

Section 12.1-12.4 Quiz Review

1. 30 basketballs (15 Spalding, 10 Wilson, and 5 other brand-names balls) are on a basketball court. Billy Joe Tumbleweed closes his eyes and arbitrarily picks up a ball from the court. Determine the probability that the ball selected is:

- a. a Spalding. $\frac{1}{2}$
 b. a Wilson. $\frac{1}{3}$
 c. not a Wilson. $\frac{2}{3}$
 d. a Wilson or a Spalding. $\frac{5}{6}$

1. One card is selected at random from a deck of cards. Determine the probability that the card selected is:

- a. a 6 $\frac{1}{13}$
 b. a 6 or a 9 $\frac{2}{13}$
 c. not a 6. $\frac{12}{13}$
 d. a red 6 $\frac{1}{26}$
 e. a black card. $\frac{1}{2}$
 f. a red card or a black card. 1
 g. a red card and a black card. 0

2. Refer to the following table, which contains information about a shopping cart full of peanut butter jars that must be stocked on a shelf.

Brand	Smooth	Chunky
Peter Pan	10	6
Jif	7	5
Skippy	4	3
Other	2	1

If a stock clerk selects one jar at random to place on the shelf, determine the probability he selects a jar of

- a. Jif $\frac{6}{19}$
- b. Skippy $\frac{7}{19}$
- c. a chunky peanut butter $\frac{15}{38}$
- d. a smooth peanut butter $\frac{23}{38}$
- e. Peter Pan smoother peanut butter $\frac{5}{19}$
- f. Jif chunky peanut butter $\frac{5}{38}$

3. Richard Anderson is going to wear a blue sport-coat and is trying to decide what tie he should wear with it. In his closet, he has 18 ties, 11 of which go well with the sport-coat. If Richard selects one tie at random, determine:

- a. the probability that it goes well with the sport-coat. $\frac{11}{18}$
- b. the odds against it going well with the sport-coat. $\frac{7}{11}$
- c. the odds in favor of it going well with the sport-coat. $\frac{11}{7}$

4. A card is picked from a standard deck of cards. Determine the odds against selecting:

- a. a jack $\frac{12}{31}$
- b. a spade $\frac{31}{40}$
- c. a picture card $\frac{10}{31}$
- d. a card greater than 6 $\frac{22}{28}$

5. One million tickets are sold for a lottery in which a single prize will be awarded. If you purchase 10 tickets, determine your odds against winning.

$$\frac{f}{s} = \frac{999990}{10} = \frac{9999}{1}$$

6. The odds against Dustin winning the 200 yard dash are 7:2. Determine the probability that Dustin wins the race.

$$\frac{f}{s} = \frac{2}{7}$$

7. Suppose that the probability that a rock concert sells out is 0.80. Determine the odds against the concert selling out.

$$P = \frac{s}{f} = \frac{8}{10} \quad \frac{f}{s} = \frac{2}{8} = \frac{1}{4}$$

8. According to the U.S. Department of Health, one in four Americans age 20 and older has high blood pressure. If an American who is age 20 and older is selected at random, determine the odds in favor of this person having high blood pressure.

$$P = \frac{s}{f} = \frac{1}{4} \quad \frac{s}{f} = \frac{1}{3}$$

9. Suppose that the probability that all the parts needed to assemble a bookcase are included in the carton is $\frac{7}{9}$. Determine the odds in favor of the carton including all the needed parts.

$$P = \frac{s}{f} = \frac{7}{9} \quad \frac{s}{f} = \frac{7}{2}$$

10. A multiple choice exam has five possible answers for each question. For each correct answer, you are awarded 5 points. For each incorrect answer, 1 point is subtracted from your score. For answers left blank, no points are added or subtracted.

- a. If you do not know the correct answer to a particular question, is it to your advantage to guess? Explain and show your work.

$$E(x) = \frac{1}{5}(5) + \frac{4}{5}(-1)$$

$$1 - \frac{4}{5} = \frac{1}{5}$$

Advantage because
it is positive

- b. If you do not know the correct answer but can eliminate one possible choice, is it to your advantage to guess? Explain and show your work.

$$E(x) = \frac{1}{4}(5) + \frac{3}{4}(-1)$$

$$\frac{5}{4} - \frac{3}{4} = \frac{2}{4} = \frac{1}{2} \quad \text{yes guess}$$

11. Two thousand raffle tickets are sold for \$1 each. One prize of \$800 is to be awarded.

- a. Ralph Cramden purchases one ticket. Determine the expected value.

$$\frac{1}{2000}(799) + \frac{1999}{2000}(-1) = ?$$

- b. Determine the fair price of a ticket.

$$E(x) + 1$$

12. The owner of an antique store estimates that there is 40% chance she will make \$2000 when she sells an antique china cabinet, a 50% chance she will make \$750 when she sells a cabinet, and a 10% she will break even when she sells a cabinet. Determine the expected amount she will make when she sells the cabinet.

$$E(x) = .40(2000) + .50(750) + .10(0) =$$