**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per.\_\_\_\_\_\_\_ Score:\_\_\_\_\_**

**U8 CW #2** *Representations of a Function*

Functions can also be described by non-numeric relations. A **mapping** is a representation of a function that helps to better understand non-numeric relations. Study each relation and its mapping below. Then decide if the relation represents a function. Explain your answer.

|  |  |
| --- | --- |
| 1. **Input:** circumference of finger

**Output:** ring size*Ring Size**Circumference*14.1mm14.9 mm15.7 mm16.5 mm3456Function? Explain.  | 1. **Input:** state a person lives in

**Output:** the team they root for in college football*Team**State*UtahNevadaArizona Cougars UtesSun DevilsFunction? Explain.  |
| 1. Write the ordered pairs (circumference, ring size) that correspond to problem #1.
 | 1. Write the ordered pairs (state a person lives in, team they root for) that correspond to problem #2.
 |
| 1. **Input:** city student lives in

**Output:** high school they go to*School**City*Salt Lake CityProvoKamasEast HSSkyline HSWest HSTimpview HSProvo HSSouth Summit HSFunction? Explain.  | 1. **Input:** Age

**Output:** Level of Baseball Team*BaseballLevel**Age*5678910ProvoKamasTee BallMinor LeagueJunior LeagueFunction? Explain.  |

There are many ways to represent a relation or function.

In the following problems, you will be given one representation of a relation and asked to create additional representations. Then, you will be asked to determine whether the relation represents a function or not.

1. **Story:** A candle is 27 centimeters high and burns 3 centimeters per hour. An equation that models this relation is $c=27-3h$ where *c* is the height of the candle in centimeters and *h* is the number of hours the candle has been burning.
	1. Express this relation as a table, mapping, graph, and set of ordered pairs.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Candle by mart - A lit candle**Table**

|  |  |
| --- | --- |
| Time (hours)*h* | Height (cm)*c* |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

 | **Mapping**

|  |  |
| --- | --- |
| *Hours* | *Height* |
|  |

 |
| **Graph** | **Set of Ordered Pairs** |

* 1. Is the height of the candle a function of the amount of time it has been burning? Explain.

|  |  |
| --- | --- |
| *x* |  *y*-101201-12-23-3 |
|  |

1. **Mapping:**
2. Express this relation as a table, graph, and set of ordered pairs.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table**

|  |  |
| --- | --- |
| *x* | *y* |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

 | **Graph** | **Set of Ordered Pairs** |

1. Is this relation a function? Explain.

**Directions:** Determine if each relation or situation defines a function. Justify your answer.

It may help to make an additional representation of the relation (especially if the problem is a context).

|  |  |
| --- | --- |
| 1. {(30, 2), (45, 3), (32, 1.5), (30, 4), (41, 3.4)}
 | 1.
 |
| 1. $x=2$
 | 1. $3x+6y=18$
 |
|

|  |  |
| --- | --- |
| *Letter Grade* |  *Percentage* |
| ABD95%88%87%66% |

 | 1. Is letter grade a function of percentage scored on a test?
 |
|

|  |  |
| --- | --- |
| *Time of Day* |  *Temperature* |
| 8:00 AM12:00 PM2:00 PM4:00 PM7:00PM65707580 |

 | 1. Is time of day a function of the temperature?
 |
| 1.

|  |  |
| --- | --- |
| **Length of Radius****(cm)** | **Length of Diameter****(cm)** |
| 0.5 | 1 |
| 1 | 2 |
| 1.5 | 3 |
| 2 | 4 |

 | 1. **Input:** name of city in the U.S.

**Output:** state city is in*Hint:* There are 16 states in the United States that have a city called Independence. |