**1-1 Word Problem Practice**

***Functions***

**1. CLIMATE** The table shows record high and low temperatures for selected states.

|  |
| --- |
| **Record Highs and Lows (°F)** |
| **State** | **High** | **Low** |
| Alabama | 112 | –27 |
| Delaware | 110 | –17 |
| Idaho | 118 | –60 |
| Michigan | 112 | –51 |
| New Mexico | 122 | –50 |
| Wisconsin | 114 | –54 |

 **Source:** National Climatic Data Center

 **a.** State the relation of the data as a set of ordered pairs.

 **b.** State the domain and range of the relation.

 **c.** Determine whether the relation is a function. Explain how you know

**2. DEER** A park’s deer population over five years can be modeled by *f*(*d*) = –3$d^{4}$ + 43$d^{3}$ – 185$d^{2}$ + 350*d* – 59. Estimate *f*(3) and *f*(5), the populations in the third and fifth years.

**3. TIPPING** A restaurant patron has decided to leave a 15% tip for meals costing up to $40, an 18% tip for meals costing at least $40 but less than $100, and a 20% tip for meals costing $100 or more. Write a piecewise function to describe the total amount *t* the patron will pay in terms of the meal cost *c*.

**4. SHIPPING** The table below shows the cost of shipping items bought from a catalog where the cost is based on the total amount of the purchase.

|  |  |
| --- | --- |
| **Total****Purchase ($)** | **Shipping****Cost ($)** |
| 0 to 75 | 8 |
| 75.01 to 150 | 15 |
| 150.01 to 250 | 20 |
| 250.01 and up | Free |

**a.** Write a piecewise function describing the shipping cost *c* in terms of the total purchase amount *t*.

**b.** Give the domain and range of the function.