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FST:	Cha	pter	6	Review

Name	

## 1. Permutations

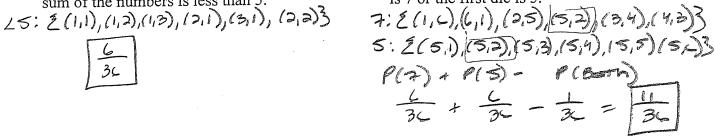
a. Evaluate  $_{10}P_{6}$ . (Show Formula)

b. What is meant by  $_{10}P_6$ ?

## 6xC = 36 2. Consider the experiment of tossing 2 fair 6-sided dice.

a. Find the probability that the sum of the numbers is less than 5.

b. Find the probability that the sum is 7 or the first die is 5.



# 3. Consider the experiment selecting a color using a spinner labeled Red, Blue,

Green and tossing a 4-sided die. a. Write the sample space for this experiment.

2(R,1)(R,2)(R,3)(R,4) (6,1) (6,2) (6,3) (6,4) b. List the outcomes for the event "the number is odd".

## 4. A particular location has a 15% chance of snow on any day regardless of whether or not it snowed the previous day.

(5) If A and B are two events in an experiment where 
$$P(B) = 0.6$$
 and  $P(A \cap B) = 0.3$ , find  $P(A \mid B) = \frac{P(A \cap B)}{P(B)} = \frac{0.3}{0.6} = \frac{0.5}{0.5}$ 

### 6. Soccer

a. How many different ways can the starting eleven on a soccer team line up in a row?

b. How many different ways can the starting eleven line up in a row if the three captains must be last?

7. What is the probability that you guess correctly on all of the questions if there are 6 true/false questions and 4 multiple choice questions with 5 choices each?

8. A sub sandwich shop offers 4 different breads, 6 different meats, and 8 different veggies. If you want to order a \$3 sub sandwich, you can pick one bread, one meat, and one veggie. How many different \$3 sub sandwiches can you make?

 $4 \times 4 = 1$   $(9) \text{ A pair of fair 4-sided dice is tossed. Let } A = \{\text{the sum is 4}\} \text{ and } B = \{3 \text{ appears on either die}\}. \quad \mathcal{L}(3,1)(3,2)(3,3)(3,4), \mathcal{L}(1,3)(2,3)(4,3)^2\}$ b. Find  $P(A \mid B)$ .

a. Find 
$$P(B|A)$$
.

$$\frac{P(B \cap A)}{P(A)} = \frac{3}{1c} \cdot \frac{1c}{3}$$
b. Find  $P(A|B)$ .

$$\frac{P(A \cap B)}{P(B)} = \frac{2}{1c} \cdot \frac{1c}{7} = \frac{2}{$$

10. Mrs. Ketterhagen's FST classes first semester of the 2014-15 school year.

	Boys	Girls	
Period 4	15	7	22
Period 5	14	9	23
Period 6	12	2	14
	41	18	159

a. What percent of all students are boys?

b. What percent of period 6 students

$$\frac{2}{14} = \boxed{14.32}$$

- (11) Suppose all patients are tested for a serious disease that is estimated to be found in 0.5% of people. Suppose also that the test accurately spots the disease 98% of the time and accurately indicates no disease 95% of the time.
  - a. Make a contingency table for this situation:

	Disease 0.5%	№ Diseie 99.58	
Test +	982	52	
Test -	22	75%	
Total	100%	100%	

b. What is the probability that someone who tests negative does in fact have the disease?

$$\frac{P(D) \text{ Seque given negative test)}}{P(D) \text{ (.005) (.02)}} = \frac{0.0001}{0.94535} = 1.06 \times 10^{-4}$$

$$\frac{P(D) \text{ (.005) (.02)}}{(.005)(.02) + (.995)(.95)} = \frac{0.0001}{0.94535} = 1.06 \times 10^{-4}$$