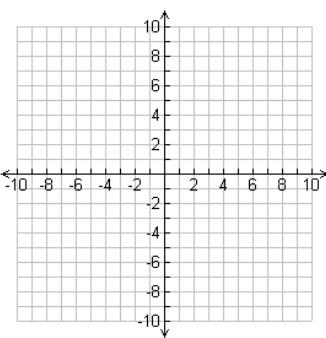
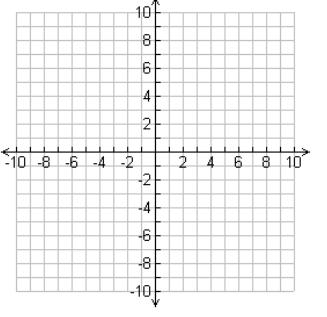


Prerequisite Skills for Algebra 1

- You should be able to do these problems without using a calculator.
- If you have questions, you can search the *italicized phrase(s)* in khanacademy.org.
- See Additional Problems on the following pages for more practice of each type.

<p>Simplify.</p> $\frac{5^3 - -17 + 2}{(4+2^2) \cdot 3}$ <p>Keywords: <i>order of operations</i> Additional Problems</p>	<p>Simplify.</p> <p>If $a = -2$ and $b = \frac{4}{3}$, find the value of the expression below:</p> $\frac{1}{6}a^2 + \frac{7}{5}b$ <p>Keywords: <i>simplifying expressions</i> Additional Problems</p>	<p>Rewrite the fraction in its simplest form.</p> $\frac{4}{\left(\frac{3}{7}\right)}$ <p>Keywords: <i>simplifying complex fractions</i> Additional Problems</p>
<p>Solve for x: $2x + 9 = 5x - 3$</p> <p>Keywords: <i>solving multi-step equations</i> Additional Problems</p>	<p>Graph on a number line.</p> $2x - 5 \leq -1$ <p>Keywords: <i>graphing linear inequalities</i> Additional Problems</p>	<p>Simplify the following expressions.</p> <p>a.) $9x^2y^3 \cdot 2xy^{-1}$ $\frac{-12m^4n^2}{3mn^2}$</p> <p>b.) $m - (9m + 1) + 17$ $12 + 4m - 3(4m - 2)$</p> <p>Keywords: <i>simplifying expressions</i> Additional Problems</p>
<p>Plot the four points on the coordinate axes: $(-2, -1)$, $(5, 0)$, $(4, 7)$, $(-3, 6)$</p>  <p>Keywords: <i>plotting points</i> Additional Problems</p>	<p>Graph the following line:</p> $y = \frac{4}{3}x - 2$  <p>Keywords: <i>graphing lines</i> Additional Problems</p>	<p>Circle the expression that is NOT equivalent to the others.</p> <p>$4(7 - 2m) - 10$ $-5m - 11 - 3m + 29$ $m - (9m + 1) + 17$ $12 + 4m - 3(4m - 2)$</p> <p>Keywords: <i>simplifying expressions</i> Additional Problems</p>
<p>Write 0.000042 in scientific notation.</p> <p>Keywords: <i>scientific notation</i> Additional Problems</p>	<p>What is the slope of the line through points $(2, -1)$ and $(-3, 1)$?</p> <p>Keywords: <i>finding slope</i> Additional Problems</p>	<p>Write and solve: Four subtracted from nine times a number is 23.</p> <p>Keywords: <i>writing expressions</i> Additional Problems</p>

Order of Operations

Name _____

Evaluate each expression.

1) $(2 \times 2 \times 2) \div (1 + 3)$

2) $6 - (5 - (2 - 2)) + 3$

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

4) $9 \div (5 - 2) - 3 \div 3$

5) $3((5 + 1) \times 3 - 4)$

6) $5 \times 16 \div 4 + 5 + 6$

Answers to

1) 2
5) 42

2) 4
6) 31

3) 3

4) 2

Simplifying Expressions

Name _____

Evaluate each using the values given.

1) $y + (x - x)^2 + y$; use $x = 5$, and $y = 2$

2) $x^2 + y - x^3$; use $x = 1$, and $y = 1$

3) $q^2 - (p - r) - p$; use $p = 4$, $q = 5$, and $r = 2$

4) $(m(p - p) + 6) \div 6$; use $m = 2$, and $p = 1$

5) $5 - (y^2 - x \div 5)$; use $x = 5$, and $y = 2$

6) $(h + j - j)(h - j)$; use $h = 6$, and $j = 4$

Answers to

1) 4

5) 2

2) 1

6) 12

3) 19

4) 1

Simplifying Complex Fractions

Name _____

Simplify each expression.

1)
$$\frac{\frac{25}{4}}{\frac{4}{25}}$$

2)
$$\frac{\frac{1}{2}}{\frac{1}{4}}$$

3)
$$\frac{\frac{3}{4}}{\frac{1}{4}}$$

4)
$$\frac{\frac{4}{3}}{\frac{1}{4}}$$

5)
$$\frac{\frac{4}{9}}{\frac{2}{3}}$$

6)
$$\frac{\frac{3}{25}}{\frac{1}{2}}$$

Answers to

$$1) \frac{625}{16}$$

$$2) 2$$

$$3) 3$$

$$4) \frac{16}{3}$$

$$5) \frac{2}{3}$$

$$6) \frac{6}{25}$$

Solving Multi-Step Equations

Name _____

Solve each equation.

$$1) \frac{5+x}{9} = 1$$

$$2) 5(a+4) = 100$$

$$3) 4 + 5r = 79$$

$$4) 2(-1+m) = 12$$

$$5) \frac{p-2}{3} = -7$$

$$6) -65 = 5(-4+b)$$

Answers to

1) $\{4\}$
5) $\{-19\}$

2) $\{16\}$
6) $\{-9\}$

3) $\{15\}$

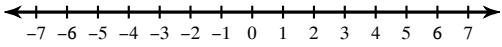
4) $\{7\}$

Graphing Inequalities

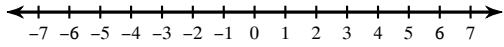
Name _____

Draw a graph for each inequality.

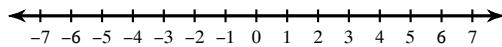
1) $m > 5$



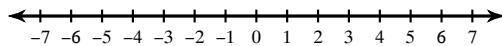
2) $-n > -4$



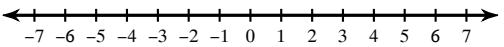
3) $x < 0$



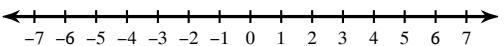
5) $n \leq 4$



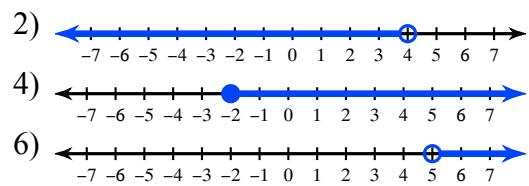
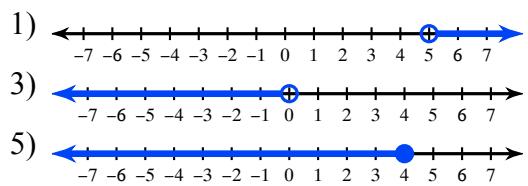
4) $m \geq -2$



6) $5 < k$



Answers to



Simplifying Expressions

Name _____

Simplify each expression.

1) $\frac{100v^3}{20v^2}$

2) $\frac{72r^2}{27r}$

3) $\frac{6x^2}{8x^3}$

4) $\frac{35x^4}{35x^3}$

5) $\frac{21n^2}{42n}$

6) $-\frac{12x}{24x^2}$

7) $\frac{27k^4}{90k^5}$

8) $\frac{21a}{70a^3}$

9) $\frac{2x}{7} \div \frac{8x}{8}$

10) $\frac{4}{8} \div \frac{10r}{6r}$

11) $\frac{8}{8p} \div \frac{6}{6p^3}$

12) $\frac{5x}{9} \div \frac{10}{8x}$

13) $\frac{6x}{10} \div \frac{9x}{2x}$

14) $\frac{5}{6n} \div \frac{2n}{8}$

15) $\frac{3}{2n} \div \frac{4n^3}{4}$

16) $\frac{2}{3n} \div \frac{4}{5n^3}$

Answers to

1) $5v$

2) $\frac{8r}{3}$

5) $\frac{n}{2}$

9) $\frac{2}{7}$

13) $\frac{2x}{15}$

3) $\frac{3}{4x}$

6) $-\frac{1}{2x}$

10) $\frac{3}{10}$

14) $\frac{10}{3n^2}$

7) $\frac{3}{10k}$

11) p^2

15) $\frac{3}{2n^4}$

4) x

8) $\frac{3}{10a^2}$

12) $\frac{4x^2}{9}$

16) $\frac{5n^2}{6}$

Plotting Points

Name _____

Plot the points.

X	Y	X	Y	X	Y
96	76	21	27	73	59
5	14	4	18	81	60
84	64	30	30	64	51
36	35				

X	Y	X	Y
100	20	400	60
200	50	1,000	80
700	80	1,000	80
900	80	600	80
600	80	800	80

X	Y	X	Y
6	3,400	2	6,300
10	1,500	5	4,000
6	3,600	9	1,100
5	4,400	6	3,200
3	5,800	3	5,700

X	Y	X	Y	X	Y
0.1	200	0.7	800	1	800
0.3	600	0.9	800	0.6	800
0.6	900	0.8	900	0.2	400
0.9	900				

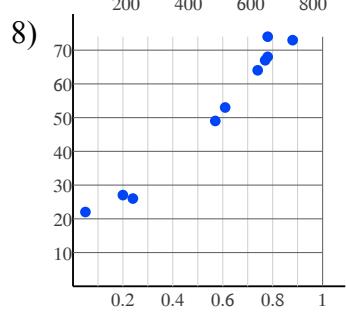
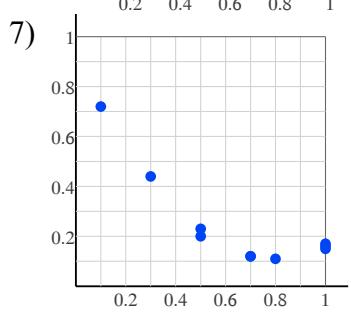
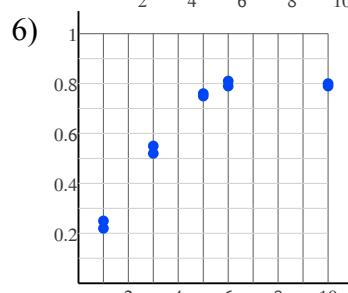
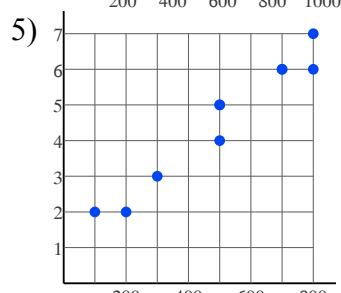
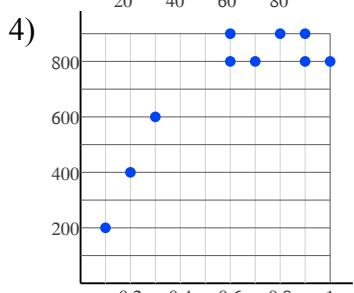
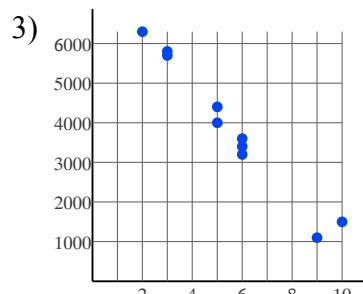
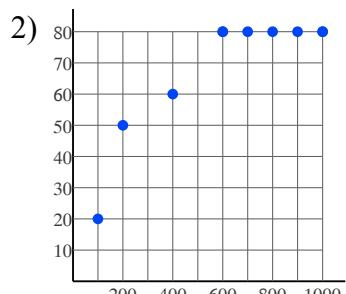
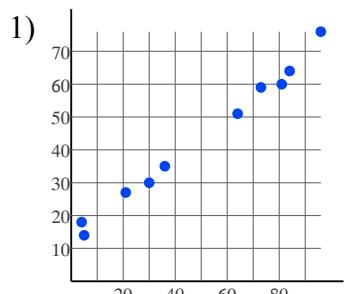
X	Y	X	Y	X	Y
700	6	100	2	700	6
500	5	800	6	800	7
500	4	200	2	500	5
300	3				

X	Y	X	Y	X	Y
1	0.22	1	0.25	6	0.79
3	0.55	3	0.52	10	0.79
6	0.81	5	0.76	5	0.75
10	0.8				

X	Y	X	Y
0.1	0.72	0.5	0.23
0.3	0.44	1	0.15
0.7	0.12	1	0.17
1	0.16	0.5	0.2
0.8	0.11	0.7	0.12

X	Y	X	Y	X	Y
0.2	27	0.05	22	0.74	64
0.78	68	0.78	74	0.24	26
0.77	67	0.88	73	0.57	49
0.61	53				

Answers to

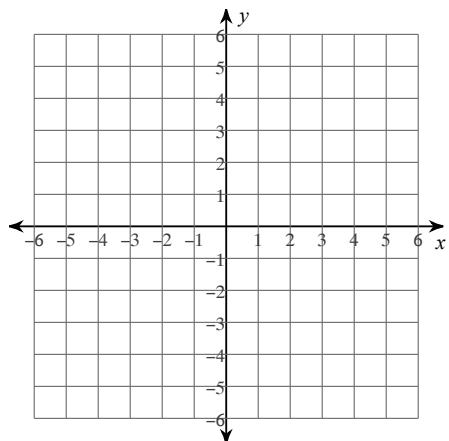


Graphing Lines

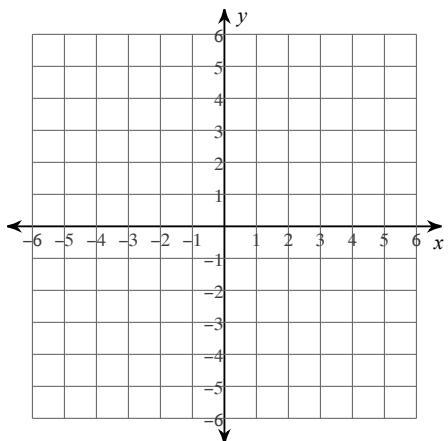
Name _____

Sketch the graph of each line.

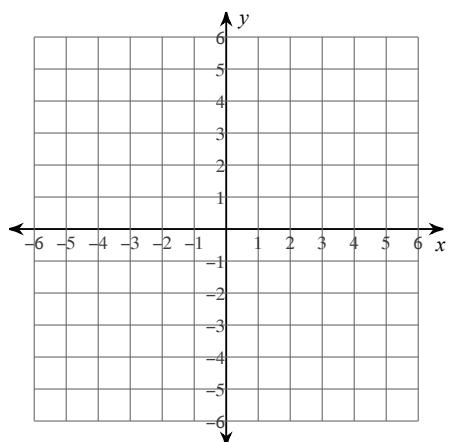
1) $x - 5y = 10$



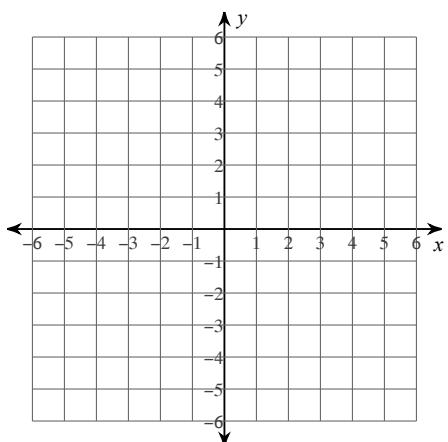
2) $5x - 4y = -20$



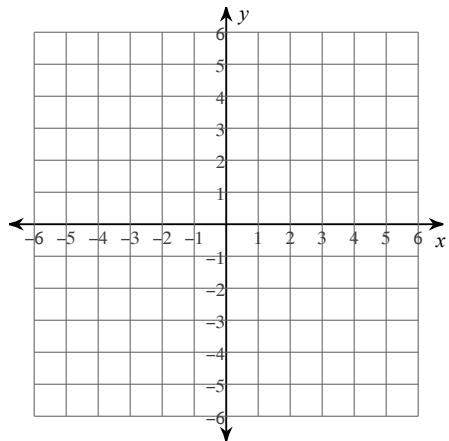
3) $4x + 5y = -10$



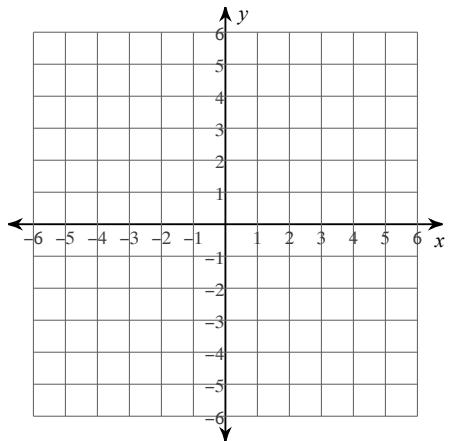
4) $4x + 5y = -5$



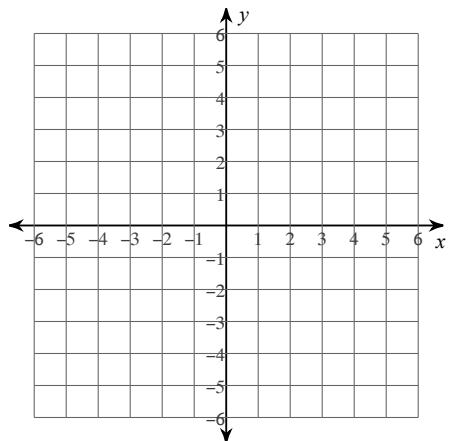
$$5) \quad y = \frac{2}{5}x + 3$$



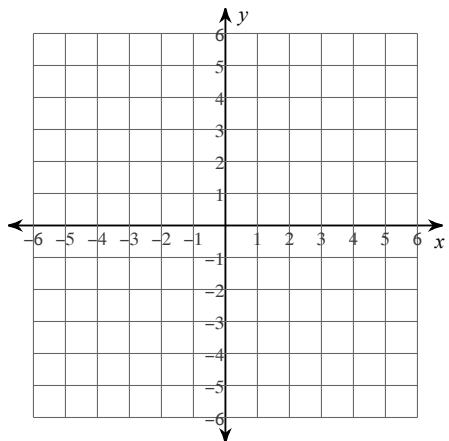
$$6) \quad y = -\frac{5}{3}x - 5$$



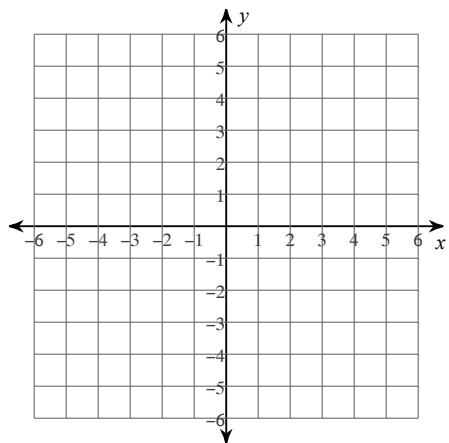
$$7) \quad y = \frac{2}{3}x + 2$$



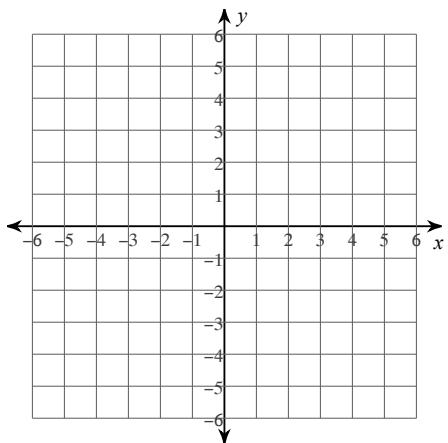
$$8) \quad y = -\frac{9}{2}x + 5$$



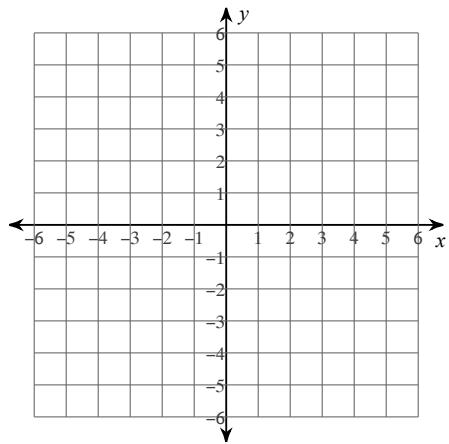
$$9) \quad 2 + 2y = \frac{4}{3}x$$



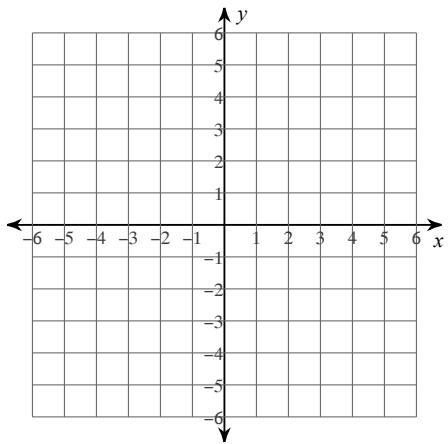
$$10) \quad -\frac{1}{4}y + \frac{1}{8}x = -1$$



$$11) \quad 0 = -3 - y$$

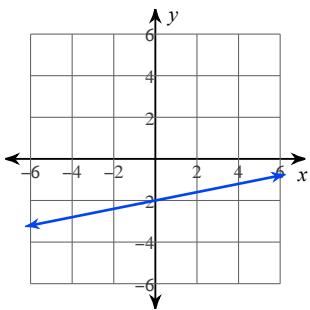


$$12) \quad 0 = -2 - 3x - 2y$$

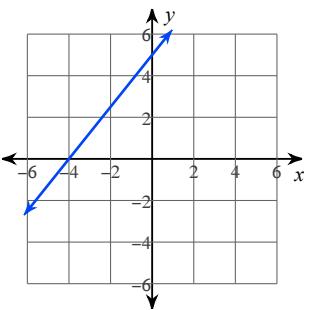


Answers to

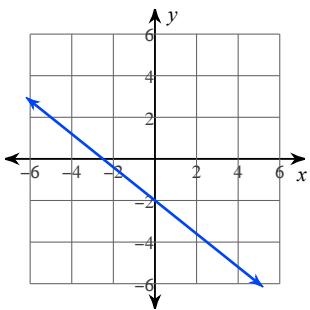
1)



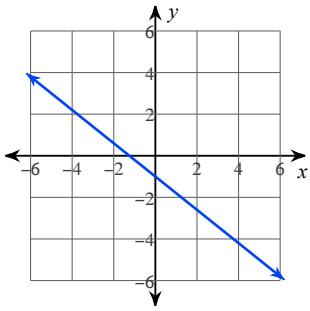
2)



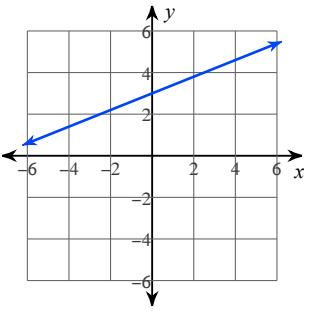
3)



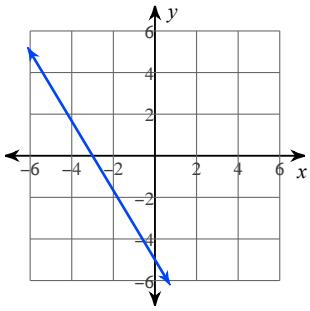
4)



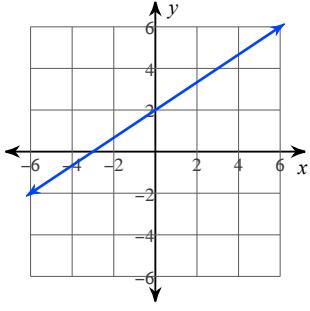
5)



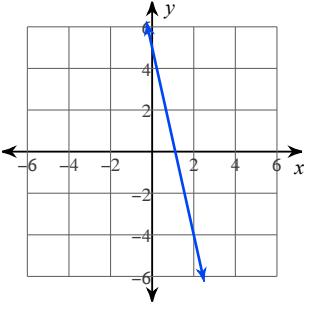
6)



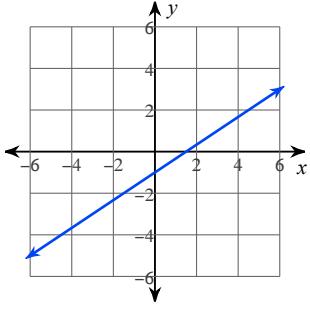
7)



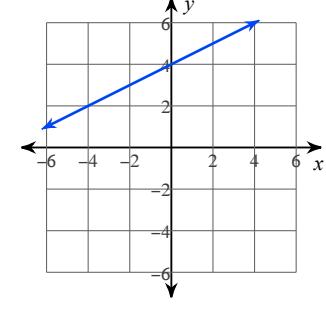
8)



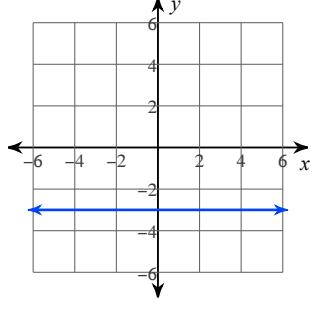
9)



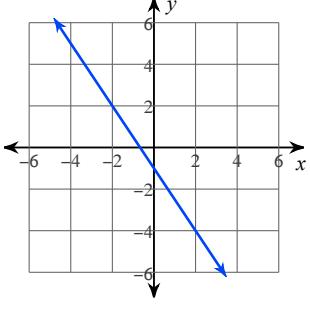
10)



11)



12)



Simplifying Expressions C

Name _____

Simplify each expression.

$$1) (n + 3n^2) + (5n + 4n^2)$$

$$2) (6x + 6x^2) - (8x^2 - 7x)$$

$$3) (4m^3 + 6m^2) - (5m^3 + 4m^2)$$

$$4) (3b - 2b^3) + (3b - 4b^3)$$

$$5) (3 - 6x) - (2x + 5)$$

$$6) (p - 6p^3) + (5p - 7p^3)$$

Answers to

1) $7n^2 + 6n$
5) $-8x - 2$

2) $-2x^2 + 13x$
6) $-13p^3 + 6p$

3) $-m^3 + 2m^2$

4) $-6b^3 + 6b$

Scientific Notation

Name _____

Write each number in scientific notation.

1) 30

2) 9.72

3) 107

4) 4200

5) 0.00712

6) 52

7) 500000

8) 200000

Answers to

$$1) 3 \times 10^1$$

$$5) 7.12 \times 10^{-3}$$

$$2) 9.72 \times 10^0$$

$$6) 5.2 \times 10^1$$

$$3) 1.07 \times 10^2$$

$$7) 5 \times 10^5$$

$$4) 4.2 \times 10^3$$

$$8) 2 \times 10^5$$

Finding Slope

Name _____

Find the slope of the line through each pair of points.

1) $(11, -16), (13, -20)$

2) $(4, 9), (3, 7)$

3) $(9, 17), (5, 17)$

4) $(15, -6), (12, 10)$

Find the slope of each line.

5) $y = \frac{4}{5}x - 2$

6) $y = x + 1$

7) $y = -5x - 3$

8) $y = -8x + 5$

Answers to

$$1) -2$$

$$2) 2$$

$$3) 0$$

$$4) -\frac{16}{3}$$

$$5) \frac{4}{5}$$

$$6) 1$$

$$7) -5$$

$$8) -8$$

Writing Expressions

Name _____

Write each as an algebraic expression.

1) the product of p and 8

2) 12 decreased by 11

3) 2 increased by n

4) 11 increased by 12

5) 8 squared

6) 4 cubed

7) the product of x and 5 is 25

8) the difference of n and 7

9) n cubed is equal to 50

10) the difference of n and 15

11) x squared

12) the sum of t and 11 is equal to 30

Answers to

$$1) p \cdot 8$$

$$5) 8^2$$

$$9) n^3 = 50$$

$$2) 12 - 11$$

$$6) 4^3$$

$$10) n - 15$$

$$3) 2 + n$$

$$7) x \cdot 5 = 25$$

$$11) x^2$$

$$4) 11 + 12$$

$$8) n - 7$$

$$12) t + 11 = 30$$