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8Xavier Summer Work

Variables and Expressions		
Write a verbal expression for each algebraic expression.		
$23f$	$5m^2 + 2c^3$	$\dfrac{4n-1}{7}$
Write an algebraic expression for each verbal expression.		
the difference of 10 and u	15 decreased by twice a number	two fifths the cube of a number
Order of Operations		
Evaluate each expression.		
$6^2 + 3 \cdot 7 - 9$	$2[5^2 + (36 \div 6)]$	$\dfrac{(2 \cdot 5)10+4}{3^2-5}$
Evaluate each expression if a = 12, b = 9, and c = 4.		
$b^2 + 2a - c^2$	$2(a-b)^2 - 5c$	$\dfrac{b^2 - 2c^2}{a+c-b}$
The length of a rectangle is 3n + 2 and its width is n - 1. The perimeter of the rectangle is twice the sum of its length and its width.		
Write an expression that represents the perimeter of the rectangle.	Find the perimeter of the rectangle when n = 4 inches.	

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Relations		
Use the relation to answer the following problems: {(4,3), (-2,4), (3, -2), (-2, 1)}		
Create a table:	Create a mapping:	Create a graph:
domain:		range:

Describe what is happening in each graph.

The graph below represents the height of a tsunami as it travels across an ocean.	The graph below represents the questions answered by a student taking an exam.

Height

Time

Number of Questions Answered

Time

Functions		
Determine whether each relation is a function.		

X   Y

−3		0
−2		3
1		−2
5		

x	y
1	5
−4	−3
7	6
1	−2

y

O   x

{(1, 4), (2, −2), (3, −6), (−6, 3), (−3, 6)}

x = -2

y = 2

If f(x) = 2x − 6 and g(x) = x − 2x², find each value.

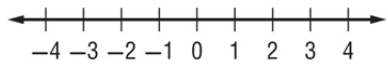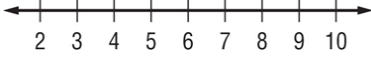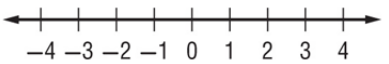| f(2)	g(-1)	f(7) − 9

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Writing Equations

Translate each sentence into an equation.

Fifty-three plus four times b is as much as 21.	The sum of five times h and twice g is equal to 23.	One fourth the sum of r and ten is identical to r minus 4.

Solving One-Step Equations

Solve each equation.

$d - 8 = 17$	$-16 = m + 71$	$f + (-3) = -9$
$180 = -15m$	$\frac{y}{9} = 8$	$\frac{g}{27} = \frac{2}{9}$

Write an equation for each sentence. Then solve the equation.

Negative nine times a number equals −117.	2.7 times a number equals 8.37.	Five sixths of a number is $\frac{5}{9}$.

Solving Multi-Step Equations

Solve each equation.

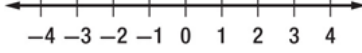| $-12n - 19 = 77$	$2.5g + 0.45 = 0.95$	$\frac{x}{5} + 6 = 2$
$\frac{r+13}{12} = 1$	$\frac{d}{-4} + 3 = 15$	$8 - \frac{3}{8}k = -4$
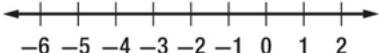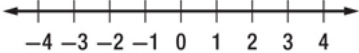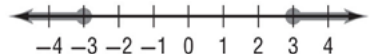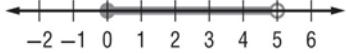
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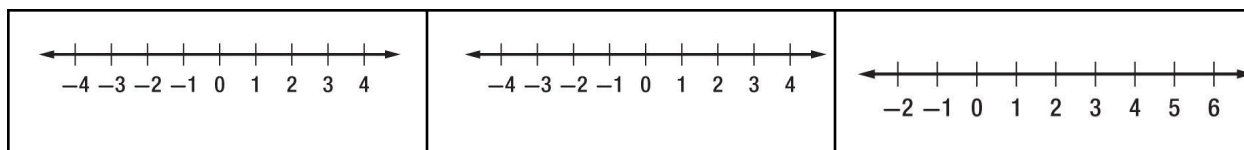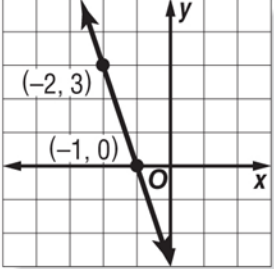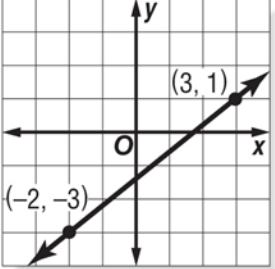|		
Solving Equations with the Variable on Each Side		
Solve each equation. Check your solution.		
$5x - 3 = 13 - 3x$	$6 + 2(3j - 2) = 4(1 + j)$	$3(d - 8) - 5 = 9(d + 2) + 1$
$1.4f + 1.1 = 8.3 - f$	$\frac{5}{2}t - 4 = 3 + \frac{3}{2}t$	$\frac{1}{3}(n + 1) = \frac{1}{6}(3n - 5)$
Literal Equations and Dimensional Analysis		
Solve each equation or formula for the variable indicated.		
$d = rt$, for r	$6w - y = 2z$, for w	$\frac{3b - 4}{2} = c$, for b

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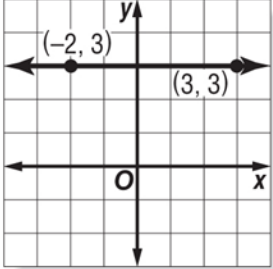
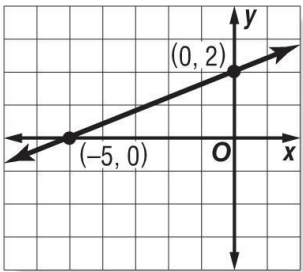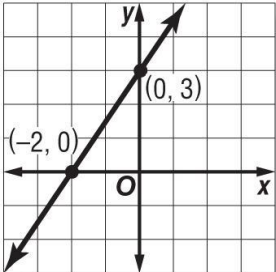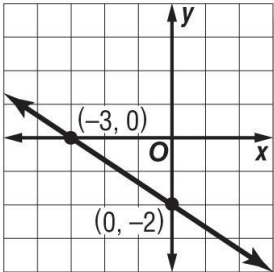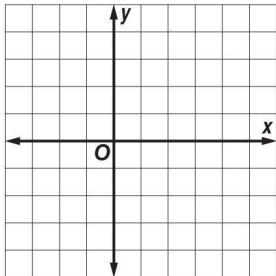| Solving Inequalities by Addition and Subtraction		
Solve each inequality, and graph the solution on the number line.		
$n - 2.5 \geq -5$	$3x + 8 > 4x$	$\frac{1}{2} \leq c - \frac{3}{4}$
$-4\ -3\ -2\ -1\ 0\ 1\ 2\ 3\ 4$	$2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ 10$	$-4\ -3\ -2\ -1\ 0\ 1\ 2\ 3\ 4$
Define a variable, write an inequality, and solve each problem.		
The sum of a number and 17 is no less than 26.	Twice a number minus 4 is less than three times the number.	Twelve is at most a number decreased by 7.
Solving Inequalities by Multiplication and Division		
Solve each inequality.		
$13p > 39$	$-13h \leq 52$	$\frac{2}{3}n > -12$
$-\frac{5}{9}t < 25$	$0.1x \geq -4$	$3 > -15y$
Define a variable, write an inequality, and solve each problem.		
Negative three times a number is at least 57.	Two thirds of a number is no more than –10.	Negative three fifths of a number is less than –6.

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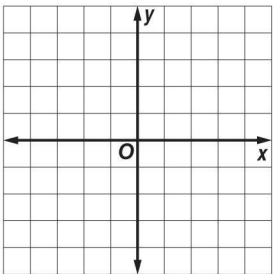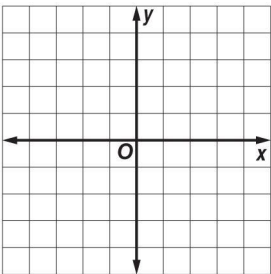
Solve each inequality.

$-5 - \frac{t}{5} \geq -9$	$\frac{3f - 10}{5} > 7$	$5n - 3(n - 6) \geq 0$

Define a variable, write an inequality, and solve each problem.

A number is less than one fourth the sum of three times the number and four.	Two times the sum of a number and four is no more than three times the sum of the number and seven decreased by four.	The area of a triangular garden can be no more than 120 square feet. The base of the triangle is 16 feet. What is the height of the triangle?

Lesson 5.4 Solving Compound Inequalities

Graph the solution set of each compound inequality.

$-4 \leq n \leq 1$	$x > 0$ or $x < 3$	$g < -3$ or $g \geq 4$

Write a compound inequality for each graph.

Solve each compound inequality. Then graph the solution set.

$k - 3 < -7$ or $k + 5 \geq 8$	$5 < 3h + 2 \leq 11$	$2c - 4 > -6$ and $3c + 1 < 13$

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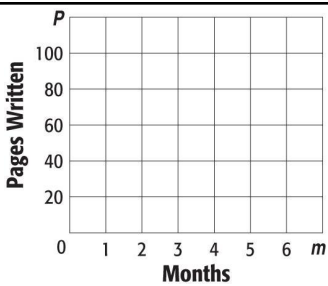
Rate of Change and Slope

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

 | |

(6, 3) and (7, -4)	(5, 9) and (3, 9)	(-2, 5) and (-2, 6)

Find the value of r so the line that passes through each pair of points has the given slope.
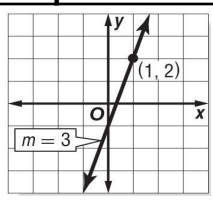
(-2, r) and (6,7) m = ½	(-7, 2) and (-8, r) m = -5

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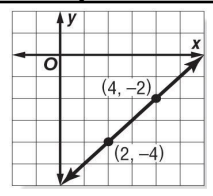| Graphing Equations		
Write an equation of a line in slope-intercept form with the given slope and y-intercept.		
slope: ¼ y-intercept: 3	slope: 0 y-intercept: -7	slope: -1 y-intercept: 0
Write an equation in slope-intercept form for each graph shown.		
Graph each equation.		
$y = -\frac{1}{2}x + 2$	$3y = 2x - 6$	$6x + 3y = 6$
Carla has already written 10 pages of a novel. She plans to write 15 additional pages per month until she is finished.		
Write an equation to find the total number of pages P written after any number of months, m.	Graph the equation.	Find the total number of pages written after 5 months.

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Pages Written vs Months graph (P axis: 20, 40, 60, 80, 100; m axis: 0, 1, 2, 3, 4, 5, 6)

Writing Equations in Slope-Intercept Form		
Write an equation of the line that passes through the given point and has the given slope.		
Graph with point (1, 2) and $m = 3$	(-5, 4), slope: -3	(6, 0), slope: 1/2
Write an equation of the line that passes through each pair of points.		
Graph with points (4, −2) and (2, −4)	(-2, -3) and (4, 5)	(-3, 0) and (1, -6)

Exponents		
Multiply the monomials and simplify.		
$(-7x^2)(x^4)$	$\frac{1}{3}(2a^3b)(6b^3)$	$(-4x^5y)^2(-2x)^3$
Simplify.		
$\dfrac{5^2}{5^5}$	$\dfrac{-2y^7}{14y^5}$	$\left(\dfrac{4p^4q^4}{3p^2q^2}\right)^3$

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Simplify.		
$\dfrac{p^{-8}}{p^3}$	$\dfrac{\left(-x^{-1}y\right)^0}{4w^{-1}y^2}$	$\dfrac{\left(-2mn^2\right)^{-3}}{4m^{-6}n^4}$