

NOTES: MATH 2 HONORS
Unit 7: Probability

An **EVENT** is an activity or experiment and is usually represented by a capital letter. A **SAMPLE SPACE** is a set of all possible outcomes for an activity or experiment. A smaller set of outcomes from the sample space is called a **SUBSET**.

EXAMPLE 1:

a. In the event of rolling a die, what is the sample space?

b. In the event of rolling a die, what is the sample space for the subset of rolling an even?

The **COMPLEMENT** of a subset is all the outcomes in the sample space that are not part of the subset. A subset and its complement make up the entire sample space. If a subset is represented by A , the complement can be represented by *not* A , $\sim A$, or A^c .

EXAMPLE 2:

a. What is the complement of Example 1b above?

The **UNION** of two events includes all outcomes from each event. The union can be included by the word “**or**” or the symbol \cup . The **INTERSECTION** of two events includes only those outcomes that are in both events. The intersection can be indicated by the word “**and**” or the symbol \cap .

**IT IS SOMETIMES EASIER TO FIND THE UNION AND INTERSECTION BY
DRAWING A VENN DIAGRAM.**

EXAMPLE 3: If $A = \{0, 2, 4, 6, 8, 10\}$ and $B = \{0, 5, 10, 15, 20\}$, find the following.

a. $A \cup B =$

b. $A \cap B =$

EXAMPLE 4: A small box of Crayola Crayons has twelve crayons. The sample space for the different colors is $S = \{Green, Violet, Turquoise, Yellow, Blue, Red, White, Brown, Peach, Black, Magenta, Orange\}$.

a. What is the subset of primary colors, P ?

b. What is the subset of American Flag colors, A ?

c. What is the union of P and A ?

d. What is the intersection of P and A ?

e. What is the complement of P ?

f. What is the complement of P and A ?