**3.1 Types of Sets and Set Notation**

**By the end of the lesson you will be able to:**

1. Understand sets and set notation

1. Use vocabulary related to sets and set notation

**Set** is a *\_\_\_\_\_\_\_\_\_\_\_\_* of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* or *distinguishable objects.* Sets are defined using brackets $\left\{ \right\}$ and are usually named with a capital letter.

For example, the set of whole numbers is written as$ W=\left\{0, 1, 2, 3, 4, 5…\right\}$ or $R=\left\{all the red cards in a deck\right\}$

**Element**are the objects that make up a set. Each element is *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

**Universal Set** is a set of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a particular context.

For example, the universal set of digits is $D=\left\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\right\}$

**Subset** is a set where all elements belong to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

*For example, the set of odd digits* $O=\left\{1, 3, 5, 7, 9\right\}$ *is a subset of* $D$*, the set of all digits.*

We write this as $O⊂D$, where $⊂$means“subset of”

**Complement** it is the set of all elements of a universal set that do not belong to a subset - is the amount you must add to something to make it "whole.”

*For example,* $O'=\left\{0, 2, 4, 6, 8\right\}$ *is the complement of* $O=\left\{1, 3, 5, 7, 9\right\}$*, a subset of the universal set of digits,* $D$*. The prime (‘) tells you that a set is a complement.*

**Empty Set** is a set with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is denoted as empty brackets $\left\{ \right\}$ or $⊘$.

**Finite Set** is a set with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ number of elements.

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**Disjoint** is two or more sets having \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Mutually Exclusive** means two or more things that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur at the same time.

**Example 1**

Indicate the multiples of 5 and 10, from 1 to 50, using **set notation**. List any subsets.

Represent the sets and subsets in a Venn diagram.

**3.2 Exploring Relationships between Sets**

**By the end of the lesson you will be able to:**

1. Explore what the different regions of a Venn diagram represent.



**Example 1**

In a high school, there are 65 Grade 12 students. Of these students 23 play basketball and 24 play volleyball. There are 31 students who don’t play either sport.

*How many students play both basketball and volleyball?* Use a Venn diagram to solve.

Assignment: P. 154 #2, 4, 9, 11, 16 and P. 160 #1-5