Practice Problems for Algebra
from www.topmath.info

1 Let f(x) = x - 8, and let g(x) = (x^2 - 64)/(x + 8). What is the difference between these two functions?

2 We define a new operator, @, such that a @ b = a^b ÷ b^a. What is 5 @ 3?

3 (T/F): 3 = 3

4 (T/F): -1 = 0

5 (<, =, or >): Which symbol goes in the space to make the statement -1 ___ -7 true?

Practice Problems for Algebra
from www.topmath.info

6 Find the range(s) for x that satisfy the condition 21 - x^2 >= -4x - 11 ?

7 If 5x + 20 = 11, what is x?

8 The simultaneous equations 6r + 10s = 36 and 24r - ks = 145 cannot be solved for what value of k?

9 The cube of the sum of p and 6 equals the product of p and 6. Write this fact as an equation.

10 If 7/14 = 7/(16-p), what is p?

Practice Problems for Algebra
from www.topmath.info

11 A movie company uses a machine that costs 1025 dollars to produce DVDs. Blank DVDs cost $72 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?

12 If y = 7x, what is the value of y when x = 8?

13 If y = -10x^2 + 2x - 6, what is the value of y when x = 8 ?

14 What is the value of 8t if t = 3w - 7 and w = 1?

15 What is the value of 7p if p = -7s + 7 and s = 5?

Practice Problems for Algebra
from www.topmath.info

1 ANSWER: The functions are identical, other than g(x) being undefined where x=-8..
EXPLANATION: Divide the denominator of g(x) into the numerator of g(x) to see that the functions appear to be identical. However, note that g(x) is undefined when the denominator is 0, because division by 0 is undefined.

2 ANSWER: 125/243. EXPLANATION: By the definition of the function, 5 @ 3 = 5^3 ÷ 3^5. We know that 5^3=125, and 3^5=243. We then divide to get the answer.

3 ANSWER: True. EXPLANATION: Since the numbers on both sides of the = symbol are the same, this is true.

4 ANSWER: False

5 ANSWER: >

Practice Problems for Algebra
from www.topmath.info

6 ANSWER: -4 <= x <= 8. EXPLANATION: Add x^2 to both sides of the equation, and subtract 21 from both sides of the equation, and you get 0 >= x^2 - 4x - 32. Factor, and you get 0 >= (x - 8)(x + 4). The right side of the equation equals 0 when x = 8 or x = -4, and it is less than 0 when x < 8 but x > -4.

7 ANSWER: -1 4/5. EXPLANATION: Begin by subtracting 20 from both sides of the equation, which yields 5x = -9. Then divide both sides by 5 to get x = -9/5.

8 ANSWER: -40. EXPLANATION: If k = -40, then the left side of the second equation is exactly 4 times the left side of the first equation. However, the right side of the second equation is not 4 times the right side of the first equation, so the two equations have no solution.

9 ANSWER: (p + 6)^3 = 6p. EXPLANATION: The sum of p and 6 is simply p + 6. 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 p + 6^3, only the 6 would be cubed. To finish, we simply write an equals sign (=), and then the product of p and 6, which is simply 6p.

10 ANSWER: 2. 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 16-p=14.

11 ANSWER: 1025 + 0.72q. 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.

12 ANSWER: 56

13 ANSWER: -630

14 ANSWER: -32. EXPLANATION: If t = 3w - 7 and w = 1, then we substitute 1 for w and find that t = 3×1 - 7, or -4. Since the question asks us to find the value of 8t, we simply multiply 8 by -4 to get the answer.

15 ANSWER: -196. EXPLANATION: If p = -7s + 7 and s = 5, then we substitute 5 for s and find that p = -7×5 + 7, or -28. Since the question asks us to find the value of 7p, we simply multiply 7 by -28 to get the answer.