

Worksheet 4.2: Multiplication Principle of Counting

Use the Multiplication Principle of Counting to find the possible number of outcomes and then each of the probabilities:

Independent Events:

1. You roll a number cube numbered from 1 to 6. You then spin a spinner with 5 sections each with a different color. The spinner has the colors red, pink, orange, green, and navy. P(2 and red)	2. You roll a cube which has the numbers 6, 15, 6, 18, 15, and 18 on it. You then spin a spinner which has 3 sections. The letters on the spinner are J, C, and D. P(J and not 6)
3. You roll a cube which has the numbers 15, 16, 19, 20, 23, and 24 on it. You then spin a spinner which has 6 sections. The letters on the spinner are F, E, K, G, J, and C. P(16 and K)	4. You flip a coin and toss a 1-6 number cube. P(heads and a composite number)
5. You roll a cube which has the numbers 6, 9, 11, 13, 6, and 17 on it. You then spin a spinner which has 8 sections. The letters on the spinner are H, G, D, A, K, C, F, and F. P(K and 17)	6. You roll a number cube numbered from 1 to 6. You then spin a spinner with 6 sections each with a different color. The spinner has the colors violet, brown, white, pink, yellow, and green. P(not yellow and 5)
7. You flip a coin and toss a 1-6 number cube. P(heads and 4)	8. You roll a cube which has the numbers 6, 8, 10, 13, 16, and 17 on it. You then spin a spinner which has 3 sections. The letters on the spinner are H, C, and B. P(8 and H)
9. You roll a cube which has the numbers 10, 14, 14, 21, 18, and 21 on it. You then spin a spinner which has 3 sections. The letters on the spinner are G, G, and A. P(21 and G)	10. You roll a number cube numbered from 1 to 6. You then spin a spinner with 4 sections each with a different color. The spinner has the colors red, navy, blue, and violet. P(violet and a number divisible by 3)

Dependent Events:

1. There are 5 purple, 4 orange, and 5 navy marbles in a hat. You pick 2 marbles from the hat. Marbles are <u>not</u> returned after they have been drawn. P(two navy marbles in a row)	2. A deck of cards has 4 orange, 5 pink, and 5 yellow cards. You pick 3 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(the first card is yellow, the second card is not yellow, and the third card is orange)
3. There are 6 green, 2 red, 2 brown, 5 navy, and 2 violet marbles in a hat. You pick 2 marbles from the hat. Marbles are <u>not</u> returned after they have been drawn. P(the first marble is brown and the second marble is not violet)	4. A deck of cards has 2 navy, 4 green, and 3 red cards. You pick 2 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(the first card is green and the second card is red)
5. There are 2 orange, 5 red, 2 purple, and 2 black marbles in a hat. You pick 2 marbles from the hat. Marbles are <u>not</u> returned after they have been drawn.	6. A deck of cards has 5 yellow, 5 pink, and 4 orange cards. You pick 2 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(the first card is pink and the second card is pink)

P(the first marble is orange and the second marble is purple)	
7. A deck of cards has 6 gray, 6 green, and 5 black cards. You pick 4 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(the first card is not green, the second card is not green, the third card is not black, and the fourth card is not gray)	8. There are 6 blue, 5 violet, and 3 orange marbles in a hat. You pick 3 marbles from the hat. Marbles are <u>not</u> returned after they have been drawn. P(three blue marbles in a row)
9. There are 4 gray, 6 brown, 6 red, 6 pink, and 2 violet marbles in a hat. You pick 2 marbles from the hat. Marbles are <u>not</u> returned after they have been drawn. P(the first marble is pink and the second marble is gray)	10. A deck of cards has 4 violet, 6 brown, and 6 navy cards. You pick 3 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(three violet cards in a row)

Independent AND Dependent Events:

1. You roll a cube which has the numbers 18, 19, 22, 24, 26, and 28 on it. You then spin a spinner which has 8 sections. The letters on the spinner are K, B, J, H, F, C, G, and D. P(not H and not 19)	2. You roll a number cube numbered from 1 to 6. You then spin a spinner with 5 sections each with a different color. The spinner has the colors orange, red, black, navy, and brown. P(brown and 4)
3. A deck of cards has 5 gray, 3 brown, and 5 white cards. You pick 3 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(the first card is white, the second card is not gray, and the third card is not white)	4. You roll a cube which has the numbers 15, 16, 21, 20, 21, and 22 on it. You then spin a spinner which has 3 sections. The letters on the spinner are B, F, and B. P(a prime number and B)
5. A deck of cards has 4 pink, 3 purple, and 3 white cards. You pick 2 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(two purple cards in a row)	6. There are 5 black, 6 white, 3 blue, 3 brown, and 6 navy marbles in a hat. You pick 2 marbles from the hat. Marbles are returned after they have been drawn. P(the first marble is navy and the second marble is white)
7. There are 5 orange, 2 purple, 5 blue, and 5 violet marbles in a hat. You pick 2 marbles from the hat. Marbles are returned after they have been drawn. P(the first marble is purple and the second marble is purple)	8. You flip a coin and toss a 1-6 number cube. P(not tails and not 1)
9. A deck of cards has 2 green, 5 orange, and 2 violet cards. You pick 2 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(the first card is green and the second card is green)	10. There are 5 white, 6 violet, and 6 yellow marbles in a hat. You pick 4 marbles from the hat. Marbles are returned after they have been drawn. P(the first marble is not yellow, the second marble is white, the third marble is violet, and the fourth marble is yellow)