Compound Probability

Up to this point, you have been working with isolated events. You have found the probability of *one thing* happening. The next step is to learn how to determine **compound probability**, or the probability of more than one event happening. For example, if you toss a coin twice, the probability of getting heads **and** tails is a **compound probability**. The word “and” tells you you’re working with compound probability.

To determine compound probability, **multiply** the probability of the first event with the probability of the next event (and continue multiplying for every event that is desired).

Determine the compound probability as a **fraction**, a **decimal**, and a **percent**.

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| **EX**  If you roll a number coin three times, what is the probability of rolling a 6, an odd number, and a 2?  *“And” makes it compound, so I will determine the probability of each, and then multiply them.* | **EX**  If you flip a coin five times, what is the probability that you will get heads every time?  *Every time means you’d get:*  *Heads, heads, heads, heads & heads…*  *COMPOUND…Multiply!* | **EX**  If you choose two marbles at random from a bag containing 3 red, 2 yellow and 5 blue marbles, what is the probability that you will choose a red or a blue marble first, and a yellow marble second, if you put the first marble back into the bag?  *“And” means multiply!*  *red or blue possibilities: 8, total: 10* |
| 1. If a number cube (#1-6) is rolled 4 times, what is the probability of rolling a 5 and two 4s? | 2. A fair spinner has 7 sections: 1A, 2B, 3C, 4D, 5E, 6F, and 7G. If you spin the spinner twice, what is the probability of spinning an even or a vowel (a, e, i, o, u) on the first spin and a 7 on the second? | 3. When rolling a 6-sided number cube (#1-6) three times, what is the probability of rolling an odd number every time (odd & odd & odd)? |
| 4. When rolling a 6-sided number cube (#1-6) twice, what is the probability of rolling a number that is not a 4 and a number that is even? | 5. When spinning a fair spinner with four equal sections—black, blue, purple, and green—, what is the probability of landing on a blue, then a green, then either a black or a purple? | 6. In a bag of marbles, there are 7 striped marbles, 2 solid marbles, and 1 swirled marble. What is the probability of randomly choosing a striped marble, putting it back in the bag (not changing the contents of the bag), and then choosing a solid marble? |
| 7. When spinning a fair spinner that has 6 striped sections, 2 yellow sections and 2 blue sections, what is the probability of landing on a striped section, spinning again, and landing on the exact same section? | 8. In a bag of marbles, there are 12 purple marbles, 10 black marbles, and 3 yellow marbles. What is the probability of choosing a black or purple marble, putting it back, and then randomly choosing the marble you chose the first time? | 9. If a number cube (#1-6) is rolled 3 times, what is the probability of rolling a 6, a 2, and an 8? |
| 10. In a deck of 52 cards, there are 4 Jacks. Two of the Jacks are black and two are red. What is the probability that a red Jack and a black jack will be chosen at random from the deck, assuming the first card is replaced (put back) in the deck? | 11. In a deck of 52 cards, there are 12 face cards. Out of the 26 black cards in the deck, 6 of them are face cards. What is the probability that two cards chosen at random will be a black card and a red face card, assuming the first card is replaced (put back) in the deck? | 12. In a deck of 52 cards, there are 36 number cards and four aces. If two card are chosen at random, what is the probability that one of them will not be a number card or an ace and the other will be an ace, assuming the first card is replaced (put back) in the deck? |