

# BASIC ALGEBRA EXAM 1 E

NAME \_\_\_\_\_

Show all work on this test or on separate paper.

CALCULATORS. Circle your answers.

1.  $7 + 3 \cdot 5 =$

2.  $5 - 5 \cdot 0 =$

3.  $24 \div 6 \times 2 =$

4.  $2 + 3^2 - 5 =$

5.  $(-8) + (-28) =$

6.  $(-3)(-9) =$

7.  $(-3)^3 + (-3)^2 =$

8.  $13 \div 0 =$

9.  $(-12) \div 3 + 3 =$

10.  $(-12) \div (3 + 3) =$

11.  $(-1)^5 =$

12.  $(-8) - (-4) =$

In 13-15, let  $x = -3$  and  $y = 5$

13.  $x^2 + y^2$

14.  $-x^2 + y^2$

15.  $xy - y^2$

In 16-19, combine like terms:

16.  $(-3x) + 7x + (-12x) =$

17.  $12x^2 + 7x - 19x^2 - 20x - 2xy =$

18.  $7(2x + 5) + 6(7 - x) =$

19.  $7(2x + 5) - 6(7 - x) =$

In 20-23, give the complete name of the property:

20.  $5 \cdot (2 \cdot x) = (5 \cdot 2) \cdot x$

21.  $5 \cdot (x \cdot 1) = 5 \cdot x$

22.  $5 \cdot (x + 2) = (x + 2) \cdot 5$

23.  $5 \cdot (x + 2) = 5 \cdot x + 5 \cdot 2$

In 24-36, show all work for partial credit (4 each)

In 24-32, solve for the variable:

24.  $-4x - 8 = 12$

25.  $2p + 12 = 6p - 16$

26.  $3(y-4) + 5y = 7y + 2(y-3)$

27.  $9 - 2(3t + 7) = -8(t - 4) - 5$

28.  $7x - x(5 - 2x) = 6 - (x - 16) + 2x^2$

In 29-32, solve and graph on a numberline:

29.  $6x - 8 \leq 16 - 2x$

30.  $-6x < 12$

31.  $-6 < x + 4 \leq 4$

32.  $-2 \leq \frac{4-x}{3} \leq 2$

In 33-36, write the equations and solve:

33. Twice a number plus 7 is equal to 5 more than the number. Find the number.

34. Find three consecutive odd numbers such that 3 times the first plus twice the second is one less than 4 times the third. Find the numbers.

35. The length of a rectangle is 75 ft. less than twice the width. The perimeter is 600 ft. Find the length + width.

36. A certain number of quarters, four times as many pennies as quarters, and 6 more dimes than pennies are worth \$3.36. How many of each coin are there?

# Basic Algebra Exam 1e Solutions

1.  $7+3 \cdot 5 = 7+15 = 22$     2.  $5-5 \cdot 0 = 5-0 = 5$     3.  $24 \div 6 \times 2 = 4 \times 2 = 8$     4.  $2+3^2-5 = 2+9-5 = 6$     5.  $(-8)+(-28) = -36$

6.  $(-3)(-9) = 27$     7.  $(-3)^3 + (-3)^2 = -27+9 = -18$     8.  $13 \div 0 = \text{undef.}$     9.  $(-12) \div 3 + 3 = -4+3 = -1$     10.  $(-12) \div (3+3) = -12 \div 6 = -2$

11.  $(-1)^5 = -1$     12.  $-8 - (-4) = -8+4 = -4$     13.  $x^2 + y^2 = (-3)^2 + 5^2 = 9+25 = 34$     14.  $-x^2 + y^2 = -(-3)^2 + 5^2 = -9+25 = 16$     15.  $xy - y^2 = (-3)(5) - 5^2 = -15-25 = -40$

16.  $(-3x) + 7x + (-12x) = 4x + (-12x) = -8x$     17.  $12x^2 + 7x - 19x^2 - 20x - 2xy = -7x^2 - 13x - 2xy$     18.  $7(2x+5) + 6(7-x) = 14x+35+42-6x = 8x+77$

19.  $7(2x+5) - 6(7-x) = 14x+35-42+6x = 20x-7$     20.  $5(2 \cdot x) = (5 \cdot 2) \cdot x$  **Associative for mult.**    21.  $5(x \cdot 1) = 5 \cdot x$  **Identity for mult.**

22.  $5 \cdot (x+2) = (x+2) \cdot 5$  **Commutative for mult.**    23.  $5 \cdot (x+2) = 5 \cdot x + 5 \cdot 2$  **Distributive**

24.  $-4x - 8 = 12$   
 $\quad \quad +8 \quad +8$   
 $-4x = 20$   
 $x = -5$

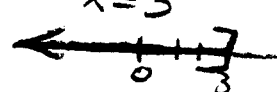
25.  $2p + 12 = 6p - 16$   
 $-4p = -28$   
 $p = 7$

26.  $3(y-4) + 5y = 7y + 2(y-3)$   
 $3y - 12 + 5y = 7y + 2y - 6$   
 $8y - 12 = 9y - 6$   
 $-9y + 12 = -9y + 12$   
 $-y = 6$   
 $y = -6$

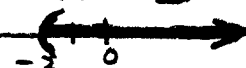
27.  $9 - 2(3b+7) = -8(b-4) - 5$   
 $9 - 6b - 14 = -8b + 32 - 5$   
 $-6b - 5 = -8b + 27$   
 $+8b + 5 \quad +8b + 5$   
 $2b = 32$   
 $b = 16$

28.  $7x - x(5-2x) = 6 - (x-6) + 2x^2$   
 $7x - 5x + 2x^2 = 6 - x + 16 + 2x^2$   
 $2x = -x + 22$   
 $+x \quad +x$   
 $3x = 22$   
 $x = \frac{22}{3}$


29.  $6x - 8 \leq 16 - 2x$   
 $8x \leq 24$   
 $x \leq 3$



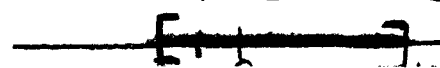
30.  $\frac{-6x < 12}{-6 \quad -6}$   
 $x > -2$



31.  $-6 < x+4 \leq 4$   
 $\quad \quad -4 \quad -4 \quad -4$   
 $-10 < x \leq 0$



32.  $3(-2) \leq \frac{4-x}{3} \leq 3(2)$   
 $-6 \leq 4-x \leq 6$   
 $\quad \quad -4 \quad -4 \quad -4$   
 $\frac{-10 \leq -x \leq 2}{-1 \quad -1 \quad -1}$   
 $10 \geq x \geq -2$  or  $-2 \leq x \leq 10$



33. Let  $x = \text{the no.}$   
 $2x + 7 = x + 5$   
 $x = -2$

34. Let  $x = 1^{\text{st}}$ ,  $x+2 = 2^{\text{nd}}$ ,  $x+4 = 3^{\text{rd}}$   
 $3(x) + 2(x+2) = 4(x+4) - 1$   
 $5x + 4 = 4x + 15$   
 $x = 11$ ,  $x+2 = 13$ ,  $x+4 = 15$

35. Let  $x = \text{width}$   
 $2x - 75 = \text{length}$   
 $2(x) + 2(2x-75) = 600$   
 $6x - 150 = 600$   
 $6x = 750$   
 $x = 125 \text{ ft W}$   
 $2x - 75 = 175 \text{ ft L}$

36.

Q	x	25	25(x)
P	4x	1	1(4x)
D	4x+6	10	10(4x+6)
			336

$25x + 4x + 40x + 60 = 336$   
 $69x = 276$   
 $x = 4 \text{ Q}$   
 $4x = 16 \text{ P}$   
 $4x+6 = 22 \text{ D}$