

Homework # 1 – 10: Two cards are selected at random from a deck of 52 cards **WITHOUT** replacement. Find the requested probabilities, (write your answer as a reduced fraction.)

1) Both cards are red

$$P(1^{\text{st}} \text{ red and } 2^{\text{nd}} \text{ red}) = P(1^{\text{st}} \text{ red}) * P(2^{\text{nd}} \text{ red})$$

$$\frac{26}{52} * \frac{25}{51} = \frac{25}{102}$$

Answer: 25/102

3) The first card is a 7 and the second card is a 4

$$P(1^{\text{st}} \text{ seven and } 2^{\text{nd}} \text{ four}) = P(1^{\text{st}} \text{ seven}) * P(2^{\text{nd}} \text{ four})$$

$$\frac{4}{52} * \frac{4}{51} = \frac{4}{663}$$

Answer: 4/663

5) Both cards are fives

$$P(1^{\text{st}} \text{ five and } 2^{\text{nd}} \text{ five}) = P(1^{\text{st}} \text{ five}) * P(2^{\text{nd}} \text{ five})$$

$$\frac{4}{52} * \frac{3}{51} = \frac{1}{221}$$

Answer: 1/221

7) The first card is red and the second card is black

$$P(1^{\text{st}} \text{ red and } 2^{\text{nd}} \text{ black}) = P(1^{\text{st}} \text{ red}) * P(2^{\text{nd}} \text{ black})$$

$$\frac{26}{52} * \frac{26}{51} = \frac{13}{51}$$

Answer: 13/51

9) The first card is not a seven and the second card is a seven

$$P(1^{\text{st}} \text{ not seven and } 2^{\text{nd}} \text{ is a seven}) = P(1^{\text{st}} \text{ not seven}) * P(2^{\text{nd}} \text{ is seven})$$

$$\frac{48}{52} * \frac{4}{51} = \frac{16}{221}$$

Answer: 16/221

Homework # 11 – 20: Two cards are selected at random from a deck of 52 cards **WITH** replacement. Find the requested probabilities (write your answer as a reduced fraction)

11) Both cards are hearts

$$P(1^{\text{st}} \text{ heart and } 2^{\text{nd}} \text{ heart}) = P(1^{\text{st}} \text{ heart}) * P(\text{second heart})$$

$$\frac{13}{52} * \frac{13}{52} = \frac{169}{2704}$$

Answer: 1/16

13) The first card is a six and the second card is black

$$P(1^{\text{st}} \text{ six and } 2^{\text{nd}} \text{ black}) = P(1^{\text{st}} \text{ six}) * P(2^{\text{nd}} \text{ black})$$

$$\frac{4}{52} * \frac{26}{52} = \frac{104}{2704}$$

Answer: 1/26

15) The first card is a face card and the second card is not a face card

There are 12 face cards (4 jacks, 4 queens and 4 kings)

There rest of the cards are not face cards. There are 40 cards that are not face cards.

$$P(\text{first is a face card and second not a face care}) = P(\text{first face card}) * P(\text{second not a face card})$$

$$\frac{4}{52} * \frac{40}{52} = \frac{160}{2704} = \frac{10}{169}$$

Answer: 10/169

17) Neither card is black

$P(1^{\text{st}} \text{ not black and } 2^{\text{nd}} \text{ not black}) = P(1^{\text{st}} \text{ not black}) * P(2^{\text{nd}} \text{ not black})$

$$\frac{26}{52} * \frac{26}{52} = \frac{1}{4}$$

Answer: 1/4

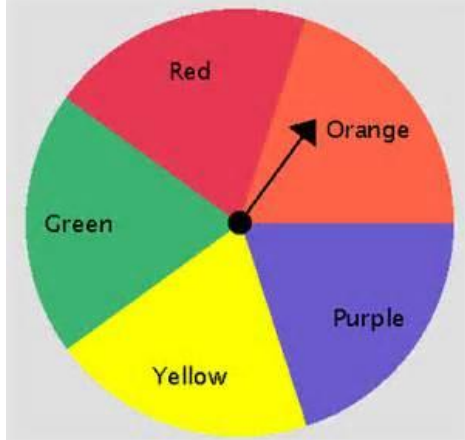
19) The first card is a queen and the second card is a seven

$P(1^{\text{st}} \text{ queen and } 2^{\text{nd}} \text{ seven}) = P(1^{\text{st}} \text{ queen}) * P(\text{second } 7)$

$$\frac{4}{52} * \frac{4}{52} = \frac{1}{169}$$

Answer: 1/169

Homework # 21-24: The spinner below is spun twice, find the requested probabilities (write your answer as a reduced fraction.)



21) Both spins are yellow

$P(\text{yellow first and yellow second}) = P(\text{yellow first}) * P(\text{yellow second})$

$$\frac{1}{5} * \frac{1}{5} = \frac{1}{25}$$

Answer: 1/25

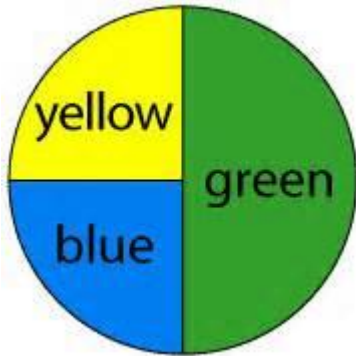
23) The first spin is green and the second is not red

$P(\text{green first and second not red}) = P(\text{green first}) * P(\text{second not red})$

$$\frac{1}{5} * \frac{4}{5} = \frac{4}{25}$$

Answer: 4/25

Homework # 25-28: The spinner below is spun three times, find the requested probabilities (write your answer as a reduced fraction.)



25) The spins in order are green, yellow the blue

$P(\text{green first and yellow second and blue third}) = P(\text{green } 1^{\text{st}}) * P(\text{yellow } 2^{\text{nd}}) * P(\text{blue } 3^{\text{rd}})$

$$\frac{1}{2} * \frac{1}{4} * \frac{1}{4} = \frac{1}{32}$$

Answer: 1/32

27) Green is spun each time

$P(\text{green first and green second and green third}) = P(\text{green first}) * P(\text{green second}) * P(\text{green third})$

$$\frac{1}{2} * \frac{1}{2} * \frac{1}{2} = \frac{1}{8}$$

Answer: 1/8

Homework #29 – 32: A coin is tossed then a dice is rolled, find the requested probabilities (write your answer as a reduced fraction.)

29) The coin is a head and the dice is a 4

$$P(\text{head and dice 4}) = P(\text{coin head}) * P(\text{dice 4})$$

$$\frac{1}{2} * \frac{1}{6} = \frac{1}{12}$$

Answer: 1/12

31) The coin is not a head and the dice is an even number

$$P(\text{coin not head and dice even}) = P(\text{coin not head}) * P(\text{dice even})$$

$$\frac{1}{2} * \frac{3}{6} = \frac{3}{12}$$

Answer: 1/4

Homework #33-34: A sample of 30 women who recently had a home built yielded the following information about their builder:

Number of women	Would you recommend builder to a friend
19	Yes
6	No
5	Not sure

Three women who provided information for the table were selected at random. Find the probability that:

33) The first would not recommend her home builder, but the second and third would recommend their home builder.

$$P(\text{1st not recommend and second will recommend and third will recommend}) \\ = P(\text{1st does not recommend}) * P(\text{second does recommend}) * P(\text{third does recommend})$$

$$\frac{6}{30} * \frac{19}{29} * \frac{18}{28} = \frac{171}{2030}$$

Answer: 171/2030

Homework #35-38

Two marbles are drawn from a bag that contains 5 blue, 3 red and 2 purple marbles **without** replacement. Find the requested probabilities

35) Both are blue

$P(\text{blue first and blue second}) = P(\text{blue first}) * P(\text{blue second})$

$$\frac{5}{10} * \frac{4}{9} = \frac{20}{90}$$

Answer: 2/9

37) The first is purple and the second is not blue

$P(\text{purple first and second not blue}) = P(\text{purple first}) * P(\text{second not blue})$

$$\frac{2}{10} * \frac{4}{9} = \frac{4}{45}$$

Answer: 4/45

Homework #39-42

Two marbles are drawn from a bag that contains 5 blue, 3 red and 2 purple marbles **with** replacement. Find the requested probabilities

39) Both are blue

$P(\text{blue 1}^{\text{st}} \text{ and blue 2}^{\text{nd}}) = P(\text{blue 1}^{\text{st}}) * P(\text{blue 2}^{\text{nd}})$

$$\frac{5}{10} * \frac{5}{10} = \frac{1}{4}$$

Answer: 1/4

41) The first is purple and the second is not blue

$P(\text{purple 1}^{\text{st}} \text{ and second not blue}) = P(\text{purple 1}^{\text{st}}) * P(\text{not blue second})$

$$\frac{2}{10} * \frac{5}{10} = \frac{1}{10}$$

Answer: 1/10

