8 Algebra CC – SSB Answer Key

Part I. Multiple Choice. Directions: Place the answers to the questions in the boxes below.

1.	2.	3.	4.	5.	6.	7.
3	1	2	3	1	4	4

1. Solve for x: $\frac{2}{7}(x+9) = x-11$

(1) 0 (2) -5 **(3)** 19 (4) 22

$7 \bullet \frac{2}{7}(x+9) = (x-11) \bullet 7$

$2(x+9) = 7(x-11)$

$2x + 18 = 7x - 77$

$2x = 7x - 95$

$-5x = -95$

$x = 19$

2nd Method Substitute each value and see which one makes the statement true.

2. Which expression is equivalent to $(x+1)(2x-4) - 3x + 5$?

(1) $2x^2 - 5x + 1$ (2) $2x^2 + 6x + 20$

(3) $2x^2 - 5x - 9$ (4) $2x^2 - x + 1$

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

$(2x^2 - 4x + 2x - 4) - 3x + 5$

$(2x^2 - 2x - 4) - 3x + 5$

$2x^2 - 2x - 4 - 3x + 5$

$2x^2 - 5x + 1$

3. Which value of x satisfies the equation $\frac{2}{3}\left(x + \frac{5}{8}\right) = 0$?

Substitute each value to determine which value is the solution.

(1) 0 **(2)** -0.625

(3) 1.6 (4) there is no value of x that will satisfy the equation

$\frac{2}{3}(-0.625 + \frac{5}{8}) = 0$

$\frac{2}{3}(0) = 0$

$0 = 0$

4. A surfer calculates the intensity of a wave with the formula $\boldsymbol{n = 2bq - r^2}$. Represent **b** in terms of **q**, **r** and **n**?

(1) $n - r^2 - 2q$ (2) $b - n$

(3) $\frac{n + r^2}{2q}$ (4) $\frac{n}{2} + \frac{r^2}{q}$

$n = 2bq - r^2$

$+r^2 \quad +r^2$

$\frac{n + r^2}{2q} = \frac{2bq}{2q}$

$\frac{n + r^2}{2q} = b$

5. Represent the product of $x + 5$ and $x^2 - 3x + 5$ as a simplified polynomial expression.

(1) $x^3 + 2x^2 - 10x + 25$ (2) $x^2 - 2x + 10$

(3) $x^3 - 2x^2 + 10x + 25$ (4) $x^3 - 15x + 5$

	x	5
x^2	x^3	$5x^2$
-3x	$-3x^2$	-15x
5	5x	25

6. Which of these expressions represents an irrational number?

(1) $\left(\sqrt{2}\right)^2 = \sqrt{2} \bullet \sqrt{2} = \sqrt{4} = 2$

(2) $\sqrt{8} - 2\sqrt{2} = 2\sqrt{2} - 2\sqrt{2} = 0$

(3) $-\sqrt[3]{216} = -6$

$(6)(6)(6) = 216$

(4) $\left(\sqrt{9}\right)\left(\sqrt{3}\right) = \sqrt{9} \bullet \sqrt{3} = \sqrt{9 \bullet 3} = \sqrt{27}$

7. The equations pictured below are equivalent. Which property justifies the equivalence?

$$-\frac{3}{4} \bullet -\frac{4}{3}(x-6) = 8 \bullet -\frac{3}{4}$$

$$x - 6 = 8 \bullet -\frac{3}{4}$$

(1) Commutative Property of Multiplication

(2) Distributive Property

(3) Identity Property of Multiplication

(4) Inverse Property of Multiplication

Part II. Extended Response. Show all necessary work.

8. The formula **P = 2l + 2w** is used to find the perimeter of a rectangle.

A. Is **P = 2(l + w)** an equivalent formula? Justify your response.

Yes. P = 2(l + w) is equivalent to P = 2l + 2w because of the distributive property.

B. Solve the formula **P = 2l + 2w** for **w**.

$$P = 2l + 2w$$

$$\underset{-2l}{} \quad \underset{-2l}{}$$

$$\frac{P - 2l}{2} = \frac{2w}{2}$$

$$\frac{\mathbf{P - 2l}}{\mathbf{2}} = \mathbf{w}$$

C. Using your formula from part B, calculate the width of a rectangle with a perimeter of 17 meters and a length of 6 meters. *Check* your answer with **P = 2l + 2w**.

$$w = \frac{P - 2l}{2}$$

$$w = \frac{17 - 2(6)}{2}$$

$$w = \frac{5}{2}$$

The width is 2.5 meters.

Check

$$P = 2l + 2w$$

$$17 = 2(6) + 2(2.5)$$

$$17 = 12 + 5$$

$$17 = 17$$

9. Determine the solution set to the equation: $\frac{x+3}{x+3} = 1$

$1(x + 3) = 1(x + 3)$

$x + 3 = x + 3$

This equation has infinite solutions. However, x cannot be equal to -3. It will make the denominator of the original equation equal to 0 which makes the fraction undefined.

x equals all real numbers except -3 ($x \neq -3$)