

Practice Problems for Algebra
from www.topmath.info

1 (T/F): $1 > 4$

2 (T/F): $-6 > -5$

3 (<, =, or >): Which symbol goes in the space to make the statement $-4 \underline{\hspace{1cm}} 4$ true?

4 Find the largest integer H such that $7H - 93 < 0$.

5 If c and d are real numbers, not equal to 0, such that the product of c and 6 is d , what is the sum of 6 and c in terms of d ?

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6 Some children are dividing a number of toy cars. If each child gets 3, then there will be 31 toy cars left over. However, 4 children do not want to participate, so the toy cars will be split among the others. Each child will get 4 toy cars, and there will be 12 remaining. How many toy cars are there altogether?

7 If card tables cost 21 dollars each, and books cost 29 dollars each, what is the cost of X card tables and Y books?

8 If $\frac{3}{7} = \frac{3}{(s+13)}$, what is s?

9 What is $9x^7y^7$ divided by $1x^4y^4$?

10 If $y = 9x + 4$, what is the value of y when $x = 9$?

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11 What is the value of $2q$ if $q = 2s$ and $s = 8$?

12 What is the value of $-10q$ if $q = 5s + 5$ and $s = 7$?

13 What is the value of $10s$ if $s = -2u - 5$ and $u = 7$?

14 Let $f(x) = x + 6$, and let $g(x) = (x^2 - 36)/(x - 6)$. What is the difference between these two functions?

15 We define a new operator, $@$, such that $a @ b = a^b - b^a$. What is $3 @ 5$?

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1 ANSWER: False

2 ANSWER: False

3 ANSWER: <

4 ANSWER: 13. EXPLANATION: The expression $7H - 93$ equals 0 when $H = 93/7$. The largest integer smaller than this fraction is 13.

5 ANSWER: $6 + d/6$. EXPLANATION: The problem asks for the sum of 6 and c , which is obviously $6 + c$. However, it asks for this sum in terms of d . Since we know that $6c = d$, then $c = d/6$, and we can use this equation to substitute for c to get the answer in terms of d .

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6 ANSWER: 136. EXPLANATION: Let n be the total number of children. If each child gets 3 toy cars, there will be 31 toy cars left over, so the number of toy cars is $3n + 31$. From the second part of the problem, we know that the total number of toy cars is also $4(n - 4) + 12$. Therefore, $3n + 31 = 4(n - 4) + 12$. We solve this to get $n=35$. We then plug this value for n into the formula $3n + 31$ to find the total number of toy cars.

7 ANSWER: $21X + 29Y$. EXPLANATION: The cost of the card tables is $21X$, and the cost of the books is $29Y$.

8 ANSWER: -6. 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 $s+13=7$.

9 ANSWER: $9x^3y^3$. EXPLANATION: Divide the 9 by 1, the x^7 by x^4 , and the y^7 by y^4 . Remember that you divide exponents by subtracting.

10 ANSWER: 85

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11 ANSWER: 32. EXPLANATION: If $q = 2s$ and $s = 8$, then we substitute 8 for s and find that $q = 2 \times 8$, or 16. Since the question asks us to find the value of $2q$, we simply multiply 2 by 16 to get the answer.

12 ANSWER: -400. EXPLANATION: If $q = 5s + 5$ and $s = 7$, then we substitute 7 for s and find that $q = 5 \times 7 + 5$, or 40. Since the question asks us to find the value of $-10q$, we simply multiply -10 by 40 to get the answer.

13 ANSWER: -190. EXPLANATION: If $s = -2u - 5$ and $u = 7$, then we substitute 7 for u and find that $s = -2 \times 7 - 5$, or -19. Since the question asks us to find the value of $10s$, we simply multiply 10 by -19 to get the answer.

14 ANSWER: The functions are identical, other than $g(x)$ being undefined where $x=6$..
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.

15 ANSWER: 118. EXPLANATION: By the definition of the function, $3 @ 5 = 3^5 - 5^3$. We know that $3^5=243$, and $5^3=125$. We then subtract to find the difference.