

**BASIC ALGEBRA EXAM 1 RR**

NAME \_\_\_\_\_

Show all work on this test or on separate paper! Turn in all work sheets.  
NO calculators on Exam 1!

**PART 1: (2 points each) Circle your answers! In 1 - 15, give the value.**

1.  $16 + 4 \cdot 5$

2.  $20 \div 5 \cdot 2$

3.  $2 + 8^2$

4.  $(-16) + (-9)$

5.  $(-23) + 7$

6.  $4 \cdot (-8)$

7.  $(-8)(-9)$

8.  $(-12) \div 0$

9.  $0 \div (-12)$

10.  $|-5| + |-3|$

11.  $(-6) + [6 + (-9)]$

12.  $(-1)^6$

13.  $(-2)^2$

14.  $-2^2$

15.  $(-3)^2 + (-5)^2$

**In 16 – 21, combine like terms and simplify:**

16.  $6x^2 + 5x - 8x^2 + 4x$

17.  $8x^2 + 2xy - xy + (-20x^2)$

18.  $3(2x + 3) + 5(6x - 5)$

19.  $3 + 5(x - 4) - 2(x + 5)$

20.  $-3(2x - 4) - 7(3x + 6)$

21.  $4x(2x - 3y) - 5y(3x - 7y)$

**In 22 – 25, give the complete name of the property used:**

22.  $3 \cdot (x + 4) = 3 \cdot x + 3 \cdot 4$

23.  $3 \cdot (x + 4) = 3 \cdot (4 + x)$

24.  $3 \cdot (x + 0) = (x + 0) \cdot 3$

25.  $3 \cdot (x \cdot 1/x) = 3 \cdot 1$

**In 26 - 28, given  $x = 6$  and  $y = -2$ , evaluate the following expressions:**

26.  $x^2 + 4y$

27.  $2x^2 + y^2$

28.  $x^2 - 3y^2$

**PART 2: (4 points each, partial credit)**

**In 29 – 33, solve the equations.**

**29.**  $4x + 8 = -4$

**30.**  $2x - 6 = 4x - 12$

**31.**  $3(2x - 5) = 2 + 5x$

**32.**  $4 + 2(x - 6) = 2(2x + 4)$

**33.**  $6x - 2(x - 6) = 2(3 - x) + 8x$

**In 34 - 38, solve the inequalities; graph on the number line that is provided.**

**34.**  $3x + 6 \geq x - 4$

**35.**  $-3x < 9$

**36.**  $0 < x + 2 \leq 5$

**37.**  $-(x + 2) - 3(2x - 3) \leq 4 - 6x$

**38.**  $-4 \leq \frac{x - 3}{2} < 2$

**In 39 - 42, give equations and solve the word problems.**

- 39. If 6 is added to 3 times a number, the result is 4 less than the number. Find the number.**
- 40. The length of a rectangle is 3 less than twice the width. The perimeter is 84. Find the dimensions of the rectangle.**
- 41. A box contains 50 coins in quarters and dimes. If the value of the coins is \$5.90, how many of each coin are there?**
- 42. A box contains nickels, dimes, and quarters worth \$3.75. There are three more nickels than quarters, and the number of dimes is twice the number of nickels. How many of each are there?**

# BASIC ALGEBRA EXAM 1 RR Solutions

1.  $16 + 4 \cdot 5 = 16 + 20 = 36$   
 2.  $20 \div 5 \cdot 2 = 4 \cdot 2 = 8$   
 3.  $2 + 8 \cdot 2 = 2 + 16 = 18$   
 4.  $(-16) + (-9) = -25$   
 5.  $(-3) + 7 = -16$   
 6.  $9 \cdot (-8) = -72$

7.  $(-8)(-9) = +72$   
 8.  $-12 \div 0 \in \text{Undef.}$  (cannot divide by 0.)  
 9.  $0 \div (-12) = 0$   
 10.  $|-5| + |-3| = 5 + 3 = 8$   
 11.  $(-6) + [6 + (-9)] = -9$

12.  $(-1)^6 = 1$   
 13.  $(-2)^2 = 4$   
 14.  $-2^2 = -4$   
 15.  $(-3)^2 + (-5)^2 = 9 + 25 = 34$   
 16.  $-2x^2 + 9x$   
 17.  $-12x^2 + x^4$

18.  $3(2x+3) + 5(6x-5) = 6x+9+30x-25 = 36x-16$   
 19.  $7+5(x-4)-2(x+5) = 7+5x-20-2x-10 = 3x-27$   
 20.  $-3(2x-9)-7(3x+6) = -6x+27-21x-42 = -27x-30$   
 21.  $4x(2x-3y)-5y(6x-7y) = 8x^2-12xy-30xy+35y^2 = 8x^2-27xy+35y^2$

22. Distributive  
 23. Commutative for +  
 24. Commutative for x  
 25. Inverse for x  
 26.  $x^2 + 4y = 6^2 + 4(-2) = 36 - 8 = 28$   
 27.  $2x^2 + y^2 = 2(6)^2 + (-2)^2 = 72 + 4 = 76$   
 28.  $x^2 - 3y^2 = 6^2 - 3(-2)^2 = 36 - 12 = 24$   
 29.  $4x + 8 = -4 \Rightarrow 4x = -12 \Rightarrow x = -3$

30.  $2x-6 = 4x-12 \Rightarrow -2x = -6 \Rightarrow x = 3$   
 31.  $3(4x-5) = 2+5x \Rightarrow 12x-15 = 2+5x \Rightarrow 7x = 17 \Rightarrow x = 17/7$   
 32.  $4+2(x-6) = 2(2x+4) \Rightarrow 4+2x-12 = 4x+8 \Rightarrow 2x-8 = 4x+8 \Rightarrow -2x = 16 \Rightarrow x = -8$   
 33.  $6x-2(x-2) = 2(8-x) \Rightarrow 6x-2x+4 = 16-2x \Rightarrow 4x+4 = 16-2x \Rightarrow 6x = 12 \Rightarrow x = 2$

34.  $3x+6 \geq 2x-4 \Rightarrow x \geq -10$   
 $2x \geq -10 \Rightarrow x \geq -5$   
 35.  $-3x < 9 \Rightarrow x > -3$   
 36.  $0 < x+2 \leq 5 \Rightarrow -2 < x \leq 3$   
 37.  $-(x+2) - 3(2x-3) \leq 4-6x \Rightarrow -x-2-6x+9 \leq 4-6x \Rightarrow -7x+7 \leq 4-6x \Rightarrow -x \leq -3 \Rightarrow x \geq 3$

38.  $(-4) \leq \frac{x-3}{2} < 2 \Rightarrow -8 \leq x-3 < 4 \Rightarrow -5 \leq x < 7$   
 39. Let  $x = \text{length}$   
 $3x+6 = x-4 \Rightarrow 2x = -10 \Rightarrow x = -5$   
 40. Let  $x = \text{width}$   
 $2x-3 = \text{length}$   
 $2w+2l = P \Rightarrow 2x+2(2x-3) = 84 \Rightarrow 2x+4x-6 = 84 \Rightarrow 6x = 90 \Rightarrow x = 15$   
 $2x-3 = 2(15) = 27$

42. No. EA VALUES

Q	x	25	25x
N	x+3	5	5(x+3)
D	2(x+3)	10	20(x+3)
			375

$25x + 5(x+3) + 20(x+3) = 375$   
 $25x + 5x + 15 + 20x + 60 = 375$   
 $50x + 75 = 375$   
 $50x = 300$   
 $x = 6$   
 $x+3 = 9$   
 $2(x+3) = 18$

No. EA VALUES

Q	x	25	25x
D	50-x	10	10(50-x)
			590

$25x + 10(50-x) = 590$   
 $25x + 500 - 10x = 590$   
 $15x + 500 = 590$   
 $15x = 90$   
 $x = 6$   
 $50-x = 44$

# 1,500  
 # 4,400  
 # 5,900