Check Up

1. A non-fatal vehicle collision results in a type of personal injury, not death. In Alberta, statistics are collected and the following graph represents the number of non-fatal collisions from 2006 to 2012.

Based on the graph provided:

a. Name the dependent and independent variables.

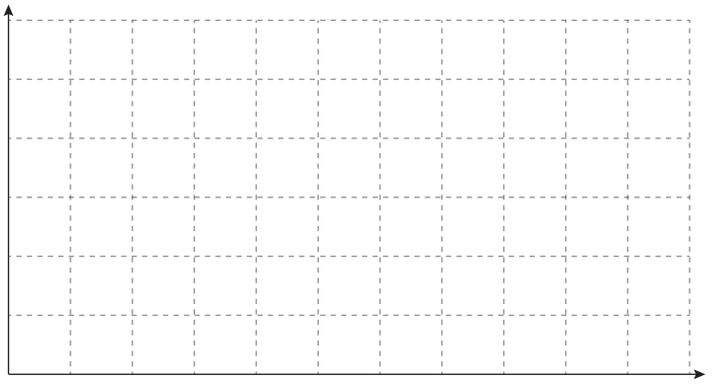
b. Identify whether the represented data is continuous or discrete.

c. State the domain and range of the relation.

d. State a conclusion about the relation.

2. a. Tasha wants to purchase some new DVDs to add to her collection. There is a one day sale coming up where DVDs will be sold for $10.00 each. She has saved $100.00 of her allowance money for the sale. Is the data continuous or discrete? Explain.

b. Graph the relation representing the amount of Tasha's money remaining after DVD purchases if she has $100.00 at the beginning of the day.



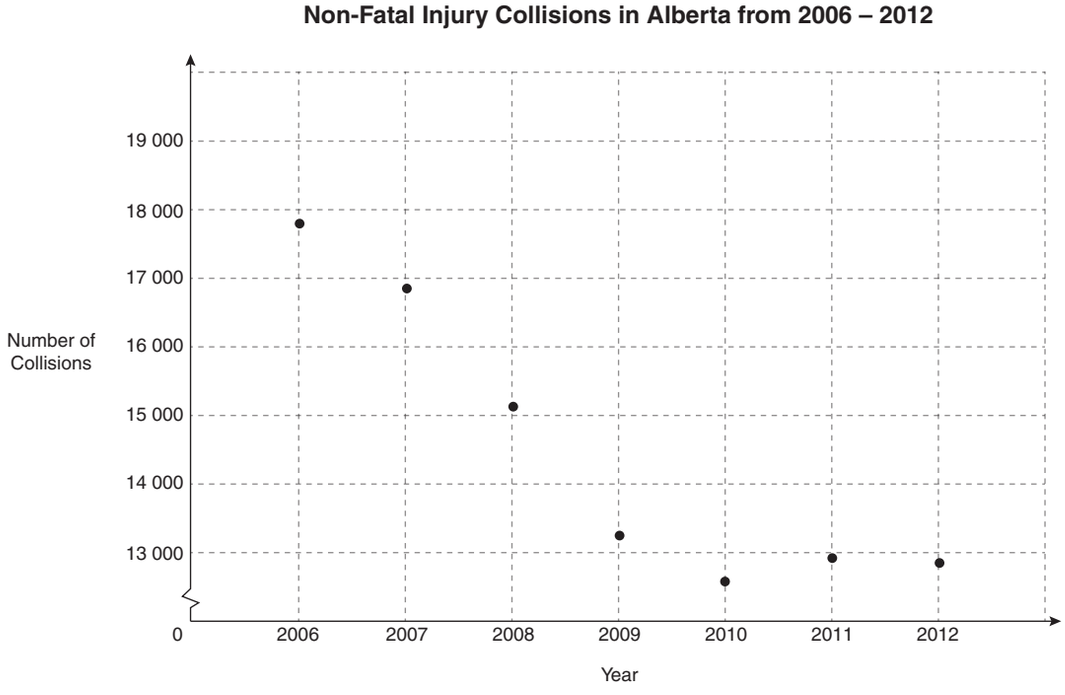
c. State the domain and range of the relation.

d. Suppose that before Tasha goes shopping for her DVDs, she treats two of her friends to lunch. If lunch costs $40.00, how many DVDs will she be able to purchase?

e. With respect to part d., state the domain and range of the resulting relation.

Compare your answers.

1. A non-fatal vehicle collision results in a type of personal injury, not death. In Alberta, statistics are collected and the following graph represents the number of non-fatal collisions from 2006 to 2012.



Based on the graph provided,

a. Name the dependent and independent variables.

The dependent variable is the number of collisions and the independent variable is the time in years.

b. Identify whether the represented data is continuous or discrete.

The data is discrete because you cannot have a fractional or decimal number of collisions and that statistic is collected at the end of each year.

c. State the domain and range of the relation.

The domain is the set of Whole Numbers in years from 2006 to 2012. The range is the set of Whole Numbers starting with approximate value of 12 000 to 17 900.

$\{x \mid 2006 \leq x \leq 2012, x \in \mathrm{W}\}$
$\{y \mid 12\,000 \leq y \leq 17\,900, y \in \mathrm{W}\}$

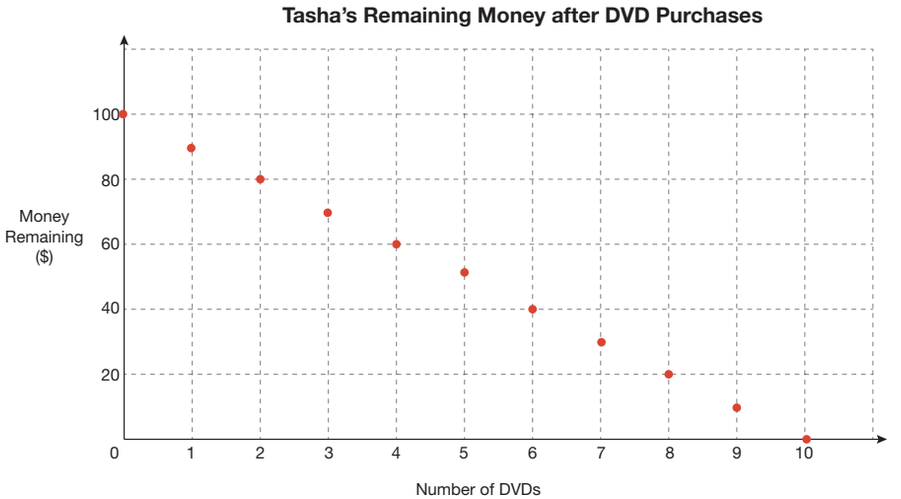
d. State a conclusion about the relation.

From 2006 to 2009, there is a sharp decrease in non-fatal collisions. From about 2009 to 2012 there is a level off of non-fatal accidents. This could potentially be due to increased safety standards in vehicles, more air bags, more signage on roads, or better drivers.

2. a. Tasha wants to purchase some new DVDs to add to her collection. There is a one day sale coming up where DVDs will be sold for $10.00 each. She has saved $100.00 of her allowance money for the sale. Is the data continuous or discrete? Explain.

   The data is discrete because Tasha can only purchase DVDs in whole numbers and the costs are in increments of $10.00.

   b. Graph the relation representing the amount of Tasha's money remaining after DVD purchases if she has $100.00 at the beginning of the day.



   c. State the domain and range of the relation.

   Domain: $\{x \mid 0 \leq x \leq 10, x \in \mathrm{W}\}$

   Range: $\{y \mid 0 \leq y \leq 100, y \in \mathrm{W}\}$

   d. Suppose that before Tasha goes shopping for her DVDs, she treats two of her friends to lunch. If lunch costs $40.00, how many DVDs will she be able to purchase?

   $\$100.00 - \$40.00 = \$60.00$

   Tasha will have enough money to buy 6 DVDs after paying for lunch.

   e. With respect to part d., state the domain and range of the resulting relation.

   Domain: $\{x \mid 0 \leq x \leq 6, x \in \mathrm{W}\}$

   Range: $\{y \mid 0 \leq y \leq 60, y \in \mathrm{W}\}$

Understanding what a relation represents means knowing and understanding the independent and dependent variables. Domain and range define the values for those variables. The next lesson continues to explore data, including identifying whether or not the data represents a linear relationship.

Multimedia

Additional video examples pertaining to this lesson are available.