HA2T Unit 10 Quiz Review Name Key

1. Classify each pair of events are dependent or independent.

   a. Flipping a coin; spinning a spinner independent

   b. Selecting a month at random; selecting a day of that month at random independent

   c. Choose a marble from a bag; choose a 2nd marble from the same bag dependent

2. Determine whether the following events are mutually exclusive.

   a. Choosing a senior; choosing a junior mutually exclusive

   b. Choosing a male student; choosing a sophomore not mutually exclusive

   c. Rolling a number less than 4; rolling an even number not mutually exclusive

3. Explain the difference between mutually exclusive and independent.

   mutually exclusive : can't happen at same time

   independent : one event doesn't affect other event

4. Complete the statement. If A and B are independent events, then P(A and B) = $P(A) \cdot P(B)$

5. Complete the statement. If A and B are mutually exclusive, then P(A and B) = 0

6. Complete the statement. If A and B are mutually exclusive, then P(A or B) = $P(A) + P(B)$

7. Complete the statement. If A and B are not mutually exclusive, then P(A or B) = $P(A) + P(B) - P(A \text{ and } B)$

8. A and B are independent events. Find P(A and B)

   a. P(A) = .3, P(B) = .7

   $P(A) \cdot P(B) = .21$

   b. $P(A) = \frac{3}{4}$, $P(B) = \frac{1}{4}$

   $P(A) \cdot P(B) = \frac{3}{16}$

9. A and B are mutually exclusive events. Find P(A or B)

   P(A) = .4, P(B) = .2

   $P(A) + P(B) = .6$

   b. $P(A) = \frac{3}{4}$, $P(B) = \frac{1}{8}$ $P(A) + P(B) = \frac{7}{8}$

10. A and B are independent, but not mutually exclusive. Find P(A or B) $P(A) + P(B) - P(A \text{ and } B)$

    P(A) = .5, P(B) = .1

    $.5 + .1 - (.5)(.1)$

    $.6 - .05$

    .55

    b. $P(A) = \frac{2}{7}$, $P(B) = \frac{3}{7}$

    $\frac{2}{7} + \frac{3}{7} - \frac{6}{49}$

    $\frac{5}{7} - \frac{6}{49} = \frac{29}{49}$

11. You flip a coin and roll a die. Find the probability of getting heads on the coin flip AND rolling a 1.

$\frac{1}{2} \cdot \frac{1}{6} = \boxed{\frac{1}{12}}$

12. Find the probability of rolling 2 sixes.

$\frac{1}{6} \cdot \frac{1}{6} = \boxed{\frac{1}{36}}$

13. A bag contains 3 blue marbles, 5 green marbles and 4 red marbles. Find the probability of picking a blue marble, keeping it, and then picking another blue marble.

$\frac{3}{12} \cdot \frac{2}{11} = \boxed{\frac{1}{22}}$

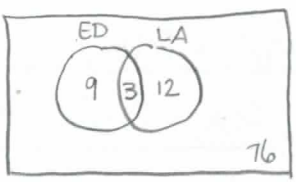
14. A bag contains 3 blue marbles, 5 green marbles and 4 red marbles. Find the probability of picking a blue marble, keeping it, and then picking a green marble.

$\frac{1}{4} \cdot \frac{5}{11} = \boxed{\frac{5}{44}}$

15. At a particular school students can only take one foreign language each term. About 37% of the students take Spanish. About 15% take French. What is the probability that a student chosen at random is taking Spanish or French?

$\frac{37}{100} + \frac{15}{100} = \frac{52}{100} = \boxed{\frac{13}{25}}$

16. Suppose 12% of students have early dismissal, 15% have late arrival and 3% have both. What is the probability that a student has late arrival or early dismissal?



$12\% + 15\% - 3\% = \boxed{24\%}$

17. Given P(A) = .5, P(B) = .2, and P(A and B) = .1 are events A and B independent? Explain.

Yes because $P(A) \cdot P(B) = P(A \text{ and } B)$

18. Given P(A) = .5, P(B) = .2, and P(A or B) = .6 are events A and B mutually exclusive? Explain.

No because $P(A \text{ or } B) \neq P(A) + P(B)$

19. Ashley rolled a die 10 times and kept track of her results shown here. {1, 3, 6, 1, 2, 6, 5, 2, 1, 4}

    a. Based on Ashley's results, what is the experimental probability of getting a 1?

    $\frac{3}{10}$

    b. What is the theoretical probability of getting a 1?

    $\boxed{\frac{1}{6}}$