

## Algebra 2: Linear Regression Homework

### Linear Regression Problems:

The data below are actual data collected by Mrs. Bonger regarding her fuel economy.

| Gallons of Gas Used | Miles Driven |
|---------------------|--------------|
| 12.3                | 228.8        |
| 7.9                 | 156.4        |
| 14.7                | 308.7        |
| 5.5                 | 90.2         |

Use linear regression to find an equation relating the gallons of gas used and the miles driven.

- Equation: \_\_\_\_\_ x stands for: \_\_\_\_\_ y-stands for: \_\_\_\_\_
- The slope of the line represents the miles per gallon. How many miles per gallon does his truck get? \_\_\_\_\_
- If he completely fills his 16 gallon tank, how far could he go before running out of gas? \_\_\_\_\_

### Guided Skills Practice

- 4. INCOME** Suppose that you work part-time at a department store, earning a base salary of \$50 per week plus a 15% commission on all sales that you make.

**(EXAMPLE 1)**

- Copy and complete the table.
- Graph the points represented in the table and connect them.
- Write a linear equation to represent the relationship between the weekly sales,  $x$ , and the weekly income  $y$ .
- Find the weekly income,  $y$ , for weekly sales of \$1200.

| Weekly sales, $x$ | Weekly income, $y$      |
|-------------------|-------------------------|
| 100               | $50 + (0.15)(100) = 65$ |
| 200               | ?                       |
| 300               | ?                       |
| 400               | ?                       |
| $x$               | ?                       |

- 5. Graph  $y = 3x - 2$ . (EXAMPLE 2)**

- 6. Does the table below represent a linear relationship between  $x$  and  $y$ ? If the relationship is linear, write the next ordered pair that would appear in the table. (EXAMPLE 3)**

|     |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|
| $x$ | -4 | 1  | 6  | 11 | 16 | 21 |
| $y$ | 13 | 19 | 25 | 31 | 37 | 43 |