

Practice Problems

Skills Practice

1. Determine the slope-intercept form of the equation of the line between each of the following pairs of points.

a. $(4, -5)$ and $(2, 3)$

b. $(-3, 2)$ and $(1, 8)$

c. $(5, -9)$ and $(5, 2)$

d. $(2, -1)$ and $(-2, 3)$

e. $(4, 3)$ and $(12, -3)$

f. $(2, -4)$ and $(7, -4)$

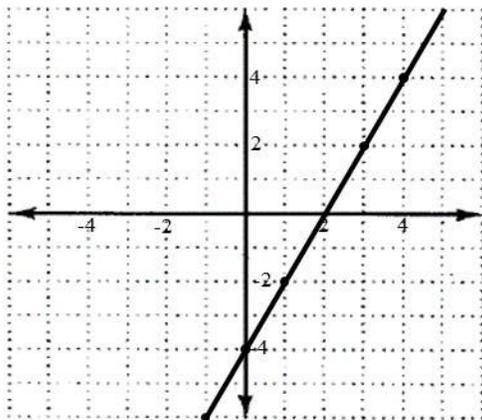
2. Give the equation of the linear function that generates the following table of values. Write your answer in slope-intercept form.

x	$f(x)$
-5	91
-2	67
1	43
4	19
9	-21

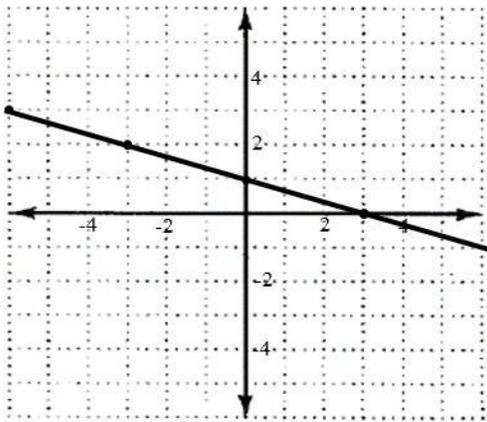
3. Give the equation of the linear function that generates the following table of values. Write your answer in slope-intercept form.

t	$C(t)$
5	-1250
15	-900
20	-725
35	-200
45	150

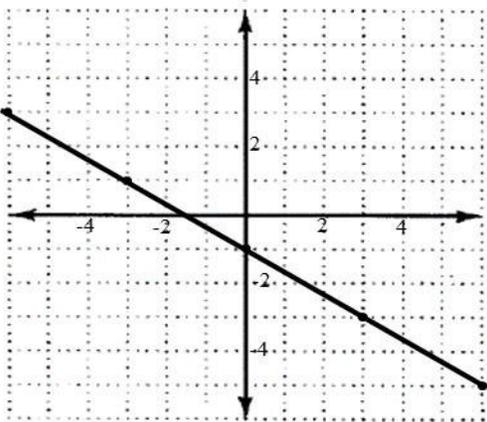
4. Give the equation of the linear function shown below. Write your answer in slope-intercept form.



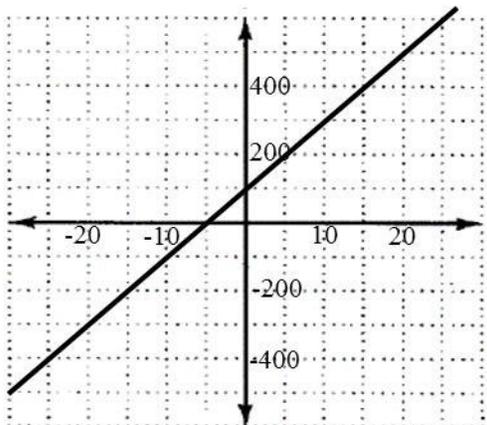
5. Give the equation of the linear function shown below. Write your answer in slope-intercept form.



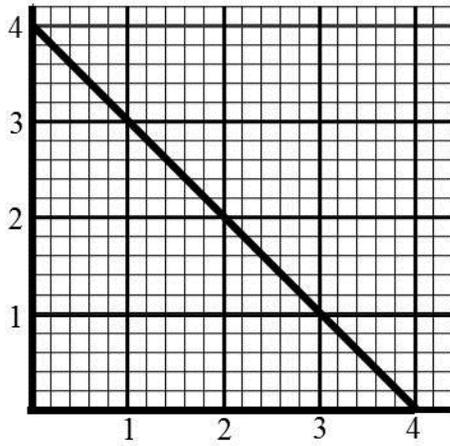
6. Give the equation of the linear function shown below. Write your answer in slope-intercept form.



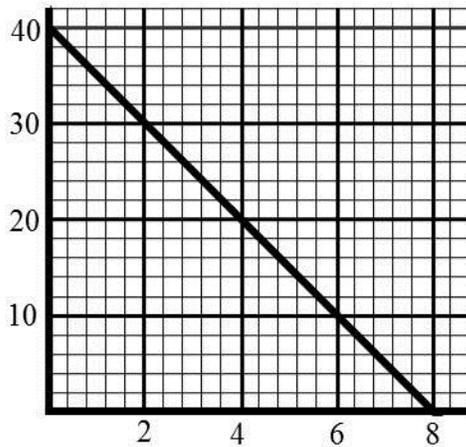
7. Give the equation of the linear function shown below. Write your answer in slope-intercept form.



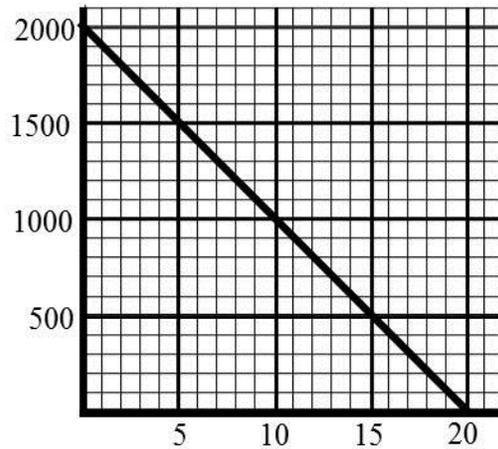
8. Give the equation of the linear function shown below. Write your answer in slope-intercept form.



9. Give the equation of the linear function shown below. Write your answer in slope-intercept form.



10. Give the equation of the linear function shown below. Write your answer in slope-intercept form.



11. Give the equation of the horizontal line passing through the point $(-6, 11)$. _____

12. Give the equation of the vertical line passing through the point $(4, 7)$. _____

13. Give the equation of the x -axis. _____

14. Give the equation of the y -axis. _____

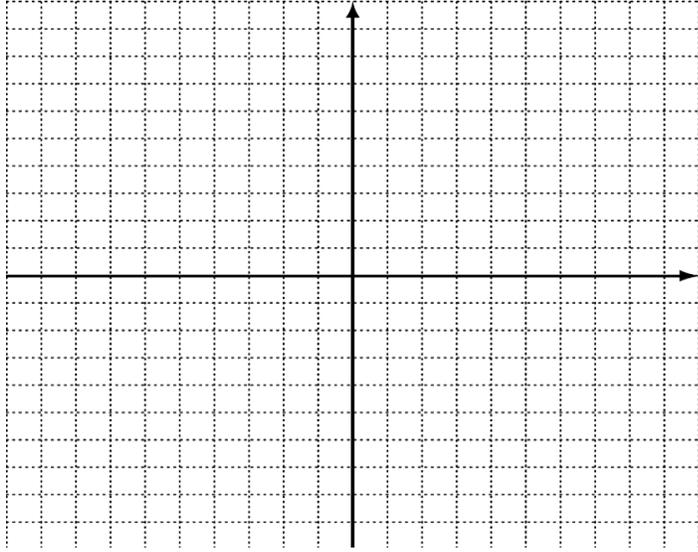
15. Give the equation of the line passing through the point $(1, -5)$ that is parallel to $y = 12 - 8x$.

16. Give the equation of the line passing through the point $(6, 0)$ that is parallel to $y = 9 - \frac{3}{2}x$.

17. Give the equation of the line passing through the point $(10, 3)$ that is perpendicular to $y = \frac{2}{5}x + 1$.

18. Give the equation of the line passing through the point $(-12, -1)$ that is perpendicular to $y = 3 - 4x$.

19. Draw an **accurate** graph of the linear equation $2x + 3y = 6$.



Slope-Intercept Form: _____

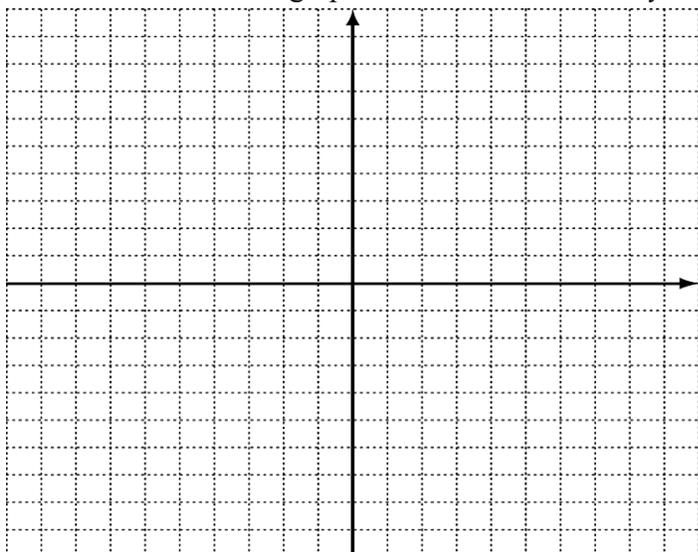
Slope: _____

Vertical Intercept: _____

Horizontal Intercept: _____

Two additional points on the line:

20. Draw an **accurate** graph of the function $x + 5y = 15$



Slope-Intercept Form: _____

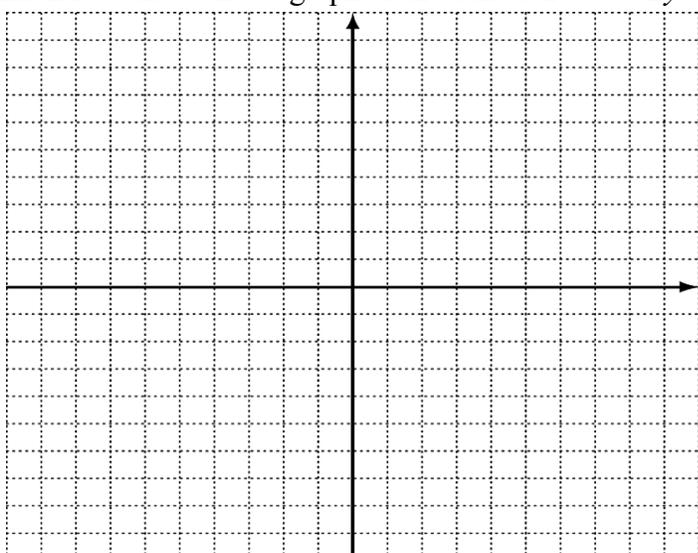
Slope: _____

Vertical Intercept: _____

Horizontal Intercept: _____

Two additional points on the line:

21. Draw an **accurate** graph of the function $3x - 2y = 4$.



Slope-Intercept Form: _____

Slope: _____

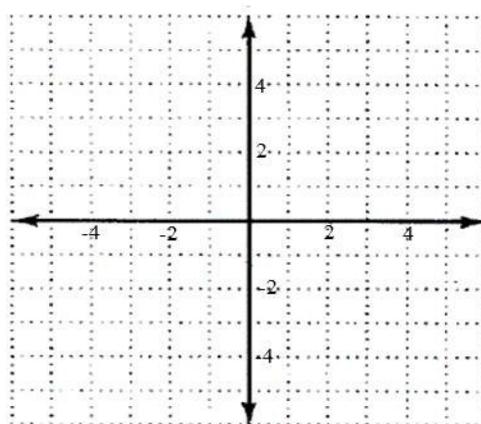
Vertical Intercept: _____

Horizontal Intercept: _____

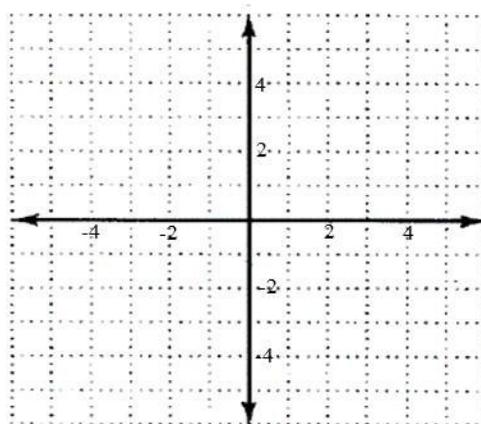
Two additional points on the line:

22. Graph the solution sets of each of the following linear inequalities.

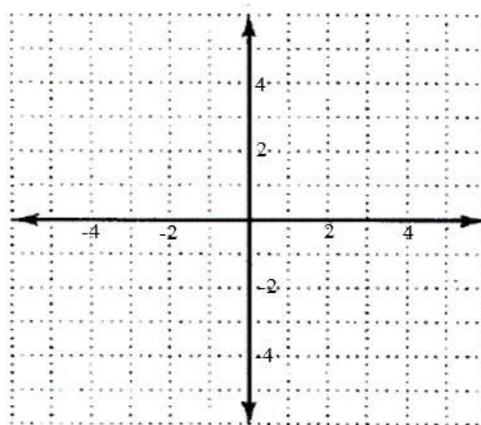
a. $y > 3 - x$



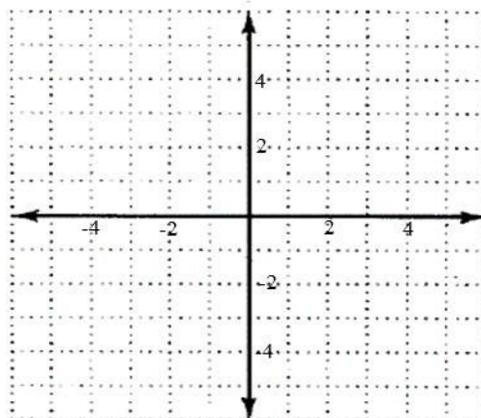
b. $y \geq \frac{3}{5}x - 1$



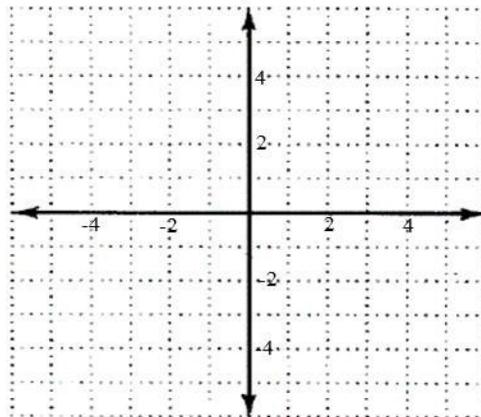
c. $4x - y < 3$



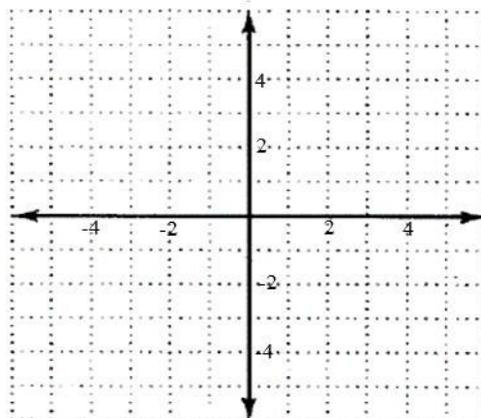
d. $x + y \leq -5$



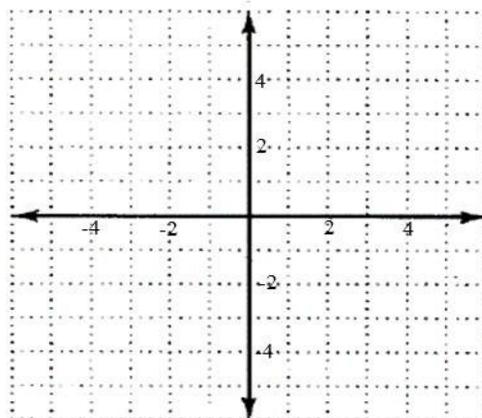
e. $y > \frac{1}{2}x$



f. $y < -4$



g. $x \geq 2$



Applications

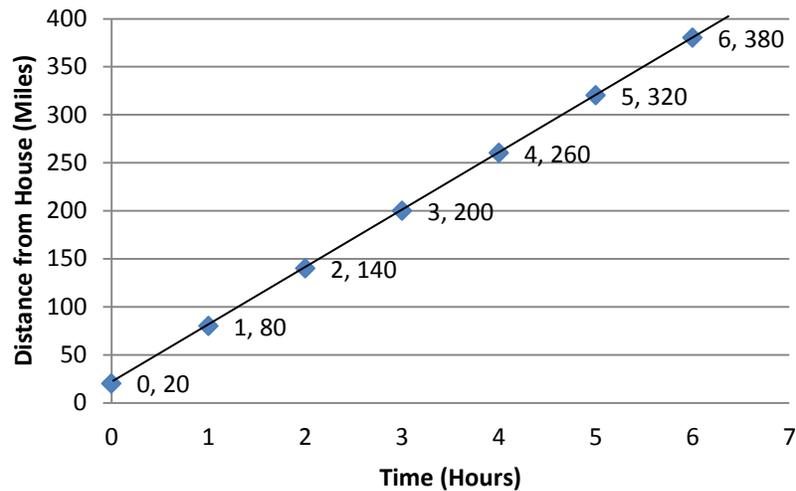
23. On January 1, 1997, there were 60 million internet users in the United States. By January 1, 2002, there were 123 million internet users in the United States.
- Let y represent the number of internet users (in millions), and x represent the number of years since 1990. Determine a linear equation in slope-intercept form, that represents this situation.
 - Interpret the slope of this linear function in the context of the story.
 - Write the vertical intercept as an ordered pair, and discuss its meaning in the context of the story.
 - Use the equation in part a to determine the number of internet users in the U.S. on January 1, 2000.
 - Use the equation in part a to determine the number of internet users in the U.S. on July 1, 2001.

24. The amount of waste in a landfill over a 15 year period (in tons) is shown in the table below.

t (years)	1	4	6	9	15
W (tons)	2.5	10	15	22.5	37.5

- a) Determine the equation of the linear function that represents this situation.
- b) What is the practical meaning of the slope of this linear function? Include units.
- c) Determine and interpret the horizontal intercept of this linear function. Include units.
- d) How much waste will there be in this landfill after 25 years?

25. Your workplace is 20 miles from your house. The graph below shows the distance you are from your house if you leave work and drive in the opposite direction.



- Determine the equation of the linear function that represents this situation. Clearly indicate what each variable represents.
- Use the equation from part a to determine how long it would take for you to be 600 miles from your house. Express your answer in hours and minutes.
- Identify the vertical intercept and interpret its meaning.
- Determine the slope, and interpret its meaning.

26. With good credit, and a \$5000 down payment, you can finance a new 2012 Chevrolet Camaro convertible for 60 months for \$615.17 per month.
- Determine the equation of the linear function that represents this situation. Clearly indicate what each variable represents.
 - Use the equation from part a to determine the total payment over the 60-month time period.
 - A new 2012 Chevrolet Camaro convertible has a base MSRP of \$35,080. Why is this value lower than your answer in part b?
27. At a concession stand, three hot dogs and five sodas cost \$18.50.
- Let h represent the price of each hot dog, and s represent the price of each soda. Write a linear equation in general form to represent this situation.
 - If hot dogs cost \$3.25 each, how much is each soda?

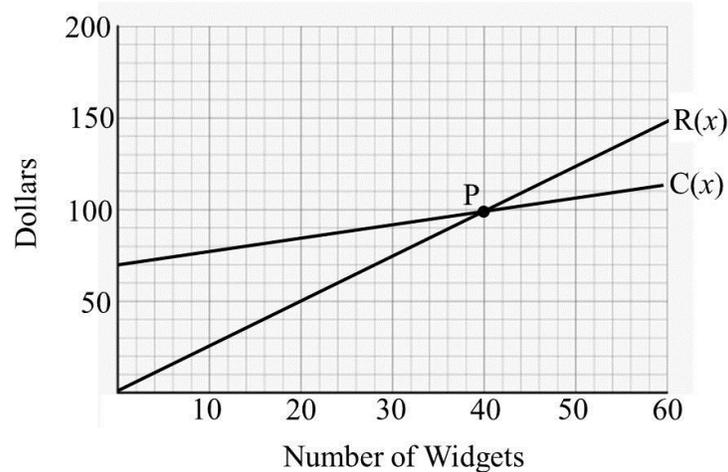
28. The museum charges \$14 for adult admission and \$11 for each child. The museum bill for a school field trip was \$896.
- Write a linear equation in general form to represent this situation. Clearly indicate what each variable represents.

 - Nine adults attended the field trip. How many children were there?
29. Bill begins a 50 mile bicycle ride. Unfortunately, his bicycle chain breaks, and he is forced to walk the rest of the way. Bill walks at a rate of 4 miles per hour, and rides his bike at a rate of 18 miles per hour.
- Let b represent the amount of time Bill spent bicycling before the chain broke, and w represent the amount of time spent walking. Write a linear equation in general form to represent this situation. (Hint: Distance = rate \cdot time)

 - Bill had been riding his bike for two hours when the chain broke. Use the equation in part a to determine the amount of time he spent walking.

Extension

30. The graph below shows the cost and revenue for a widget company. The function $R(x)$ gives the revenue earned when x widgets are sold. The function $C(x)$ gives the total cost to produce x widgets.



- Identify the vertical intercept of $C(x)$. Write it as an ordered pair, and interpret its meaning.
- Determine the slope of $C(x)$. Write it as an ordered pair, and interpret its meaning.
- Identify the vertical intercept of the $R(x)$. Write it as an ordered pair, and interpret its meaning.
- Determine the slope of the $R(x)$. Write it as an ordered pair, and interpret its meaning.
- Point P has coordinates $(40, 100)$. Discuss the significance of this point in terms of the cost, revenue, and *profit* for this company.

31. **Refer to your course syllabus**

- a. The Final Exam for this class is worth _____ % of your course grade.
- b. Let x represent the score you make on the Final Exam (as a percent), and y represent your grade in the class (as a percent) just prior to taking the Final exam. Write a linear equation in standard form to represent this situation.
Hint: If your final exam is worth 30% of your course grade, then everything else would be worth $100\% - 30\% = 70\%$ of your course grade.
- c. Suppose you have a 77% in the class just before taking the final exam. What score do you need to make on the Final Exam to earn a B (80%) in the class? Assume that your instructor *does not* round up!