

Chapter 2 Review Worksheet

Name: LEY

A delivery service charges a base price for an overnight delivery of a package plus an extra charge for each pound the package weighs. A customer is billed \$22.85 for shipping a 3-pound package and \$40 for shipping a 10-pound package.

1. Identify what you have been given (1 point, 2 points, slope, y-int.). List them below.

2 points: (3, 22.85) (10, 40)

2. Write an equation in **slope-intercept form** that gives the total cost of shipping a package as a function of the weight of the package.

$$m = \frac{40 - 22.85}{10 - 3} = \frac{17.15}{7} = \$2.45/\text{lb}$$

$$y - 40 = 2.45(x - 10)$$

$$y - 40 = 2.45x - 24.50$$

$$y = 2.45x + 15.50$$

\$2.45: cost per pound
\$15.50: base price

3. Find the cost of shipping a 15-pound package.

$$y = 2.45(15) + 15.50$$

$$y = \$52.25$$

For a school band fundraiser, students are selling seat cushions for \$4 each and license plate holders for \$6 each. One student raises \$304.

4. Write an equation in **standard form** of the line that models the possible combinations of seat cushions and license plate holders that the student sold.

$$4c + 6p = 304$$

c = # of seat cushions sold
p = # of plate holders sold

5. If the student sold 19 seat cushions, how many license plate holders must they have sold?

$$4(19) + 6p = 304$$

$$76 + 6p = 304$$

$$6p = 228$$

$$p = 38 \text{ plate holders}$$

6. Write an equation of a line in **slope-intercept form** that is **perpendicular** to $2x + 7y = 14$ and passes through $(-4, -1)$.

$$m = \frac{7}{2}$$

$$y - (-1) = \frac{7}{2}(x - (-4))$$

$$y + 1 = \frac{7}{2}(x + 4)$$

$$y + 1 = \frac{7}{2}x + 14$$

$$y = \frac{7}{2}x + 13$$

$$7y = -2x + 14$$

$$y = -\frac{2}{7}x + 2$$

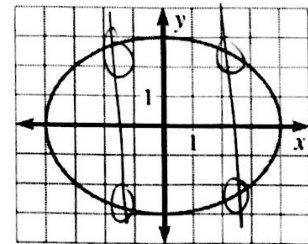
7. Identify the domain and range of the graph.

Does the graph represent a function? Explain how you know.

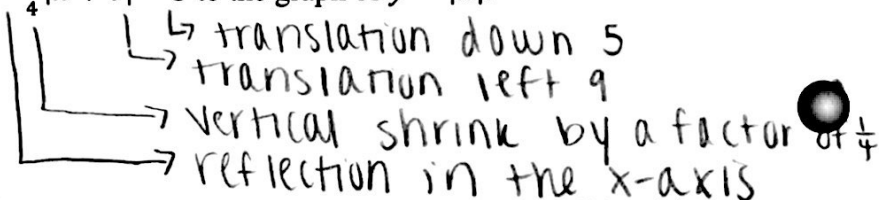
$$D: [-4, 4] \text{ OR } -4 \leq x \leq 4$$

$$R: [-3, 3] \text{ OR } -3 \leq y \leq 3$$

Not a function, Vertical Line Test.



8. Without graphing, compare the graph of $y = -\frac{1}{4}|x + 9| - 5$ to the graph of $y = |x|$.



A cable company charges \$44 per month for basic service. Each premium channel costs an additional \$16 per month.

9. Write an equation in **slope-intercept form** that gives the total cost (in dollars) of cable each month as a function of the number of premium channels purchased.

$$y = 16x + 44$$

10. Identify the dependent and independent variables in this situation.

(x) independent: # of premium channels purchased

(y) dependent: cost of cable services

11. Find the cost of cable service for a month in which you purchase 4 premium channels.

$$y = 16(4) + 44$$

$$y = \$108$$

During the period 1990-2004, the annual sales of a small company increased by the same amount each year. In 1997, the annual sales were \$97,000. By 2002, sales had increased to \$147,000.

12. Write a linear equation in **slope-intercept form** that models the annual sales as a function of the number of years since 1990.

(7, 97,000) (12, 147,000)

$$m = \frac{147,000 - 97,000}{12 - 7} = \frac{50,000}{5} = \$10,000/\text{yr}$$

$$y - 97,000 = 10,000(x - 7)$$

$$y - 97,000 = 10,000x - 70,000$$

$$y = 10,000x + 27,000$$

13. Use the model to predict the sales in 2016.

$$y = 10,000(26) + 27,000$$

$$y = \$287,000$$

A BMX race track charges a one time membership fee and an entrance fee per race. One racer paid a total of \$76 after 3 races. Another racer paid a total of \$124 after 7 races.

14. Write an equation in **slope-intercept form** that gives the total cost, C, as a function of the number of races entered, r.

(3, 76) (7, 124)

$$m = \frac{124 - 76}{7 - 3} = \frac{48}{4} = \$12/\text{race}$$

$$y - 76 = 12(x - 3)$$

$$y - 76 = 12x - 36$$

$$C = 12r + 40$$

15. What is the entry fee per race?

$$\$12$$

16. How much does the track membership cost?

$$\$40$$