Statistics and Probability Review

Name: Key Date: ______________

3/46 − 18 = 28

1. A jar contains 12 red marbles, 16 blue marbles, and 18 white marbles. (46)

a. Three marbles are chosen from a jar without replacement. What is the probability that none are white?

$$\frac{28}{46}\cdot\frac{27}{45}\cdot\frac{26}{44} = \frac{19656}{91656} = \frac{273}{1265}$$

b. Four marbles are chosen from the jar with replacement. What is the probability they are all white?

$$\frac{18}{46}\cdot\frac{18}{46}\cdot\frac{18}{46}\cdot\frac{18}{46} = \frac{104976}{4477456} \approx 2\%$$

Extra credit: c. Three marbles are chosen from the jar without replacement. What is the probability that at least one is white?

$$\frac{18}{46}\cdot\frac{28}{45}\cdot\frac{27}{44} = \frac{13608}{91080} = \frac{189}{1265} \approx 15\%$$

2. Find the probability of drawing the given cards from a standard deck of 52 cards (a) with replacement and (b) without replacement.

a. a club, then a diamond $\frac{13}{52}\cdot\frac{13}{52}$

b. a jack then a 7

c. a 5, then a face card, then an ace

d. a king, then another king, then a third king

	Replacement	Without Replacement
a.	$\frac{13}{52}\cdot\frac{13}{52} = \frac{169}{2704} = \frac{1}{16}$	$\frac{13}{52}\cdot\frac{13}{51} = \frac{169}{2652} = \frac{13}{204}$
b.	$\frac{4}{52}\cdot\frac{4}{52} = \frac{16}{2704} = \frac{1}{169}$	$\frac{4}{52}\cdot\frac{3}{51} = \frac{12}{2652} = \frac{1}{221}$
c.	$\frac{4}{52}\cdot\frac{12}{52}\cdot\frac{4}{52} = \frac{3}{2197}$	$\frac{4}{52}\cdot\frac{12}{51}\cdot\frac{4}{50} = \frac{192}{132600} = \frac{8}{5525}$
d.	$\frac{4}{52}\cdot\frac{4}{52}\cdot\frac{4}{52} = \frac{1}{2197}$	$\frac{4}{52}\cdot\frac{3}{51}\cdot\frac{2}{50} = \frac{24}{132600} = \frac{1}{5525}$

Class ex. 25 + 18 = 43

3. A pet store has 18 light green parakeets (5 female and 13 males) and 25 sky blue parakeets (15 females and 10 males). You randomly choose one of the parakeets. What is the probability that it is a male or a sky blue parakeet?

"OR" add

$$\frac{23}{43} + \frac{25}{43} - \frac{10}{43} = \frac{38}{43}$$

4. You randomly roll two six-sided dice. Find the probability of the given event.

a. rolling a sum of either 5 or 6

$\frac{9}{36} = \frac{1}{4}$

1+4 2+3 1+5 2+4 3+3

b. rolling doubles

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

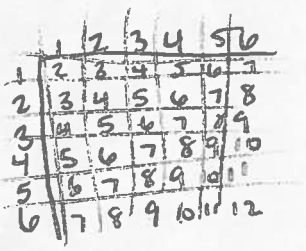
dice | cards | Rules

c. the sum is greater than 4

$\frac{33}{36} = \frac{11}{12}$

d. the sum is greater than 7 and less than 11

$\frac{12}{36} = \frac{1}{3}$



e. rolling a sum of less than 2

$\frac{0}{36}$

5. A committee of 5 members is chosen from a group of 8 Republicans and 6 Democrats.

a. Find the probability that there will be no Democrats.

$\frac{8}{14} \quad \frac{7}{13} \quad \frac{6}{12} \quad \frac{5}{11} \quad \frac{4}{10} = \frac{6720}{240240} = \frac{4}{143}$

b. Find the probability that there will be 3 Democrats and 2 Republicans.

$\frac{6}{14} \quad \frac{5}{13} \quad \frac{4}{12} \quad \frac{8}{11} \quad \frac{7}{10} = \frac{6720}{240240} = \frac{4}{143}$

6. **What are the measures of Central Tendency?**

Mean, median, mode (Range)

7. **Find the mean, median, and mode for each set of data** Range

	mean	median	mode	Range
a. 4, 6, 9, 12, 5	7.2	6	∅	12 − 4 = 8
b. 7, 13, 4, 7	7.75	7	7	13 − 4 = 9

4, 7, 7, 13

Find the mean, median, and mode for each set of data

	mean	median	mode	Range
c. 10, 3, 8, 15	9	9	∅	15-3=12
d. 9, 9, 9, 9, 8	8.8	9	9	1
e. 300, 24, 40, 50, 60	94.8	50	∅	300-24=276
f. 23, 23, 12, 12	17.5	17.5	12, 23	23-12=11

24, 40, 50, 60, 300

8. One of the events in the Winter Olympics is the Men's 500-meter Speed Skating. The times for this event are show to the right. Find the mean, median, and mode times. Then create a box plot (box and whisker plot) using the data.

mean: 40.61

median: 40.15

mode: 43.4

Year	Time	Year	Time
1928	43.4	1964	40.1
1932	43.4	1968	40.3
1936	43.4	1972	39.44
1948	43.1 Q_1	1976	39.17 Q_3
1952	43.2	1980	38.03
1956	40.2	1984	38.19
1960	40.2	1988	36.45