Describing Subsets

Name: __Key__

Hour: _____

For all probabilities with cards assume one card is being drawn.

Find the probability of the following events.

1. Avery has been learning to play some new card games and is curious about the probabilities of being dealt different cars from a standard 52 – card deck. Help him figure out the probabilities listed below:

   Express answers as a percent rounded to the nearest tenth.

   a. P(king)

   7.7%

   b. P(queen)

   7.7%

   c. P(diamond)

   25%

   d. P(black)

   50%

   e. P(face card)

   23%

   f. P(three or four)

   15.4%

2. Assume that two standard dice are being rolled and the sum is being calculated. *Express answers as fractions.*

   a. P(sum 2) $\frac{1}{36}$

   b. P(sum of 9) $\frac{1}{9}$

   c. Event A = {the sum is a multiple of 3}, find P(A)

   $\frac{1}{3}$

   d. Event B = {the sum is a multiple of 4}, find P(B)

   $\frac{1}{4}$

Set

3. Using the situation described in problem #1 answer the following:

   Express answers as a decimal rounded to the nearest hundredth.

   a. What is P(king or diamond)? How does your answer relate to the probabilities you calculated in problem #1?

   .31

   b. What is the P(king or queen)? Again, how does your answer relate to the probabilities you calculated in problem #1?

   .15

   c. P(diamond or face card)

   .42

   d. P(10 or black)

   .54

   e. P(8 and red)

   .04

   f. P(less than 5)

   .23

   g. P(less than 3 or face card)

   .31

   h. P(greater than 5 but less than 10)

   .31

4. Using the situation described in problem #2 find the following. *Express answers as fractions.*

   a. What is P(A and B)? $\frac{1}{36}$

   b. What is P(A or B)? $\frac{5}{9}$

5. In a random sample of 10,000 college students, a research comply found that 35.7% were involved in a club and 27.8% studied 4 or more hours per day. When they reported their findings, the research company indicated that 53.4% of college students were either involved in a club or they studied 4 or more hours per day. Given this information, what is the probability that a college student is involved in a club and studies 4 or more hours per day?

$$P(A \cap B) = 10.1\%$$

Go!

6. Eddie is arguing with Tana about the probability of flipping three coins. They decide to flip a penny, nickel and a dime. If they flip three coins, would a tree diagram or an area model be better for determining the sample space? Justify your answer.

tree diagram - an area model can only do 2 at a time.

7. Zelda, the fortune teller at the fair, foresees you meeting a tall dark stranger in the next 140 days. What is the portability that you will meet the stranger on Monday? What is the probability that you will meet the stranger on the weekend? What is the probability you will meet the stranger on a weekday?

$$P(M) = \frac{1}{7} \qquad P(weekend) = \frac{2}{7}$$

$$P(weekday) = \frac{5}{7}$$

Use the tree diagram to answer 8-11 *Express answers as a decimal rounded to the nearest hundredth.*

8. What is the probability that you order a taco that has a hard shell with chicken?

.09

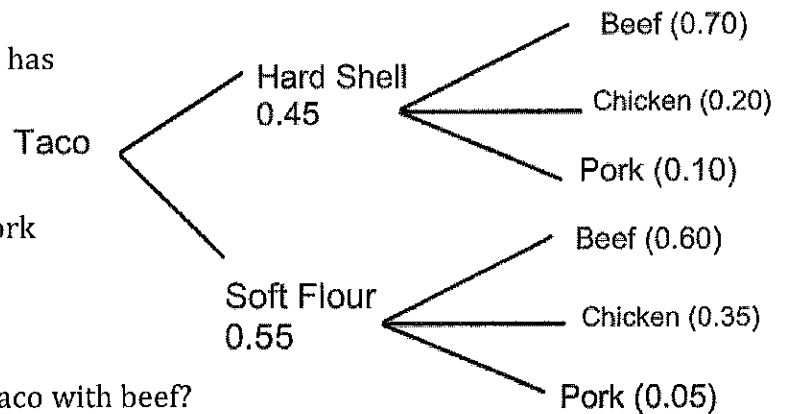9. What is the probability of ordering a taco with pork as the meat?

.0725

10. What is the probability of ordering a soft flour taco with beef?

.33

11. What is the probability of ordering a hard shell taco?

.45

Taco
- Hard Shell 0.45
  - Beef (0.70)
  - Chicken (0.20)
  - Pork (0.10)
- Soft Flour 0.55
  - Beef (0.60)
  - Chicken (0.35)
  - Pork (0.05)

Use the tree diagram to answer 12-15 *Express answers as a decimal rounded to the nearest hundredth.*

12. What is the probability that you order a sandwich on white bread?

.70

13. What is the probability of ordering a sandwich with turkey on wheat?

.18

14. What is the probability of ordering a sandwich with ham?

.26

15. What is the probability of ordering a sandwich with ham on white?

.14

- WHEAT 0.30
  - HAM 0.40
  - TURKEY 0.60
- WHITE 0.70
  - HAM 0.20
  - TURKEY 0.80