Review for Challenging Integrated Math 1 Curriculum for Placement Into Integrated Math 2

Foundations for Algebra

Be able to:

- Simplify an expression using: the order of operations, the distributive property, and/ or adding like terms.
- Recognize that a negative sign in front of parentheses changes the sign of all the terms within
- Identify the subsets of the real number system
- Evaluate algebraic expressions for given values of its variables

Simplify

1) $-(-2-c)$
2) $8(14+10)\div(8-2)$
3) $5(x-3)-2x$
4) $2m^2-3mz+7mz-m^2+2$
5) $5+2(4)^2\div 8+1$
6) $3x+2y-5y+10x$
7) $2(x-1)-3(4x+5)$
8) $8(5+30\div 5)$
9) $40\div 5(2)$
10) $-4(3x-1)$
11) $50\div(5\times 5)$
12) $a^2+12ab-3a^2-5ab$
13) $4-2(x+7)$
14) $36^{1/2}$
15) $(-11)^2$

Evaluate

16) $x+3y^2$ for $x=-7$ and $y=2$
17) $xy+z$ for $x=-4$, $y=3$, and $z=-3$
18) $b-2a-c$ for $a=-6$, $b=6$, and $c=-5$

ANSWERS for Unit A

1) $2+c$	6) $13x-3y$	11) 2	15) 121
2) 32	7) $-10x-17$	12) $-2a^2+7ab$	16) 5
3) $3x-15$	8) 88	13) $-2x-10$	17) -15
4) $m^2+4mz+2$	9) 16	14) 6	18) 23
5) 10	10) $-12x+4$		

Solving Equations
Be able to:

- Solve equations using the following steps:
  - eliminate fractions (by multiplying both sides of the equation by the LCD of all terms)
  - eliminate parentheses
  - add like terms on each side
  - eliminate the variable from either side
  - eliminate the constant from the side with the variable
  - eliminate the coefficient
- Recognize solutions that are all real numbers or no solution
- Solve proportions by cross-multiplying
- Solve a formula for a specified variable (solve a literal equation)
- Solve absolute value equations by writing and solving two equations

Solve

1) $20 = -d + 13$
2) $2x + 6 = 4x - 6$
3) $2y + 12 - 4y = 54$
4) $4(y + 3) = 40$
5) $-\frac{2}{3}x - 5 = -7$
6) $\frac{-9}{12} = \frac{x}{40}$
7) $-2|x| = -8$
8) $-d + 7 = 3$
9) $2(3a + 2) = -8$
10) $2n + 3n + 7 = -41$
11) $-8n + 5 = -67$
12) $\frac{15}{8} = \frac{-12}{6x}$
13) $5x - 11 = 3 - x - 14 + 6x$
14) $3(4a + 2) = -18$
15) $-2d + 17 = 3$
16) $-6 - 3(2k + 4) = 18$
17) $13 + 2(5c - 2) = 29$
18) $3x + 3 = 5x - 1$
19) $\frac{3x + 7}{2} = 8$
20) $3(2p + 4) = 2(3p - 6)$
21) $-3|x| = 6$
22) $4x - 7 + 1 = 3 + 3x - 15$
23) $\frac{a}{5} - 2 = -13$
24) $\frac{4}{6} = \frac{x}{24}$
25) $\frac{x + 2}{6} = \frac{x - 1}{12}$
26) $|x + 3| = 8$
27) $3|x - 1| + 2 = 11$
28) $|x - 5| + 2 = 9$

ANSWERS for Unit B

1) $d = -7$
2) $x = 6$
3) $y = -21$
4) $y = 7$
5) $x = 3$
6) $x = -30$
7) $x = 4$ and -4
8) $d = 4$
9) $a = -2$
10) $n = -48/5$
11) $n = 9$
12) $x = 30$
13) $0 = 0$, all real #s
14) $a = -2$
15) $d = 7$
16) $k = -6$
17) $c = 2$
18) $x = 4/3$
19) $x = 3$
20) no solution
21) no solution
22) $x = -6$
23) $a = -55$
24) $x = 16$
25) $x = -5$
26) $x = 5$ and -11
27) $x = 4$ and -2
28) $x = 12$ and -2

Solving Inequalities

Be able to:

- Graph inequalities on a number line
- Use the additive and multiplicative properties of equality to solve inequalities
- Recognize that you must reverse the inequality symbol when you multiply or divide both sides of an inequality by a negative number

Solve

1) $3y+5<26$

2) $2w+1<7$

3) Graph: $x \le -6$

4) Solve and graph the inequality: $-5 \le w-3$

5) Solve and graph solution: $-3c<-18$

6) Write an inequality that represents each verbal expression: c is greater than 21.

7) Write an inequality that represents each verbal expression: z is less than or equal to -5.

8) Graph on a number line: $x<6$

9) Solve and graph: $-x \ge 5$

10) Solve and graph: $2x-3(x-5)>10$

11) Solve and graph: $2x+5 \le 4x+1$

12) Solve: $-2y-6-y>15$

13) Solve: $6m-5m+2 \ge 11$

14) Solve: $2(c-3)-2c>0$

15) Solve: $-3t+1 \ge -3(t+2)$

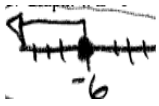
16) Solve: $4 \le \frac{-2}{5}y$

17) Solve: $\frac{x}{4}>-1$

ANSWERS for Unit C

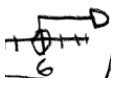
1) $y<7$

2) $w<3$

3) 

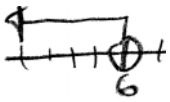
4) $-2 \le w$

5) $c>6$



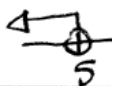
6) $c>21$

7) $z \le -5$

8) 

9) $x \le -5$

10) $x<5$



11) $2 \le x$

12) $y<-7$
13) $y \le -7$
14) $m \ge 9$
15) $All\ real\ \#s$
16) $-10 \ge y$
17) $x>-4$

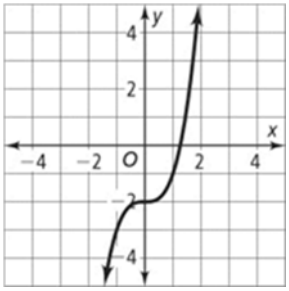
Functions

Be able to:

- Graph points on the coordinate plane
- Identify the coordinates of a point
- Determine whether a relation is a function (from a map, graph, table or list of coordinates)
- Find domain and range of a given relation

Choose the relations that **are** functions:

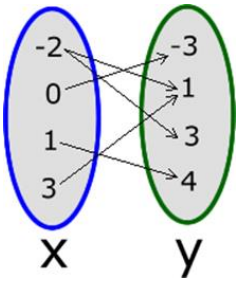
1)



2)

x	y
0	0
1	2
2	−4
3	7

3)



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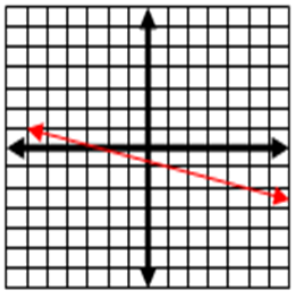

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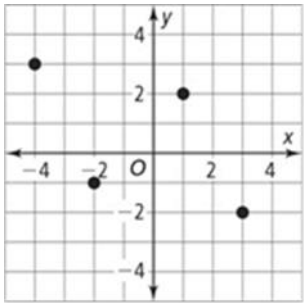

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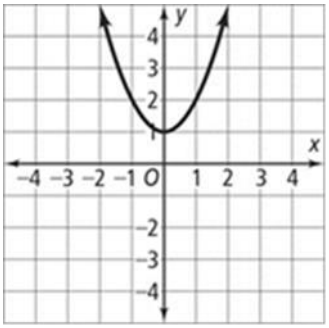

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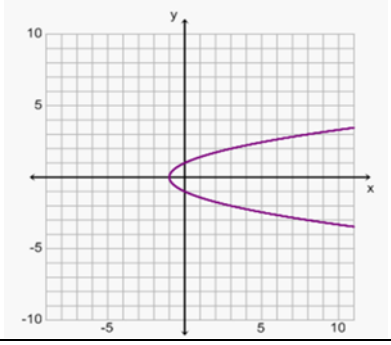

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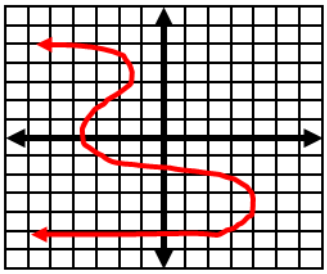

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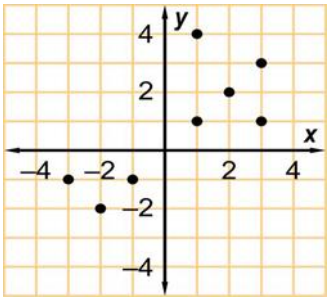

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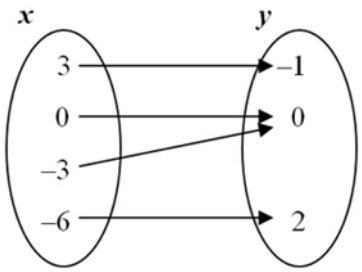


11) Graph and Label each point on the graph at right:

$A(3, -2)$

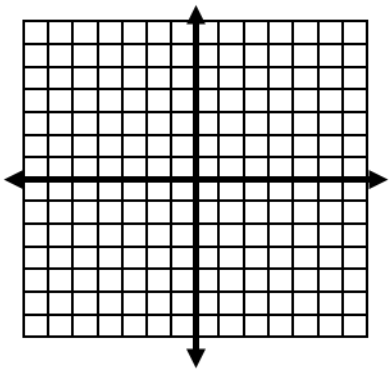
$B(0, 4)$

$C(-6, 0)$

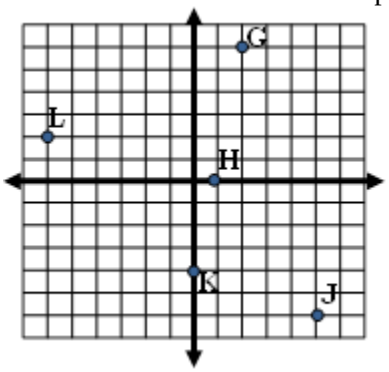
$D(-3, -5)$

$E(4, 4)$

$F(-1, 6)$



12) State the coordinates for each point.



G: _____

H: _____

J: _____

K: _____

L: _____

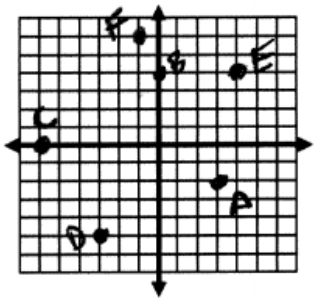
13) Complete the table for the given function.

x	$y = 3x+1$	y
−2		
−1		
0		
1		
2		

ANSWERS for Unit D

1) Function
2) Function
3) Not a function
4) Function
5) Function
6) Function
7) Not a function
8) Not a function
9) Not a function
10) Function

11)



12)
G(2, 6)
H(1, 0)
J(5, −6)
K(0, −4)
L(−6, 2)

13)

x	$y = 3x+1$	y
−2		−5
−1		−2
0		1
1		4
2		7

Linear Equations & Inequalities and Their Graphs

Be able to:

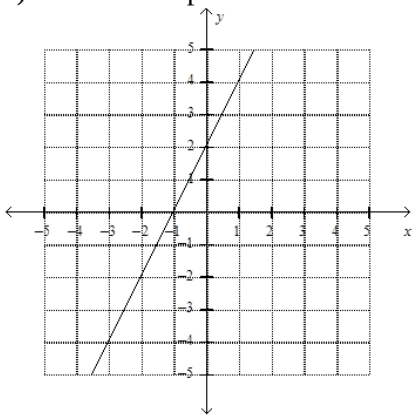
- Find rate of change (slope) from a table.
- Calculate the slope of a line, given two points or the graph of a line
- Recognize that a line with a positive slope rises to the right, while a line with a negative slope falls to the right
- Find the slope of a horizontal or vertical line
- Graph a line in slope-intercept form, using the y-intercept and the slope
- Graph a line in standard form, using the x-intercept and y-intercept
- Write an equation of a line in slope-intercept form, given the slope and y – intercept, or two points
- Write the equation of a line, given its graph
- Recognize whether a given pair of lines are parallel or perpendicular or neither
- Write the equation of a line, given one point and the equation of a parallel or perpendicular line
- Write linear equations to model and solve real-world applications
- Graph linear inequalities, recognizing that the graph is a shaded region of the coordinate plane and that < and > require a dashed boundary line, while ≤ and ≥ require a solid boundary line

1) What is the ***y***-intercept of $y = \frac{1}{3}x - 7$?

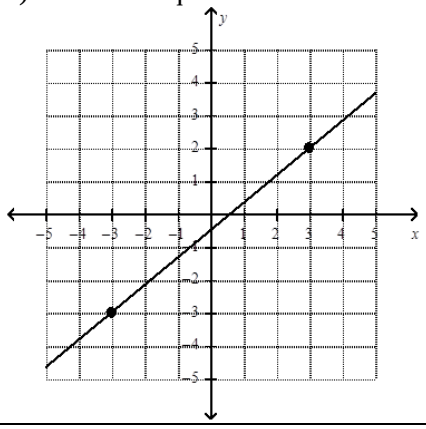
2) What are the ***x***- and ***y***-intercepts of $3x - 7y = 12$?

3) Find the slope of the line that passes through the points (2, 7) and (−2, 5)

4) Find the slope of the line.



5) Find the equation of the line.



6) Write an equation for the line through the point (4, −1) with slope $= \frac{-1}{3}$.

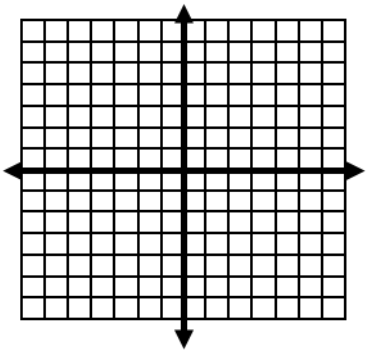
7) What is the ***y***-intercept of $7x - 3y = 6$?

8) Find the slope of the line containing the points (−2, 3) and (0, 8).

Graph the following linear equations on graph at the right.

9) $y = 1$

10) $2x - 4y = 8$

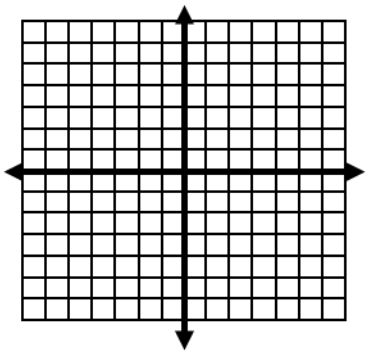


11) State the slope of $y = -2x + 12.$

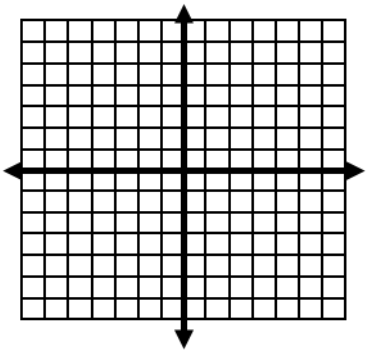
12) Write the equation of the line in slope-intercept form with slope $= \frac{1}{4}$ and ***y***-intercept of (0, 3).

13) What is the slope of the line defined by $x = 2$?

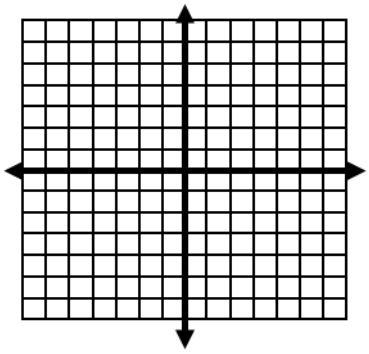
14) State the slope and ***y***-intercept of $y = \frac{1}{3}x - 4.$ Graph the line.



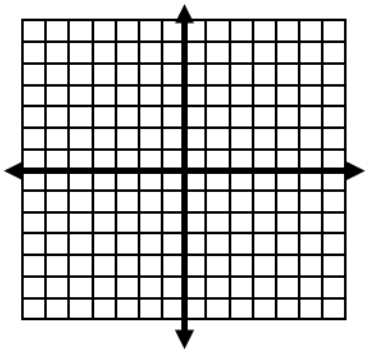
15) Graph: $y = \frac{-1}{2}x - 5$



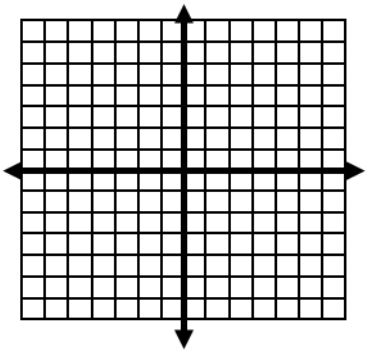
16) Graph: $y = \frac{5}{3}x - 2$



17) Graph: $y > \frac{-1}{3}x + 4$



18) Graph: $y \le 2x + 1$



ANSWERS for Unit E

1) $(0,\ -7)$

2) x-int$(4,\ 0)$

y-int$\left(0,\ {}^{12}\!/\!_{-7}\right)$

3) $m = {}^{1}\!/\!_{2}$

4) $m = 2$

5) $(y-2) = \frac{5}{6}(x-3)$

or $y = \frac{5}{6}x - \frac{1}{2}$

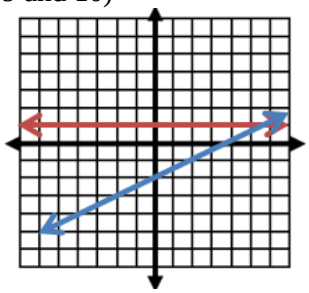
6) $(y+1) = \frac{-1}{3}(x-4)$

or $y = \frac{-1}{3}x + \frac{1}{3}$

7) $(0,\ -2)$

8) $m = {}^{5}\!/\!_{2}$

9 and 10)

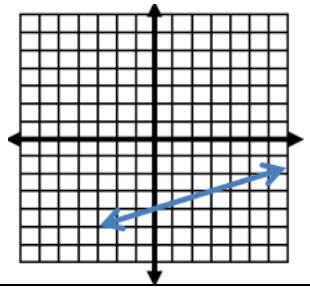


11) $m = -2$

12) $y = \frac{-1}{4}x + 3$

13) undefined

14) $m = {}^{1}\!/\!_{3}$, $(0,\ -4)$



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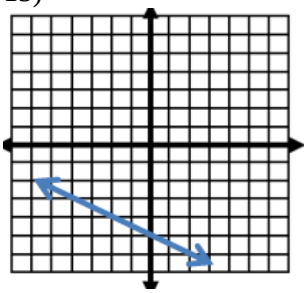

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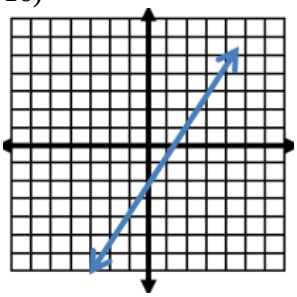

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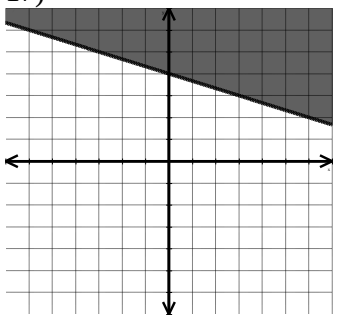
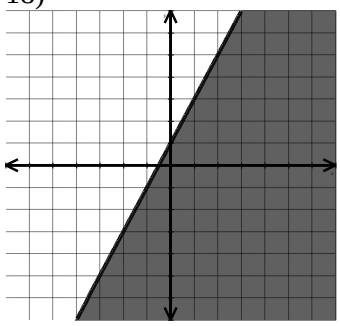
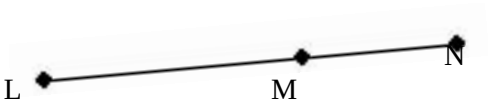


18)

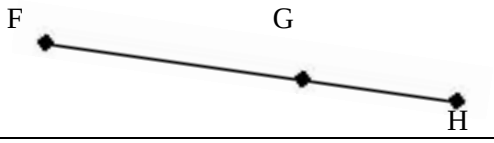


- Students will define line segments, and will apply algebraic logic to solve for segments
- Students will recognize angle pairs, and will use properties of angle pairs
- Students will solve for missing angles in triangles

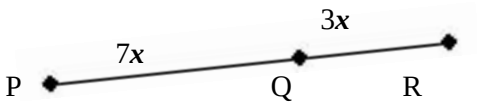
1) Find the value of x and LN if M is between L and N. LM = $3x$ = 27 and MN = $5x$.



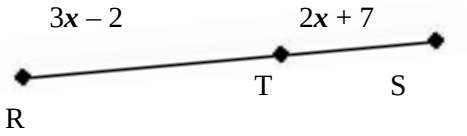
2) Find the value of x and GH if G is between F and H. FG = $2x - 5$
GH = $3x + 5$
FH = 55



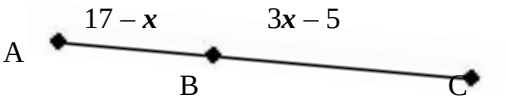
3) Find the value of x and PR if PQ = 56.



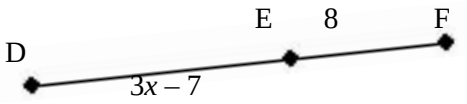
4) Find the value of x and RT if RS = 40.



5) Find the value of x and BC if AC = 26



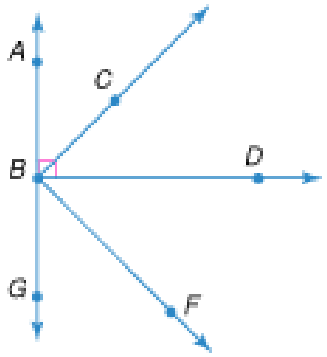
6) Find the value of x and DE if DF = $5x - 13$

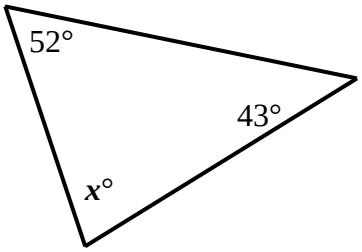
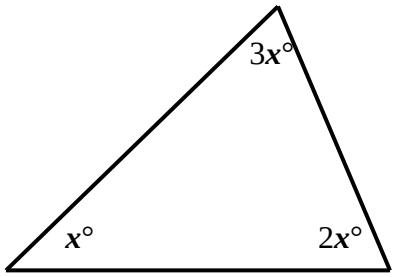
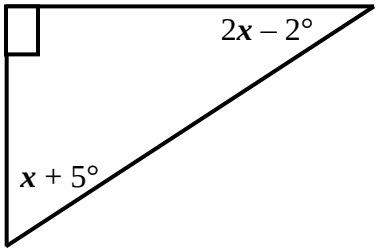
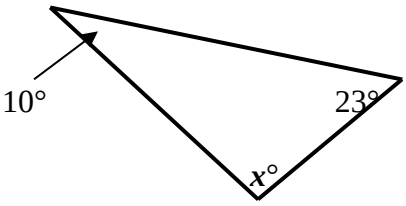
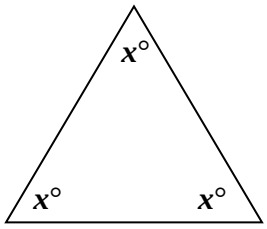
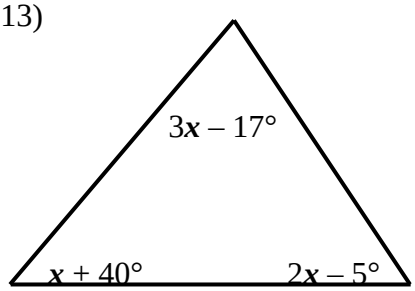


7) Use the figure to the right:

A) Name an angle supplementary to $\angle ABC$.

B) Name an angle complementary to $\angle ABC$.



8)  	9)  	10) 
11)  	12)  	13) 

ANSWERS:

1) $x = 9$; LN = 72	8) $x = 85°$
2) $x = 11$; GH = 38	9) $x = 30°$
3) $x = 8$; PR = 80	10) $x = 29°$
4) $x = 7$; RT = 19	11) $x = 147°$
5) $x = 7$; BC = 16	12) $x = 60°$
6) $x = 7$; DE = 14	13) $x = 27°$
7A) $\angle CBG$ 7B) $\angle CBD$	