

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**UNIT #1 – THE BUILDING BLOCKS OF ALGEBRA**  
**REVIEW QUESTIONS**

**Part I Questions**

1. Which of the following is the value of the expression  $2x^2 + 1$  when  $x = -2$ ?

(1)  $-7$

(3)  $-15$

(2)  $17$

(4)  $9$

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2. Which equation below illustrates the associative property of addition?

(1)  $(2+8)+(1+9)=(8+2)+(9+1)$

(3)  $5+2(3+4)=5+6+8$

(2)  $5(2+7)=10+35$

(4)  $(3+7)+2=3+(7+2)$

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3. Which expression below is equivalent to  $10x - 35$ ?

(1)  $5(2x - 7)$

(3)  $10(x - 5)$

(2)  $x(10 - 35)$

(4)  $10(x - 35)$

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4. The product of the binomial  $(3x + 2)$  with the binomial  $(2x - 1)$  can be written equivalently as

(1)  $5x + 1$

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

(2)  $6x - 3$

(4)  $6x^2 - 2$

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5. Which of the following is equivalent to the expression  $\frac{8x+30}{10}$ ?

(1)  $8x + 3$

(3)  $8x + 20$

(2)  $\frac{4}{5}x + 3$

(4)  $\frac{4}{5}x + 30$

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6. When  $3(2x-5)$  is added to  $2(4-x)$  the result is

(1)  $8x+2$

(3)  $4x-7$

(2)  $5x+3$

(4)  $2x-11$

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7. If the expression  $4x-3$  is equal to 11 for some value of  $x$ , then what is the expression  $4x-1$  equal to for the same value of  $x$ ?

(1)  $-15$

(3)  $9$

(2)  $13$

(4)  $-11$

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8. Written in simplest exponential form the product  $(3x^7)(-2x^3)$  is?

(1)  $-5x^2$

(3)  $x^4$

(2)  $-6x^{10}$

(4)  $-6x^{21}$

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9. Which of the following is equivalent to  $(x+5)^2$ ?

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

(3)  $2x+25$

(2)  $x^2+25$

(4)  $2x+10$

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10. Written as the product of two binomials, the expression  $(x+3)(4x-1)-(x+3)(x-9)$  is

(1)  $(2x+6)(3x-10)$

(3)  $(x+3)(3x+8)$

(2)  $(x+3)(x-10)$

(4)  $(2x+6)(3x+8)$

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11. If Mark's age is represented by  $m$  and Hatchi's age is represented by  $h$  then which of the following expressions represents five less than half the sum of Mark and Hatchi's ages?

(1)  $5-m+\frac{h}{2}$

(3)  $5-m-\frac{h}{2}$

(2)  $m+\frac{h}{2}-5$

(4)  $\frac{m+h}{2}-5$

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## Free Response Questions

12. Write a trinomial expression that is equivalent to  $(2x + 5)(3x - 2)$ .
13. If  $5x + 8 = 10$  for some value of  $x$ , then what is the value of  $10x + 16$  for the same value of  $x$ ? Explain how you arrived at your answer.
14. If the expression  $(2x^3)^2(-5x^4)$  was placed in the form  $ax^b$ , where  $a$  and  $b$  are integers, then what is the value of  $a + b$ ? Show the work that leads to your answer.
15. Write the following expression in simplest binomial form.
- $$4(3x - 2) - 2(4x + 5)$$
16. Show, using a numerical example, that the expressions  $(x + 2)^2$  and  $x^2 + 4$  are *not* equivalent.



17. Consider the binomial expression  $3x+1$ .

(a) What property is illustrated in the identity shown below?

$$2(3x+1) = 6x+2$$

(b) What property is illustrated in the identity shown below?

$$6x+(2+3) = (6x+2)+3$$

(c) If the expression  $3x+1$  is equal to  $-7$  for some value of  $x$ , then what is the value of the expression  $6x+5$  for the same value of  $x$ ? Show the work that leads to your solution.

18. Given the product  $(x+8)(x+3)$  do the following.

(a) Show that this product is equivalent to  $x^2+11x+24$  by using the Distributive Property twice.

(b) Test the equivalency by using  $x=1$ . Show the intermediate calculations.

19. Given the number  $n$ , write an expression for:

(a) Twice the sum of  $n$  and 5

(b) The sum of twice  $n$  and 5

(c) Give a numerical example that shows these are *not* the same expression.



20. Rewrite the expression below as an equivalent product of two binomials.

$$(x-8)(4x+5)-(x-8)(2x-4)$$

Test the equivalency of the two expressions by using the value  $x = 9$ . Show your test.

21. Fill in the real number property below that justifies each step in combining to linear binomials.

$$\begin{aligned}(4x+5)+(3x+6) &= 4x+(5+3x)+6 && \underline{\hspace{2cm}} \\ &= 4x+(3x+5)+6 && \underline{\hspace{2cm}} \\ &= (4x+3x)+(5+6) && \underline{\hspace{2cm}} \\ &= x(4+3)+(5+6) && \underline{\hspace{2cm}} \\ &= 7x+11\end{aligned}$$

22. Francisco is three years more than twice Jenna's age. Harrison is two years less than three times Jenna's age. If Jenna's age is given by  $a$ , then write an expression for Francisco's age, Harrison's age, and the sum of all three ages, in terms of  $a$ .

Francisco's Age:

Harrison's Age:

Sum of All Three Ages:

