PC Sec 6-1 to 6-3 Review   Name_____

*Interpret the following: $A \cup B$ ___union___ $A \cap B$ ___intersection___

1) Consider the sample space when 2 fair 6-sided dice are tossed.

a) Find P(the sum is 9)

$9: \{(3,6),(4,5),(5,4)(6,3)\}$

$$\boxed{\dfrac{4}{36}}$$

b) Find P(the sum is 8 or the first die is a 4)

$8: \{(2,6),(3,5),(4,4)(5,3),(6,2)\}$

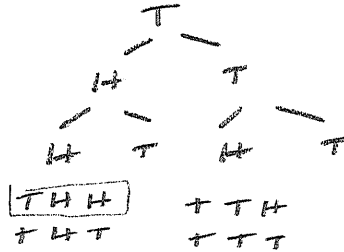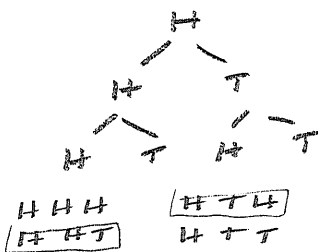$4: \{(4,1),(4,2),(4,3),(4,4),(4,5),(4,6)\}$

$P(8) + P(4) - P(\text{both})$

$\dfrac{5}{36} + \dfrac{6}{36} - \dfrac{1}{36} = \boxed{\dfrac{10}{36}}$

2) Let A be the event: It's raining. Describe the complement of A.

NOT raining

3) Consider an experiment in which a coin is tossed 3 times.

a) Write the experiment's sample space.

HHH HTH THH TTH
HHT HTT THT TTT

b) What is the probability of exactly 2 heads showing up?

$$\dfrac{3}{8}$$

4) A test has 11 true-false questions and 13 multiple-choice questions, each with 4 choices. What is the probability of answering all questions correctly if you randomly guess on each?

$$\dfrac{1}{2^{11} \cdot 4^{13}} = \dfrac{1}{1.37 \times 10^{11}} = \boxed{7.28 \times 10^{-12}}$$

5) There are 8 trophies to display on a shelf.

a) How may ways can the 8 trophies be arranged?

$8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = \boxed{40,320}$

b) How many ways can the trophies be arranged if the tallest trophy must be displayed in the middle?

first

$1 \quad 7 \quad 6 \quad 5 \quad 4 \quad 3 \quad 2 \quad 1 = \boxed{5040}$