Unit 9 Quiz Review

Name: Key

1. How many of each of the following are in a standard deck of cards?
   a. Red cards 26
   b. Black cards 26
   c. Face cards 12
   d. Jacks 4
   e. 3 of Diamonds 1
   f. 8 of Clubs 1
   g. Ace of Hearts 1
   h. Spades 13

2. If the probability that it will be sunny is 86%, then what is the probability that:
   a. It will be sunny two days in a row? $(.86)(.86) = .7396 \rightarrow$ 73.96%
   b. It **will not** be sunny 3 days in a row? $100 - 86 = 14\%$ $(.14)(.14)(.14) = .002744 \rightarrow$ .2744%

3. In a standard deck of cards, what is the probability that you will select **one card** that is:
   a. A Jack or a Spade? $\frac{4+13-1}{52} = \frac{16}{52} = \frac{4}{13}$
   b. A face card? $\frac{12}{52} = \frac{3}{13}$
   c. A Queen of Hearts? $\frac{1}{52}$
   d. A black card? $\frac{26}{52} = \frac{1}{2}$
   e. A 7 and a diamond? $\frac{1}{52}$
   f. A 3 and a red card? $\frac{2}{52} = \frac{1}{26}$

4. What is the probability of selecting three Kings in a row from a deck of cards?
   $\left(\frac{4}{52}\right)\left(\frac{3}{51}\right)\left(\frac{2}{50}\right) = \frac{24}{132600} = \frac{1}{5525}$

5. What is the probability of randomly drawing a King and then a face card from a deck of cards?
   $\left(\frac{4}{52}\right)\left(\frac{11}{51}\right) = \frac{44}{2652} = \frac{11}{663}$

6. What is the probability of drawing a face card and then a 3 from a standard deck of cards **with replacement**?
   $\left(\frac{12}{52}\right)\left(\frac{4}{52}\right) = \frac{48}{2704} = \frac{3}{169}$

7. If two cards are drawn from a standard deck of cards, what is the probability that the first card will be an Ace and the second card will be a 5?
   $\left(\frac{4}{52}\right)\left(\frac{4}{51}\right) = \frac{16}{2652} = \frac{4}{663}$

8. Someone spins a spinner with 3 equal sections (blue, red, and yellow). Calculate the probability that it will land on the blue section and then again on the blue section.
   $\left(\frac{1}{3}\right)\left(\frac{1}{3}\right) = \frac{1}{9}$

9. List the sample space for the days of the week. {Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday}

10. How many elements are in the sample space of ~~a~~ months in a year? 12

11. A teacher is making a 10 question test. The first two questions are multiple choice with options of A, B, C, and D. The last eight questions are either true or false. How many ways could you select answers for this test?
    $4 \cdot 4 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 =$ 4096 ways

12. There is a container with bags of chips. There are 3 bags of BBQ chips, 2 bags of Sour Cream & Onion, 5 bags of Doritos, and 5 bags of Plain Chips. Find each of the following: Total: 15

a. P(BBQ) $\frac{3}{15} = \frac{1}{5}$

b. P(no Doritos) $\frac{10}{15} = \frac{2}{3}$

c. P(Salt & Vinegar) $\frac{0}{15} = 0\%$

d. P(BBQ or Doritos) $\frac{3+5}{15} = \frac{8}{15}$

13. A drawer contains 4 red t-shirts, 5 black t-shirts, 3 blue t-shirts, and 2 white t-shirts. What is the probability that Sarah will randomly select a black t-shirt, not return it to the drawer, and then select a red t-shirt?

total: 14

$\left(\frac{5}{14}\right)\left(\frac{4}{13}\right) = \frac{20}{182} = \frac{10}{91}$

14. If a meal plan offers you 4 types of meat, 8 vegetables, 3 types of pasta, 2 desserts, and 3 options for drink, then how many different meals could you make out of a meat, a vegetable, a pasta, a dessert, and a drink?

$4 \cdot 8 \cdot 3 \cdot 2 \cdot 3 =$ 576 meals

15. You want to build a sandwich at your favorite restaurant. You can choose between beef, chicken, or a black bean patty. The sandwich can also have cheddar, provolone, mozzarella, or no cheese. The sauce options are ranch, bbq, honey mustard, ketchup, mayo, or yellow mustard. You can finally choose to add bacon, or no bacon. How many different sandwiches could you make?

$3 \cdot 4 \cdot 6 \cdot 2 =$ 144 sandwiches

16. Complete the two-way table and answer the questions.

	Female	Male	TOTAL
Math	64	116	180
English	157	133	290
Science	119	140	259
History	82	65	147
Art	20	84	104
Other	8	12	20
TOTAL	450	550	1000

a) What is the probability of choosing someone who likes History? $\frac{147}{1000}$

b) What is the probability of randomly selecting a student whose favorite subject is Math? $\frac{180}{1000} = \frac{9}{50}$

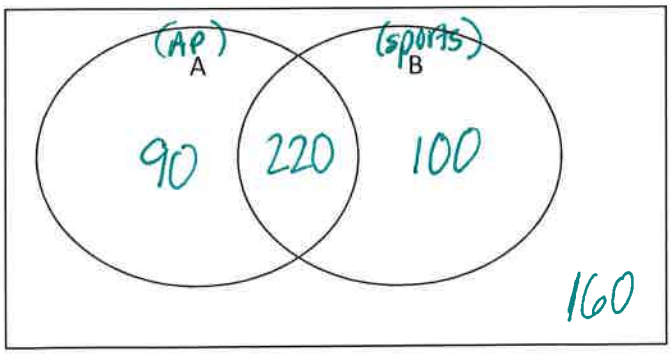
c) How many students are females who prefer Math? 64

e) What is the probability that a student is male or likes English best? $\frac{550+290-133}{1000} = \frac{707}{1000}$

f) Find P(Male | History). $\frac{65}{147}$

g) Find P(Math | Female). $\frac{64}{450} = \frac{32}{225}$

17. A small school of 570 students was surveyed. Circle A represents students who wish to take AP Classes. Circle B represents students who wish to play sports. 320 students wish to play sports, 310 students which to take AP Classes, and 220 wish to both play sports and take AP Classes. Create a Venn Diagram and answer the questions.



a. How many students are in neither A, nor B? 160

b. How many students only want to play sports? 100

c. Find P(A | B). $\frac{220}{320} = \frac{11}{16}$

d. Find P(B | A). $\frac{220}{310} = \frac{22}{31}$

e. What is $A \cup B$? 410

f. What is $A \cap B$? 220

g. Find P($A \cap B$). $\frac{220}{570} = \frac{22}{57}$

h. What is B^C? 250