

SUMMER PACKET FOR HONORS ALGEBRA ONE

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

Write an algebraic expression for the phrase.

- ___ 1. the sum of b and 11
 a. $b - 11$ b. $\frac{b}{11}$ c. $b + 11$ d. $11b$
- ___ 2. the product of g and 4
 a. $4g$ b. $g + 4$ c. $\frac{g}{4}$ d. $g - 4$
- ___ 3. 4 times the sum of q and p
 a. $4q + p$ b. $4 + q + p$ c. $4qp$ d. $4(q + p)$
- ___ 4. -2 times the quantity q minus 3
 a. $-2q - 3$ b. $q(-2 - 3)$ c. $\frac{-2}{q - 3}$ d. $-2(q - 3)$

Define a variable and write an expression for the phrase.

- ___ 5. the quotient of 6 times a number and 16
 a. $\frac{16x}{6}$ b. $\frac{6x}{16}$ c. $96x$ d. $\frac{x}{96}$
- ___ 6. 4 minus a number
 a. $4 - n$ b. $4n$ c. $\frac{4}{n}$ d. $\frac{n}{4}$
- ___ 7. The total cost to rent a row boat is \$18 times the number of hours the boat is used. Write an equation to model this situation if c = total cost and h = number of hours.
 a. $c = 18h$ b. $c - 18 = h$ c. $h = 18c$ d. $c = \frac{h}{18}$
- ___ 8. What equation models the data in the table if d = number of days and c = cost?

Days	Cost
2	44
3	66
5	110
6	132

- a. $d = 22c$ b. $c = 22d$ c. $c = d + 22d$ d. $c = d + 22$
- ___ 9. An equilateral triangle has three sides of equal length. What is the equation for the perimeter of an equilateral triangle if P = perimeter and s = length of a side?
 a. $s = 3P$ b. $P = 3s$ c. $P = 3 + s$ d. $P = 3(s + s + s)$
- ___ 10. Evaluate $u + xy$, for $u = 18$, $x = 10$, and $y = 8$.
 a. 188 b. 36 c. 98 d. 224
- ___ 11. A pair of shoes costs \$52.99 and the state sales tax is 8%. Use the formula $C = p + rp$ to find the total cost of the shoes, where C is the total cost, p is the price, and r is the sales tax rate.
 a. \$95.38 b. \$60.99 c. \$57.23 d. \$78.19
- ___ 12. When simplifying an expression, you ___ perform operations inside grouping symbols first.
 a. always b. sometimes c. never
- ___ 13. Evaluate the expression $(ab)^2$ for $a = 4$ and $b = 3$.
 a. 36 b. 24 c. 81 d. 144
- ___ 14. You can use the formula $C = \frac{5}{9}(F - 32)$ to convert temperature in degrees Fahrenheit, F , to temperature in degrees Celsius, C . What is 62°F in degrees Celsius? Round your answer to the nearest tenth.
 a. 30°C b. 16.7°C c. 52.2°C d. 2.4°C
- ___ 15. A rational number is ___ a real number.
 a. always b. sometimes c. never

___ 16. Write the number 2.4 in the form $\frac{a}{b}$, using integers, to show that it is a rational number.

a. $\frac{4}{10}$

b. $\frac{24}{100}$

c. $\frac{24}{10}$

d. $\frac{4}{11}$

___ 17. Simplify each element in the matrix.

$$\begin{bmatrix} 2^5 - 3(4) & -4 \div (-1) + 3 \\ \left(\frac{1}{4}\right)\left(2\frac{1}{3}\right) & \frac{14 + (-17)}{6} \end{bmatrix}$$

a. $\begin{bmatrix} 20 & 7 \\ 2\frac{1}{12} & -\frac{1}{2} \end{bmatrix}$

b. $\begin{bmatrix} 20 & -1 \\ \frac{7}{12} & -\frac{1}{2} \end{bmatrix}$

c. $\begin{bmatrix} 20 & 7 \\ \frac{7}{12} & -\frac{1}{2} \end{bmatrix}$

d. $\begin{bmatrix} -2 & 7 \\ \frac{7}{12} & -\frac{1}{2} \end{bmatrix}$

___ 18. Evaluate $|-x - 2y|$ for $x = -2$ and $y = 3$.

a. 4

b. 8

c. -4

d. -8

Simplify the expression.

___ 19. $3[(15 - 3)^2 + 4]$

a. 108

b. 36

c. 18

d. 9

___ 20. $\frac{4(20 + 12) \div (4 - 3)}{1}$

a. 29

b. 80

c. 128

d. 92

___ 21. $3^3 \cdot 32 + 12 \div 4$

a. 297

b. 868

c. 437

d. 867

___ 22. $-9 + 6$

a. 15

b. -3

c. -15

d. 3

___ 23. $-4.8 - (-4.9) + 5.7$

a. -4

b. -5.8

c. 5.8

d. -15.4

___ 24. $-\frac{1}{8} - \frac{2}{7}$

a. $\frac{1}{5}$

b. $-\frac{23}{56}$

c. $\frac{23}{56}$

d. $-\frac{1}{8}$

___ 25. $\begin{bmatrix} 5.9 & -18 \\ 18 & -4.2 \end{bmatrix} + \begin{bmatrix} -3.7 & 3 \\ -9 & 3.9 \end{bmatrix}$

a. $\begin{bmatrix} 2.2 & -15 \\ 9 & -0.3 \end{bmatrix}$

b. $\begin{bmatrix} -2.2 & 27 \\ 0.09 & 0.7 \end{bmatrix}$

c. $\begin{bmatrix} 23.9 & -21.7 \\ 13.8 & -13.2 \end{bmatrix}$

d. $\begin{bmatrix} 23.9 & -21 \\ 27 & -8.1 \end{bmatrix}$

___ 26. $|18 - 6|$

a. 13

b. -13

c. 12

d. -12

___ 27. $-6.5(-4.9)$

a. -16.25

b. -31.85

c. -12.25

d. 31.85

___ 28. $(-2)^5$

a. -32

b. 16

c. -10

d. 32

___ 29. -5^4

a. 20

b. 125

c. -625

d. 625

___ 30. $\frac{1}{2}(-12m + 38)$

a. $-6m + 38$

b. $-24m + 19$

c. $-6m + 76$

d. $-6m + 19$

___ 31. $(-5 - c)(-1)$

a. $-5 + c$

b. $5 + c$

c. $5 - c$

d. $-5 - c$

___ 32. $1.7m^2 + 6.5m - 4n + 2.5m^2 - n$

a. $4.2m^2 + 1.5n$

b. $4.2m^2 - 1.5n$

c. $1.5m^2 - 4.2n$

d. $1.5m^2 + 4.2n$

___ 33. $13[6^2 \div (5^2 - 4^2) + 9]$

a. 585

b. 169

c. 26

d. 181

___ 34. $3.7 - 1.8 - 3.67 + 4.4 - 1.34$
 a. -7.51 b. -1.29 c. 1.29 d. 8.63

___ 35. $\frac{(-9)(-8)}{(-2)}$
 a. 36 b. -72 c. 72 d. -36

___ 36. $\frac{1}{3}n(-6 + 27m - 51p)$
 a. $-18n + 81mn - 153np$ c. $-2n + 9mn - 17np$
 b. $-2n + 9m - 17p$ d. $-2n - 9mn + 17np$

___ 37. Evaluate the formula $V = \frac{Bh}{3}$ for $B = 9 \text{ in.}^2$ and $h = 32 \text{ in.}$
 a. 288 in.^3 b. 9.6 in.^3 c. 32 in.^3 d. 96 in.^3

- ___ 38. Name the set(s) of numbers to which 1.68 belongs.
 a. rational numbers
 b. natural numbers, whole numbers, integers, rational numbers
 c. rational numbers, irrational numbers
 d. none of the above

- ___ 39. Name the set(s) of numbers to which -5 belongs.
 a. whole numbers, natural numbers, integers
 b. rational numbers
 c. whole numbers, integers, rational numbers
 d. integers, rational numbers

- ___ 40. Which set of numbers is the most reasonable to describe the number of desks in a classroom?
 a. whole numbers c. rational numbers
 b. irrational numbers d. integers

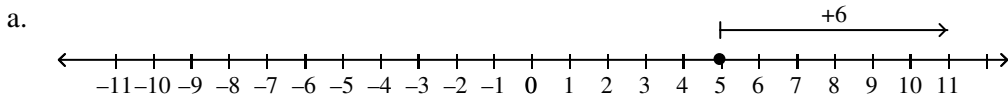
- ___ 41. Order the numbers from least to greatest.
 $3\frac{39}{40}, 3\frac{19}{20}, 3\frac{1}{2}$
 a. $3\frac{39}{40}, 3\frac{1}{2}, 3\frac{19}{20}$ c. $3\frac{19}{20}, 3\frac{39}{40}, 3\frac{1}{2}$
 b. $3\frac{1}{2}, 3\frac{19}{20}, 3\frac{39}{40}$ d. $3\frac{1}{2}, 3\frac{39}{40}, 3\frac{19}{20}$

- ___ 42. The opposite of a negative number is ___ negative.
 a. always b. sometimes c. never

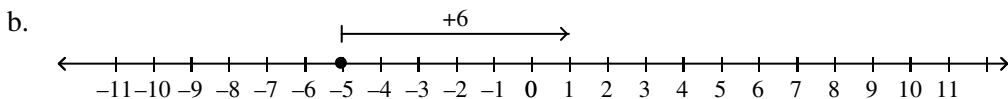
- ___ 43. Write $-\frac{1}{6}, \frac{5}{3}, -\frac{5}{6}$ in order from least to greatest.
 a. $-\frac{1}{6}, -\frac{5}{6}, \frac{5}{3}$ b. $-\frac{1}{6}, \frac{5}{3}, -\frac{5}{6}$ c. $\frac{5}{3}, -\frac{5}{6}, -\frac{1}{6}$ d. $-\frac{5}{6}, -\frac{1}{6}, \frac{5}{3}$

- ___ 44. $|-2.8|$
 a. 2.8 b. -2.8

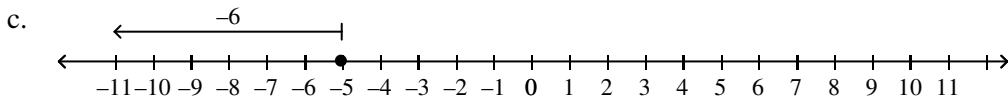
- ___ 45. Which number line model can you use to simplify $-5 + 6$?



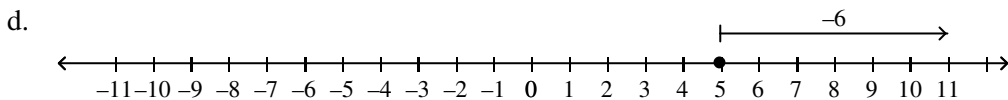
$-5 + 6 = 11$



$-5 + 6 = 1$



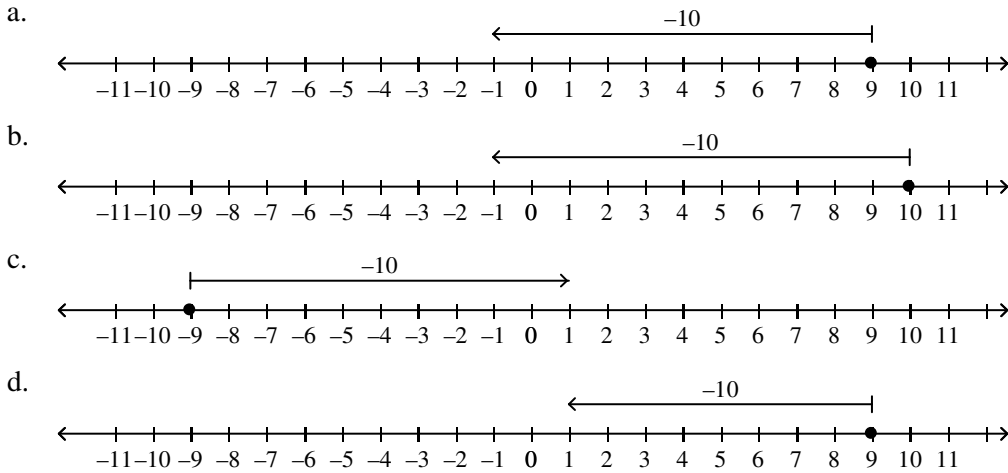
$-5 + 6 = -11$



$-5 + 6 = 11$

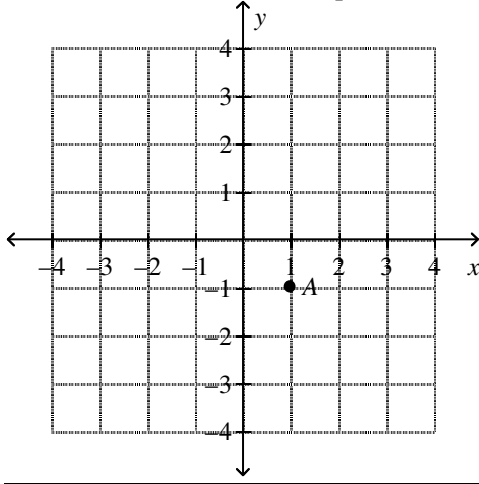
- ___ 46. A mountain climber ascends a mountain to its peak. The peak is $12,740 \text{ ft}$ above sea level. The climber then descends 200 ft to meet a fellow climber. Find the climber's elevation above sea level after meeting the other climber.
 a. $12,540 \text{ ft}$ b. $-12,540 \text{ ft}$ c. $10,740 \text{ ft}$ d. $12,940 \text{ ft}$

- ___ 47. Evaluate $-x + 2.7$ for $x = 0.9$.
 a. -1.8 b. -3.6 c. 1.8 d. 3.6
- ___ 48. The temperature on a summer afternoon is 85°F . Define a variable and write an expression to find the temperature after it changes. Then evaluate your expression for a decrease of 11 degrees Fahrenheit.
 a. $11 + c$; $11 + (-85) = 96$ c. $11 - c$; $11 - (-85) = 74$
 b. $85 + c$; $85 + (-11) = 74$ d. $85 - c$; $85 - (-11) = 96$
- ___ 49. Simplify $9 - 10$ using a number line.



- ___ 50. Evaluate $b - 2a - c$ for $a = -7$, $b = 3$, and $c = -7$.
 a. 24 b. 3 c. 10 d. -18
- ___ 51. The closing price of a share of stock in Company XYZ is $\$25.69$ on Thursday. If the change from the closing price on Wednesday is $-\$0.75$, find the closing price on Wednesday.
 a. $\$26.44$ b. $\$24.94$ c. $\$25.75$ d. $\$25.06$
- ___ 52. You made two deposits to your bank account this month. One deposit was $\$17.92$, and the second deposit was $\$15.33$. Your balance at the end of the month is $\$72.31$, and you made no withdrawals. Write and evaluate an expression for your balance at the beginning of the month.
 a. $\$72.31 + (\$17.92 - \$15.33)$; $\$74.90$
 b. $\$72.31 - \$17.92 - \$15.33$; $\$39.06$
 c. $\$72.31 + \$17.92 + \$15.33$; $\$105.56$
 d. $\$72.31 - (\$17.92 - \$15.33)$; $\$69.72$
- ___ 53. Evaluate $x(-y + z)$ for $x = 3$, $y = 3$, and $z = 1$.
 a. -6 b. 10 c. 12 d. -8
- ___ 54. The expression $-5.5\left(\frac{a}{1000}\right)$ can be used to calculate the change in temperature in degrees Fahrenheit for an increase in altitude a , measured in feet. A plane starts on the ground and then rises 23,000 ft. Find the change in temperature at the altitude of the plane.
 a. 126.5 degrees c. -125 degrees
 b. -126.5 degrees d. 125 degrees
- ___ 55. The product of two negative numbers is ___ positive.
 a. always b. sometimes c. never
- ___ 56. $-12 \div (-2)$
 a. 24 b. -6 c. -24 d. 6
- ___ 57. Evaluate $7m + 2n - \frac{8p}{n}$ for $m = -4$, $n = 2$, and $p = 1.5$.
 a. -10 b. -19 c. -30 d. -22
- ___ 58. If a is a negative number, then $a\left(\frac{1}{a}\right)$ is ___ equal to -1 .
 a. always b. sometimes c. never
- ___ 59. Evaluate $\frac{a}{b}$ for $a = -6$ and $b = -2$.
 a. 12 b. 3 c. $\frac{4}{3}$ d. -12
- ___ 60. Simplify $7(499)$ using the Distributive Property.
 a. 3500 b. 3493 c. 3514 d. 3486
- ___ 61. Use the Distributive Property to find the price of 7 CDs that cost $\$14.99$ each.
 a. $\$105.00$ b. $\$98.00$ c. $\$104.93$ d. $\$105.70$
- ___ 62. For every real number x , y , and z , the statement $(x - y)z = xz - yz$ is ___ true.
 a. always b. sometimes c. never

73. What are the coordinates of point A?



- a. $(-1, 1)$ b. $(1, 1)$ c. $(-1, -1)$ d. $(1, -1)$

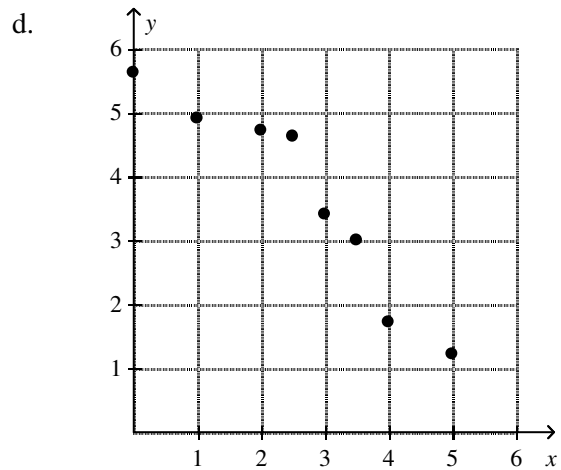
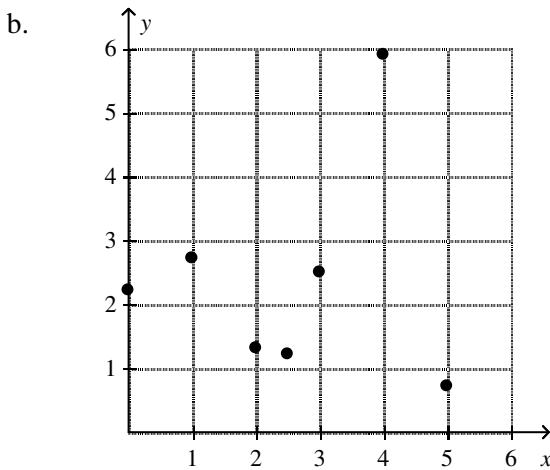
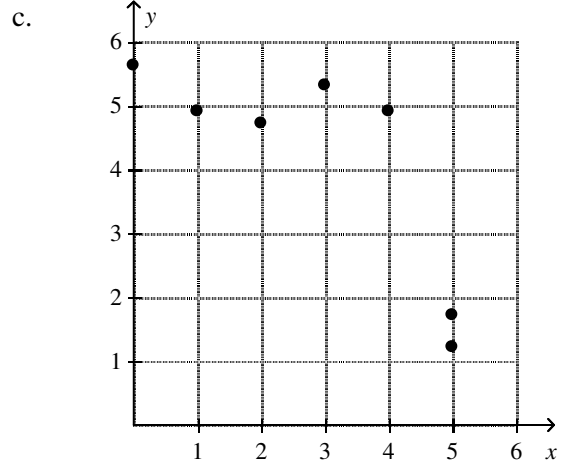
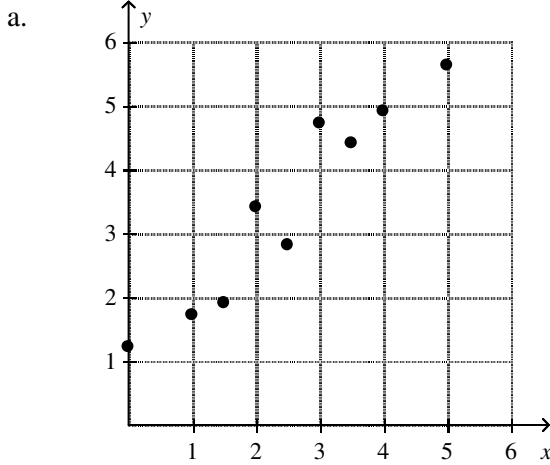
74. In which quadrant or on which axis would you find the point $(-2, -4)$?

- a. Quadrant III b. Quadrant II c. Quadrant IV d. y-axis

75. The point (a, b) is _____ in Quadrant II when $a < 0$.

- a. always b. sometimes c. never

76. Which of the scatter plots shows a positive correlation?

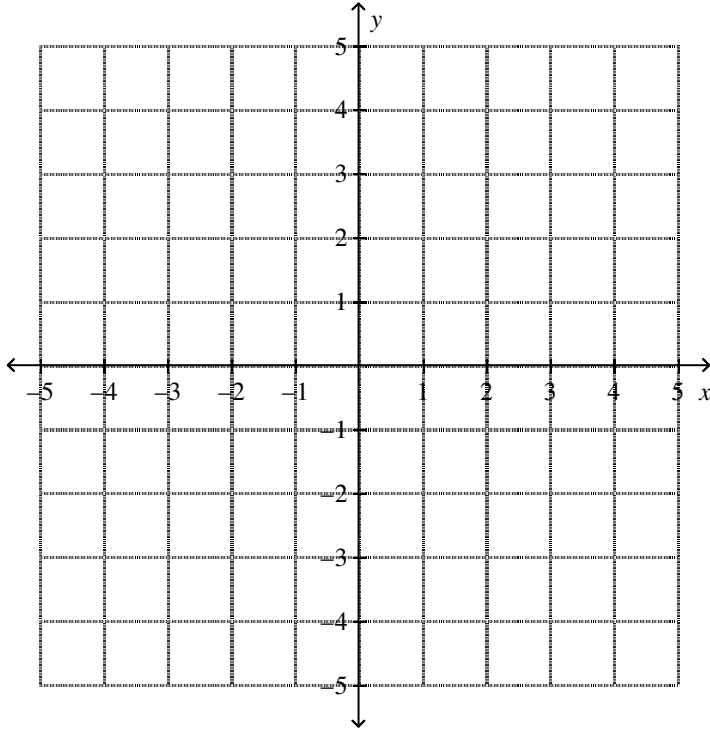


77. Write the coordinates of the point that is 9 units to the left of the y-axis and 6 units above the x-axis.

- a. $(-9, 6)$ b. $(9, 6)$ c. $(-9, -6)$ d. $(6, -9)$

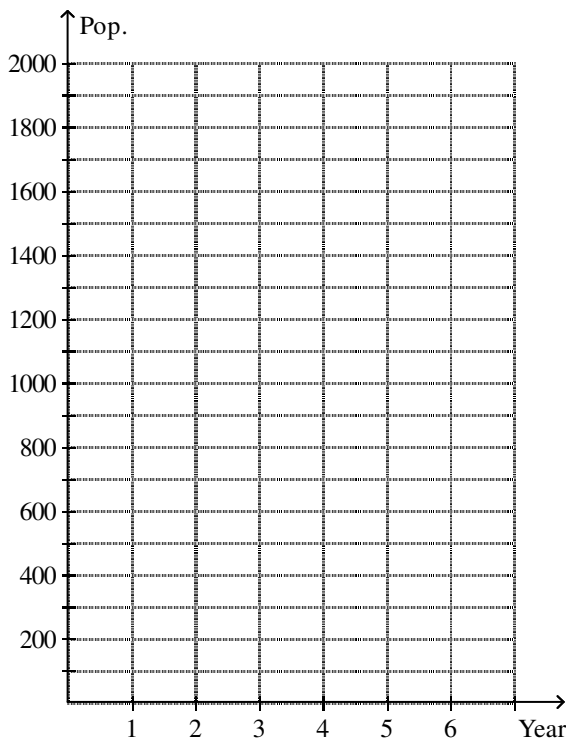
Short Answer

78. a. Write an equation to show how the amount of money in a jar of nickels is related to the number of nickels in the jar.
 b. If the jar contains 40 nickels, how much money is this?
79. Graph the points on the same coordinate plane.
 $A(4, 4)$, $B(3, -1)$, $C(-4, -1)$



80. The population of an endangered animal species has been increasing. Make a scatter plot using the data given in the table.

Year	Population
1	230
2	670
3	620
4	840
5	1400
6	1580



Essay

81. a. Simplify the following expressions.

$$(-1)^1, (-1)^2, (-1)^3, (-1)^4, (-1)^5$$

b. What is the sign of the final answer when the exponent is odd? When the exponent is even?

c. Use your answer from part (b) to simplify $(-1)^{19}$.

82. Justify each step.

a. $7 + 2(x - 3) + 5x = 7 + 2x - 6 + 5x$

b. $= 7 + 2x + (-6) + 5x$

c. $= 7 + (-6) + 2x + 5x$

d. $= 7 + (-6) + (2 + 5)x$

e. $= 7 + (-6) + 7x$

f. $= 1 + 7x$

g. $= 7x + 1$

83. Simplify the expression. Justify each step.

$$13x - 4 + 9x$$

Other

84. Is the statement below *true* or *false*? If the statement is false, give a counterexample.

All real numbers are rational.

85. Is the following statement *true* or *false* for all values of a and b ? If false, give a counterexample.

$$|a + b| > |b|$$