Practice Problems for Algebra
from www.topmath.info

1 (T/F): $2 = 3$

2 (T/F): $-1 = -1$

3 (<, =, or >): Which symbol goes in the space to make the statement -1 ___ -3 true?

4 Find the range(s) for x that satisfy the condition $5 - x^2 >= -6x - 22$?

5 If $4x + 13 = 11$, what is x?

6 The simultaneous equations $2r + 4s = 43$ and $6r - ks = 130$ cannot be solved for what value of k?

7 The cube of the sum of t and 4 equals the product of t and 4. Write this fact as an equation.

8 If $5/17 = 5/(22-v)$, what is v?

9 A movie company uses a machine that costs 1275 dollars to produce DVDs. Blank DVDs cost $45 per box of 100. How many dollars does it cost for the equipment and blanks to produce q DVDs, assuming that q is a multiple of 100?

10 If $y = 5x$, what is the value of y when $x = 3$?

11 If y = 7x^2 + 5x + 5, what is the value of y when x = 10 ?

12 What is the value of 11q if q = 3v - 2 and v = 9?

13 What is the value of 6r if r = -10u + 7 and u = 10?

14 What is the value of -2r if r = -2v - 5 and v = 5?

15 If f(x) = 3x, what is f(u + v)?

1 ANSWER: False. EXPLANATION: Since 2 is not the same as 3, this is false, because the = symbol means they are the same.

2 ANSWER: True

3 ANSWER: >

4 ANSWER: -3 <= x <= 9. EXPLANATION: Add x^2 to both sides of the equation, and subtract 5 from both sides of the equation, and you get 0 >= x^2 - 6x - 27. Factor, and you get 0 >= (x - 9)(x + 3). The right side of the equation equals 0 when x = 9 or x = -3, and it is less than 0 when x < 9 but x > -3.

5 ANSWER: -1/2. EXPLANATION: Begin by subtracting 13 from both sides of the equation, which yields 4x = -2. Then divide both sides by 4 to get x = -2/4.

6 ANSWER: -12. EXPLANATION: If k = -12, then the left side of the second equation is exactly 3 times the left side of the first equation. However, the right side of the second equation is not 3 times the right side of the first equation, so the two equations have no solution.

7 ANSWER: (t + 4)^3 = 4t. EXPLANATION: The sum of t and 4 is simply t + 4. To cube it, we must put parentheses around it, because raising a number to a power is higher in the order of operations than adding. In other words, if we wrote t + 4^3, only the 4 would be cubed. To finish, we simply write an equals sign (=), and then the product of t and 4, which is simply 4t.

8 ANSWER: 5. EXPLANATION: Because the numerators on both sides of the equals sign are the same, the denominators must also be the same. Therefore, we simply need to solve the equation 22-v=17.

9 ANSWER: 1275 + 0.45q. EXPLANATION: The fixed cost is the cost of the equipment. Then for each additional DVD, we add 1/100th of the cost of a box of 100.

10 ANSWER: 15

11 ANSWER: 755

12 ANSWER: 275. EXPLANATION: If q = 3v - 2 and v = 9, then we substitute 9 for v and find that q = 3×9 - 2, or 25. Since the question asks us to find the value of 11q, we simply multiply 11 by 25 to get the answer.

13 ANSWER: -558. EXPLANATION: If r = -10u + 7 and u = 10, then we substitute 10 for u and find that r = -10×10 + 7, or -93. Since the question asks us to find the value of 6r, we simply multiply 6 by -93 to get the answer.

14 ANSWER: 30. EXPLANATION: If r = -2v - 5 and v = 5, then we substitute 5 for v and find that r = -2×5 - 5, or -15. Since the question asks us to find the value of -2r, we simply multiply -2 by -15 to get the answer.

15 ANSWER: 3(u + v). EXPLANATION: This problem is solved simply by substituting u + v for x.