# Algebra to the Core
# Assessment Keys

**Assessment 1: Numeric Expressions**
1) C
2) After *parentheses* and *exponents* are simplified, multiplications and divisions should be applied as they occur from left to right.
3) 20          4) 19          5) 40          6) 24
7) The operation 4 + 8 was done prematurely.  8 ÷ 2 should have been done prior.
8) Without an 'agreed upon' Order of Operations, different people could interpret the same numeric expression in different ways, thus having more than one answer for the same problem.
9) $48.00
10)  36 points

**Assessment 2:  Algebraic Expressions**
1) D          2) C
3) The variable F allows the expression to be used again and again for various values of F.
4) One expression has one variable, the other has two variables.  Evaluating the first requires only one value for x.  Evaluating the second requires two values, one for x and one for y.
5)  30          6)  31          7)  19          8)  36
9)  10° Celsius
10)  220 square inches

**Assessment 3:  Polynomials Part 1**
1) A          2) C
3) $3x^2 + 5x + 7$     4) $3x^2 + 5x + 3$     5) $8x^2 - 4x - 4$     6) $-2x^2 - 3x + 11$
7)  $2x^2 + 3x + 4$
8)  A is a polynomial, B is not.  A polynomial can only have whole number exponents on its variables.
9)  $3x^2 + 5x - 3$,   39
10)  19h + 5s

**Assessment 4:  Solving Equations (by inspection)**
1) B          2) D
3) x = 7          4) x = 12          5) x = 5          6)  x = 5
7)  Knowing that the variable expression 5x needs to be 20, Sarah reasoned that x must equal 4.
8)  Yes.  For example, the solutions of 2x + 16 = 20 and 5(x + 1) = 15 are both x= 2.
9)  2x + 5 = 19.  Thus,  x= 7.
10)  2t + $1.50 + $2.50 = $10.  2t + $4 = $10.  By inspection, t= $3.00.  The cost of each taco was $3.00.
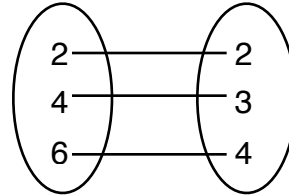
# Algebra to the Core
# Assessment Keys

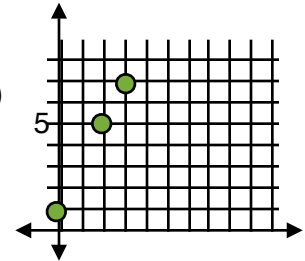**Assessment 5: Numeric Expressions**

1) range            2) C          3)

4)

5) C               6) A

7) WC = 14º       8) A

9) Yes, each student has one and only one birth date.

10) Not likely, some students will have attended multiple schools, not one and only one.

**Assessment 6: Graphing Functions**

1) IV

2) C

3) No matter where, in the plane, a vertical line is drawn, the line will intersect the graph at one and only one point.
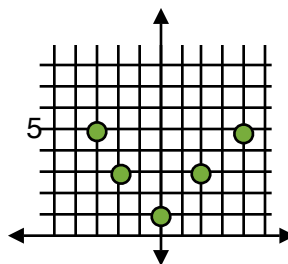
4) The original graph would need to be reflected across the x-axis. Together, the original graph and its reflection would be the the new graph. Note, the new graph fails the vertical line test. Thus, the new graph is not a function.
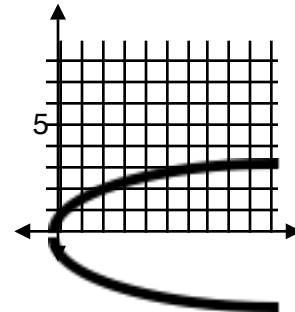
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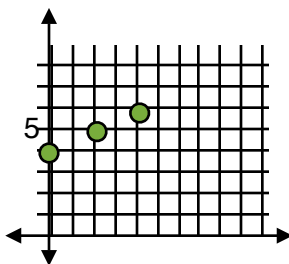
6.

7) What is three more than twice x?

8) What is five less than the square of x?

9) $5.00 + .20(10) = $7.00

10) 54 square inches

# Algebra to the Core
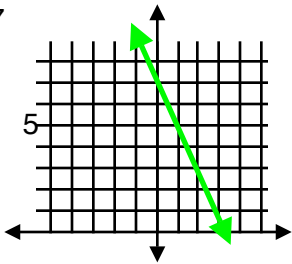# Assessment Keys

**Assessment 7:  Linear Equations**
1) $(y_2 - y_1) / (x_2 - x_1)$
2) A
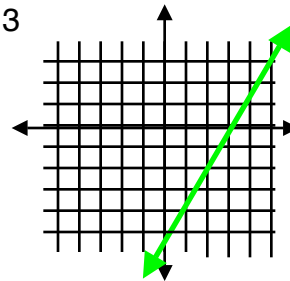3)  8/6 or 4/3
4) y = 2x + 9

5)  y-int = 7

6) y-int = –5   x-int= 3

7)  A-III,  B-II,  C-IV,  D-I
8)  C
9)  y = 30 + 25x
10)  The plane descends at a rate of 200ft. per second.


**Assessment 8:  Polynomials Part 2**
1)  A

2)  C

3)  –7y(2 + y)

4)  (2x + 7)(2x – 7)

5)  (x + 6)(x – 1)

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

7) For example:  $6(3^2) - 7(3) - 24 = 9$ and $(2 \cdot 3 + 3)(3 \cdot 3 - 8) = 9$

8) Given $x^2 - 25$, the binomials (x + 5)(x –5) can be created where the last terms multiply to –25, and the products of the inner terms and the outer terms create canceling terms 5x and –5x.    Given $x^2 + 25$, the binomials (x + 5)(x + 5) or (x – 5)(x – 5) can be created where the products of the last terms equal 25, but the sums of the products of the inner and outer terms do not cancel and equal zero.

9) (x – 4)

10)  A

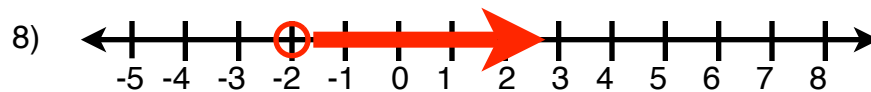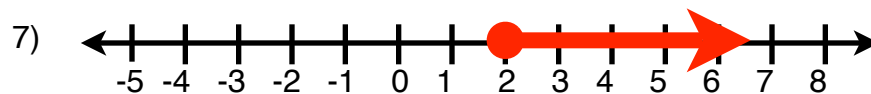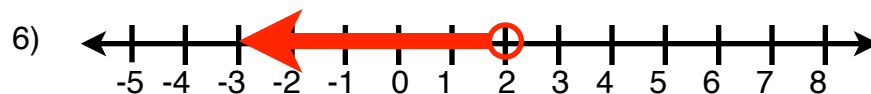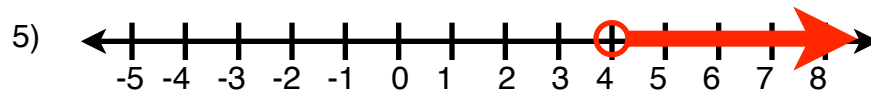# Algebra to the Core
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**Assessment 9:  Solving and Graphing Inequalities**

1) D,  C,  B,  A

2) B,  A

3)  negative:  knowing the solutions of x are all negative, 'a' would need to be negative so the product of 'a' times x produces a positive number (greater than 4).

4) The inequality sign '>' was reversed and written as '<'. Since the value of 'a' was negative, dividing both sides by 'a' changed the sign of b, which changed the sign nature of the problem.
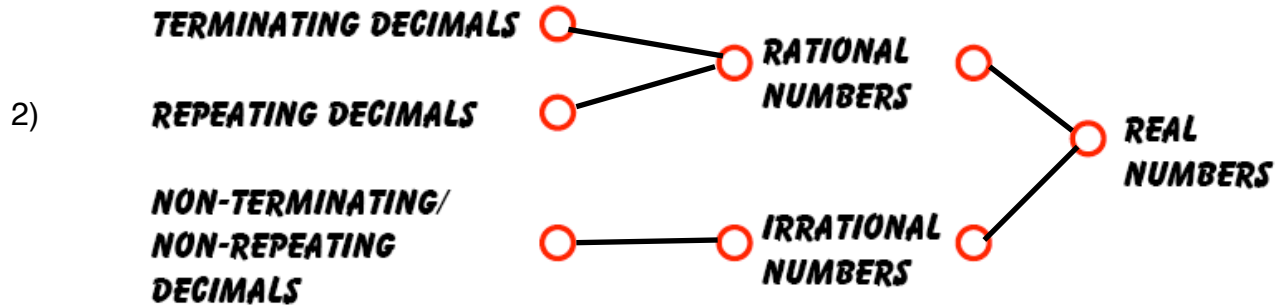
5)



6)



7)



8)



9)   $x + 4.75 \geq 6.50.$        $x \geq \$ 1.75$

10)   $12\,w > 36.$     $w > 3$ inches

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**Assessment 10:  Irrational Expressions**

1)  4        7        12        0        1/2



3)  When written as a decimal, a rational number is a terminating decimal or a repeating decimal.  An irrational number is a decimal that is non-terminating and non-repeating.

4)  A:true      B: false        C: true        D: true

5)  $2\sqrt{5} + 3\sqrt{5} = 5\sqrt{5}$

6)  $2\sqrt{2} - 5\sqrt{2} = -3\sqrt{2}$

7)  $5\sqrt{3} + 10\sqrt{3} = 15\sqrt{3}$

8)  $2\sqrt{6} + 3\sqrt{6} - 1\sqrt{6} = 4\sqrt{6}$

9)  $3\sqrt{7}$  inches

10)  $h = \sqrt{8^2 + 4^2} = \sqrt{100} = 10$ cm.