

**LESSON
4.4****Challenge Practice***For use with the lesson "Write Linear Equations in Standard Form"*

In Exercises 1–5, write an equation in standard form of the line that passes through the two points.

1. $(p, q), (2, 3), p \neq 2$
2. $(2p, 3q), (3p, 2q), p \neq 0$
3. $(p, 2p), (3p, 4p), p \neq 0$
4. $(p, -4p), (p, 3p)$
5. $(p, 3p), (4p, 3p), p \neq 0$

In Exercises 6–8, use the following information.

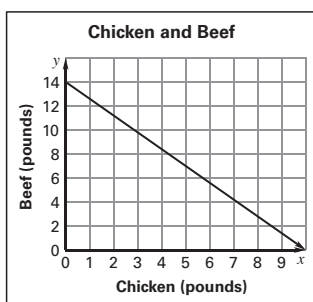
A geologist found a one cubic foot block of ore containing iron and gold. The geologist knows that iron weighs 500 pounds per cubic foot and gold weighs 1200 pounds per cubic foot.

6. Let x represent the pounds of iron in the block and y represent the pounds of gold. Write an equation of the line in standard form that represents the different numbers of pounds of each metal that could be in the block.
7. If the block weighs 514 pounds, how many pounds of gold are in the block?
8. If gold is worth \$8000 per pound, and iron is worth \$.25 per pound, then how much is the block of ore worth?
9. Write an equation in standard form for the line that passes through the points (a, b) and (b, a) given that $a \neq b$.

Lesson 4.4 Write Linear Equations in Standard Form, continued

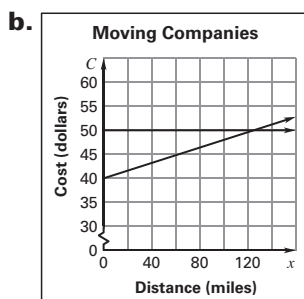
Problem Solving Workshop: Mixed Problem Solving

- a. $m = 3w + 6$ b. 21 miles
- a. $C = 20a + 200$ b. \$1040 c. a. \$153.09
b. $C = 4.83y + 153.09$ c. \$215.88 d. 89
- Answer will vary.
- $3.5x + 2.5y = 35$



The x -intercept is the pounds of chicken you can buy for \$35. The y -intercept is the pounds of ground beef you can buy for \$35.

7. a. $C_1 = 0.08x + 40$, $C_2 = 50$



- c. When you have to drive the truck 125 miles.
 d. Rent a truck from Company A when you have to drive the truck less than 125 miles. Rent a truck from Company B when you have to drive the truck more than 125 miles. 8. The situation can be modeled by a linear equation because the cost is increasing at a constant rate of \$2 per game. It costs \$2.50 to rent bowling shoes and \$2 to play a game. 9. Answers will vary.

Challenge Practice

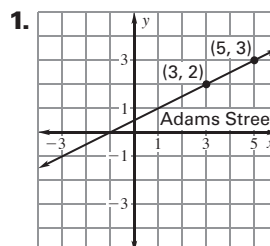
- $(q - 3)x + (2 - p)y = 2q - 3p$
- $qx + py = 5pq$ 3. $-x + y = p$
- $x = p$ 5. $y = 3p$
- $\frac{1}{500}x + \frac{1}{1200}y = 1 \rightarrow 12x + 5y = 6000$

7. 24 pounds of gold 8. \$192,122.50

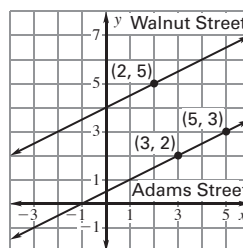
9. $x + y = a + b$

Lesson 4.5 Write Equations of Parallel and Perpendicular Lines

Teaching Guide



2. There is enough information to write an equation that represents Walnut Street. You are given that Walnut Street and Adams Street are parallel and you are given that the high school is located at $(2, 5)$ on Walnut Street. Parallel lines have the same slope. So, you know the slope of the line and a point on the line. An equation that represents Walnut Street is $y = \frac{1}{2}x + 4$.



Practice Level A

- 3 2. 2 3. 3 4. $-\frac{1}{2}$ 5. $-\frac{1}{3}$ 6. $-\frac{1}{5}$
- $y = x + 1$ 8. $y = -3x - 1$
- $y = \frac{1}{2}x + \frac{9}{2}$ 10. $y = -10x - 77$
- $y = -2x + 1$ 12. $y = 9x - 23$
- $y = x - 1$ 14. $y = -\frac{1}{2}x + \frac{3}{2}$
- $y = -4x - 17$ 16. $y = 3x + 4$
- $y = \frac{1}{5}x - \frac{12}{5}$ 18. $y = \frac{1}{4}x + \frac{17}{2}$
- Lines a and b are perpendicular. 20. Lines a and b are parallel. Lines a and b are both perpendicular to line c .
- a. Line a : $y = \frac{2}{3}x$; Line b : $y = -\frac{2}{3}x$
 b. no; The slope of line b is not a negative reciprocal of the slope of line a .