**2.4 Skills Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Identify the dependent quantity and the independent quantity in each problem situation.

**1.** Terrence is purchasing canned vegetables at his local grocery store to donate to the local food pantry. Each can costs $0.39.

**2.** Rosita’s pet rabbits eat 12 ounces of rabbit food every day.

**3.** The amount of electricity used by a light changes as the knob on the dimmer switch is turned.

**4.** Stephanie is selling Girl Scout cookies to raise money for her local troop. For each box of cookies she sells, the troop receives $2.00.

**5.** The height reached by a water-propelled rocket is directly related to the amount of water pressure within the rocket.

**6.** As an engineer opens the release gate on a dam’s spillway, the amount of water released from the lake increases.

Complete the table and create a graph (attach your own graph paper) for each given problem situation. In the “Expression” row of the table, write a variable to represent the independent quantity in the first column and write an expression to represent the dependent quantity in terms of the independent quantity in the second column.

**7.** The Rivue Restaurant on the 25th floor of the Galt House in Louisville, Kentucky rotates 2.5 times every hour.

|  |  |  |
| --- | --- | --- |
|  | **Independent Quantity** | **Dependent Quantity** |
| **Quantity Name** |  |  |
| **Unit of Measure** |  |  |
|  | 1 |  |
|  | 2 |  |
|  |  | 10 |
|  | 6 |  |
|  |  | 25 |
| **Expression** |  |  |

**8.** Horace begins measuring the diameter of a pumpkin in his pumpkin patch when it has a diameter of 6 inches. After he measures the pumpkin, its diameter begins to increase at a rate of 2 inches per week.

|  |  |  |
| --- | --- | --- |
|  | **Independent Quantity** | **Dependent Quantity** |
| **Quantity Name** |  |  |
| **Unit of Measure** |  |  |
|  | 0 | 6 |
|  | 1 |  |
|  |  | 12 |
|  | 5 |  |
|  |  | 26 |
| **Expression** |  |  |

**9.** Gretchen is filling a water trough for her cows. The water trough has 10 centimeters of water in it when she begins filling it and the water level increases by 5 centimeters every minute.

|  |  |  |
| --- | --- | --- |
|  | **Independent Quantity** | **Dependent Quantity** |
| **Quantity Name** |  |  |
| **Unit of Measure** |  |  |
|  | 1 |  |
|  | 4 |  |
|  |  | 50 |
|  | 12 |  |
|  |  | 85 |
| **Expression** |  |  |

**10.** Carl initially had $200 in his savings account. Each week he withdraws $15.

|  |  |  |
| --- | --- | --- |
|  | **Independent Quantity** | **Dependent Quantity** |
| **Quantity Name** |  |  |
| **Unit of Measure** |  |  |
|  | 1 |  |
|  |  | 155 |
|  |  | 125 |
|  | 8 |  |
|  |  | 50 |
| **Expression** |  |  |

**11.** A washing machine rotates at a rate of 6 rotations per second during the spin cycle.

|  |  |  |
| --- | --- | --- |
|  | **Independent Quantity** | **Dependent Quantity** |
| **Quantity Name** |  |  |
| **Unit of Measure** |  |  |
|  | 1 |  |
|  |  | 30 |
|  |  | 72 |
|  | 30 |  |
|  |  | 300 |
| **Expression** |  |  |

**12.** A corn mill produces 1 ounce of cornmeal with every 4 rotations of the stone-grinding wheel.

|  |  |  |
| --- | --- | --- |
|  | **Independent Quantity** | **Dependent Quantity** |
| **Quantity Name** |  |  |
| **Unit of Measure** |  |  |
|  | 4 |  |
|  |  | 3 |
|  |  | 5 |
|  | 36 |  |
|  |  | 10 |
| **Expression** |  |  |

**13.** A concrete truck has an initial load of 70 cubic yards of concrete. The truck pours concrete at a rate of 0.2 cubic yard per second.

|  |  |  |
| --- | --- | --- |
|  | **Independent Quantity** | **Dependent Quantity** |
| **Quantity Name** |  |  |
| **Unit of Measure** |  |  |
|  | 10 |  |
|  |  | 66 |
|  | 50 |  |
|  |  | 50 |
|  |  | 30 |
| **Expression** |  |  |

**14.** A steamroller travels at a constant rate of 3.5 feet per second.

|  |  |  |
| --- | --- | --- |
|  | **Independent Quantity** | **Dependent Quantity** |
| **Quantity Name** |  |  |
| **Unit of Measure** |  |  |
|  | 5 |  |
|  |  | 35 |
|  | 25 |  |
|  |  | 175 |
|  |  | 350 |
| **Expression** |  |  |