 diamonds, 1 spade, and 4 clubs left in the deck. What is the probability that she will pick a heart and club without replacing the cards?

Key Point:

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**Interaction with New Material**

Ex.1) The numbers 1 – 10 are placed into a hat. Is it more likely to pull out 3 odd numbers without replacement or 2 prime numbers without replacement? (1 is not a prime number)

**PARTNER PRACTICE**

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| *Bachelor Level* |

1. Reyanna picks two coins at random from the 3 quarters, 3 dimes, and 3 nickels in her pocket. She does not put the first coin back.
2. What is the probability that she chooses a quarter followed by a dime?
3. What is the probability that both coins she picks are nickels?
4. If she picks three coins, what is the probability that she picks 1 of each coin?
5. In the three fractions you wrote to find your answer to part c, were the numerators the same, or different? Why?

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1. In the three fractions you wrote to find your answer to part c, were the denominators the same, or different? Why?

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| *Master Level* |

1. Sherri is trying to figure out the 4-digit code that her brother uses to lock his video games up. For the code, she knows that each digit (0-9) can only be used once.

Step A: What is the likelihood that Sherri randomly guesses the code on the first try?

Step B: Sherri remembers seeing her brother punch in the number “9” as the first digit. Knowing one of the digits, what is the probability that Sherri will guess her brother’s code now?

**INDEPENDENT PRACTICE**

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| *Bachelor Level* |

A bag contains 5 red, 3 brown, 6 yellow, and 2 blue marbles. Once a marble is selected, it is not replaced. Find each probability.

1. P(red then yellow)
2. P(yellow then blue)
3. P(brown, brown, then blue)
4. P(yellow, then yellow, then *not* blue)
5. P(blue, blue, then blue)

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| *Master Level* |

1. The 7th grade teachers have nominated 12 scholars, 9 boys and 3 girls, to be helpers at the Parent Teacher Conferences. Mr. Rosskamm decides he only needs 4 helpers, so to be fair, he will write each scholar’s name on a little piece of paper, put it in a hat, and randomly select 4 names.

Step A: What is the probability that all the scholars chosen will be boys?

Step B: What is the probability that all the scholars chosen will be girls?

Step C: What is the probability that more than half the scholars chosen will be girls?

Step D: Explain how you determined your answer to part c.

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1. Eight cards are numbered from 1 to 8 and placed in a box. One card is selected at random and not replaced. Another card is randomly selected.
2. What kind of probability is this? Explain.

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1. What is the probability that the first card has the number 4, and the second card has the number 8?
2. What is the probability that both cards are greater than 5?
3. What is the probability that the first card has the number 8, and the second card is a factor of 8?
4. For the next experiment, one card is selected at random and replaced before the next one is selected. What is the probability that the first card has the number 8, and the second card is a factor of 8?

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| *PhD Level* |

1. There are two red balls and two white balls in a jar. One ball is drawn and replaced with a ball of the opposite color. The jar is shaken and one ball is chosen. What is the probability that this ball is red?

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

**EXIT TICKET**

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| 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. The school chess club has 6 girls and 4 boys. Two students are to be selected at random to represent their school in a statewide tournament. The coordinator of the club writes each student’s name on a card and places the cards in a paper bag. What is the probability that the coordinator will draw the name of a girl followed by the name of another girl, if the first name is not returned to the bag? Express your answer as a percent.
2. In a bag, there are 5 red cards and 5 black cards. Julia can win the game she’s playing if she picks 3 red cards in a row. Each time she picks, she holds onto the card. What is the probability that Julia will win the game?

a) $\frac{1}{8}$

b) $\frac{1}{12}$

c) $\frac{6}{100}$

d) $\frac{125}{810}$