

1. You flipped a coin 70 times and recorded 23 heads. What is the experimental probability of flipping tails?

$$P(\text{tails}) = \frac{47}{70}$$

2. Find the probability that you roll a pair of dice whose sum is 13.

0

3. Classify each pair of events as dependent or independent.

a. A student in your math class is selected at random. One of the remaining students is selected at random.

dependent

b. You roll a standard die twice.

independent

4. Calculate each probability given that  $P(A)=.3$ ,  $P(B)=.7$ , and A and B are independent.  $P(A \text{ and } B) = (.3)(.7) = .21$

a.  $P(A|B) = \frac{P(A \text{ and } B)}{P(B)} = \frac{.21}{.7} = .3$

b.  $P(B|A) = \frac{P(A \text{ and } B)}{P(A)} = \frac{.21}{.3} = .7$

5. Calculate each probability given that  $P(A)=.5$ ,  $P(B)=.4$ , and  $P(A \text{ and } B)=.1$

a.  $P(A|B) = \frac{P(A \text{ and } B)}{P(B)} = \frac{.1}{.4} = .25$

b.  $P(B|A) = \frac{P(A \text{ and } B)}{P(A)} = \frac{.1}{.5} = .2$

6. At a high school, 30% of the students buy class rings. You select five students at random. Find:

$P(\text{at least one buys a ring}) = 1 - P(\text{no rings}) = 1 - .16807 = \boxed{.83193}$

$$P(\text{no rings}) = \left(\frac{7}{10}\right)\left(\frac{7}{10}\right)\left(\frac{7}{10}\right)\left(\frac{7}{10}\right)\left(\frac{7}{10}\right) = .16807$$

7. Find the probability of pulling an even card, given that the card is red.

$$P(\text{even} | \text{red}) = \frac{P(\text{even and red})}{P(\text{red})} = \frac{10/52}{26/52} = \frac{10}{26} = \boxed{\frac{5}{13}}$$

8. Find the probability of pulling an even card or a face card.

$$P(\text{even or face}) = \frac{20}{52} + \frac{16}{52} = \frac{36}{52} = \boxed{\frac{9}{13}}$$

9. Find the probability of pulling a 5 or a red card from a deck of cards.

$$P(5 \text{ or red}) = P(5) + P(\text{red}) - P(5 \text{ and red})$$

$$\frac{4}{52} + \frac{26}{52} - \frac{2}{52} = \frac{28}{52} = \boxed{\frac{7}{13}}$$

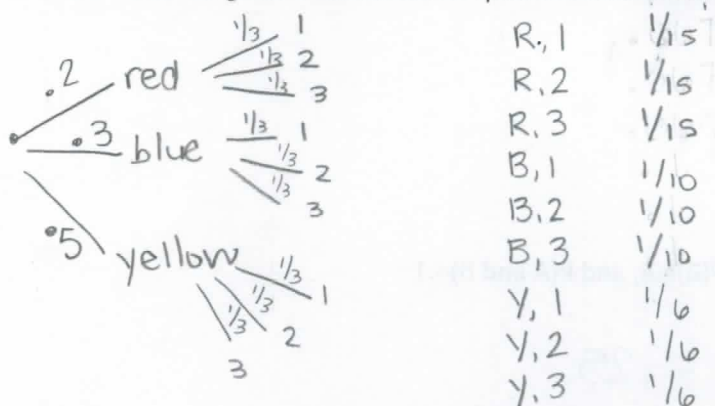
10. Find the probability of rolling a 5 on a standard die and pulling a 5 from a deck of cards.

$$P(5 \text{ and } 5) = P(5) \cdot P(5)$$

$$= \frac{1}{6} \cdot \frac{4}{52} = \boxed{\frac{1}{78}}$$

11. There is a bag that contains 2 red marbles, 3 blue marbles, and 5 yellow marbles. You reach into the bag and draw one of the balls. You then roll a 6-sided die that has the numbers 1,1,2,2,3,3 on the sides.

a. Draw a tree diagram to illustrate the possible outcomes.



b. P(red and roll 2)

$$\boxed{\frac{1}{15}}$$

c. P(red or roll 2)

$$\frac{1}{15} + \frac{1}{15} + \frac{1}{15} + \frac{1}{10} + \frac{1}{6} = \boxed{\frac{7}{15}}$$

d. P(yellow | 2)

$$\frac{1/6}{\frac{1}{15} + \frac{1}{10} + \frac{1}{6}} = \boxed{\frac{1}{2}}$$