

Name

Key

Date

Hour



Multiplying Probabilities

Alg 2 Trig G

Finding the probabilities of INDEPENDENT EVENTS:

1.) You have 9 dimes and 7 pennies in your pocket. You randomly select one coin, look at it, and *then replace it*. You then randomly select another coin. **What is the probability that both of the coins you select are dimes?**

In general, $P(A \text{ and } B) = P(A) \cdot P(B)$

For this problem, $P(\text{dime and dime}) = \dots\dots$

$$\frac{9}{16} \cdot \frac{9}{16} = \frac{81}{256}$$

- What is the probability that you select one dime and one penny?

$$\frac{9}{16} \cdot \frac{7}{16} = \frac{63}{256}$$

2.) When three dice are rolled, what is the probability that the first two show a 5 and the third shows an even number?

$P(5) \cdot P(5) \cdot P(\text{even})$

$$\frac{1}{6} \cdot \frac{1}{6} \cdot \frac{3}{6} = \frac{3}{216} = \frac{1}{72}$$

3.) When three dice are rolled, what is the probability that one die is a multiple of 3, one die shows an even number, and one die shows a 2?

$P(\text{multiple of } 3) \cdot P(\text{even}) \cdot P(2)$

$$\frac{2}{6} \cdot \frac{3}{6} \cdot \frac{1}{6} = \frac{6}{216} = \frac{1}{36}$$

Finding the probabilities of DEPENDENT EVENTS:

4.) You have 7 dimes and 9 pennies in a wallet. Suppose two coins are to be selected at random, WITHOUT REPLACING the first one. **What is the probability of picking a penny, then a dime?**

In general, $P(A \text{ and } B) = P(A) \bullet P(B \text{ following } A)$

$$\frac{9}{16} \cdot \frac{7}{15} = \frac{63}{240} = \boxed{\frac{21}{80}}$$

5.) The host of a game show draws chips from a bag to determine the prizes for which contestants will play. Of the 20 chips, 11 show **computer**, 8 show **trip**, and 1 shows **truck**. If the host draws the chips at random and DOES NOT REPLACE them, find the probability of drawing a computer, then a truck.

$P(\text{computer}) \bullet P(\text{truck})$

$$\frac{11}{20} \cdot \frac{1}{19} = \boxed{\frac{11}{380}}$$

6.) What is the probability of drawing, WITHOUT REPLACEMENT, 3 hearts, then a spade from a standard deck of cards?

$$P(\heartsuit) \cdot P(\heartsuit) \cdot P(\heartsuit) \cdot P(\spadesuit)$$

$$\frac{13}{52} \cdot \frac{12}{51} \cdot \frac{11}{50} \cdot \frac{13}{49} = \frac{22308}{6497400} = \boxed{\frac{1859}{541450}}$$

7.) What is the probability of drawing, WITHOUT REPLACEMENT, a Jack, then a Queen, then an Ace from a standard deck of cards?

$$P(\text{Jack}) \cdot P(\text{Queen}) \cdot P(\text{Ace})$$

$$\frac{4}{52} \cdot \frac{4}{51} \cdot \frac{4}{50} = \frac{64}{132600} = \boxed{\frac{8}{16575}}$$