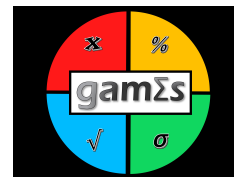


GAMES Practice Problem Solutions – Exponents, Factors, and Fractions



1. Are the following equalities true or false? If false, explain why it is false and correct expression.

- (a) False. $\frac{x+y}{a+b} = \frac{x}{a+b} + \frac{y}{a+b}$ Both terms in the numerator are divided by $a+b$
- (b) False. Negative one can be factored out of the numerator and denominator so that we are left with: $\frac{x}{x+y}$
- (c) False. While x could be equal to six, x could also be equal to -6. $x = +/ - 6$
- (d) False. BEDMAS tells us we must treat the brackets separate and before the exponents. For example, let $x = 2$, $y = 2$ and calculate both sides of the equation. We end up with $\sqrt{8} = 4$. The left-hand side is not equal to the of right-hand side.
- (e) False. Only x is raised to the power of -1 – the 2 is not. $2x^{-1} = \frac{2}{x}$ or $\frac{1}{2x} = (2x)^{-1}$
- (f) True. We can factor $x^2 - y^2$ using the difference of squares formula.
- (g) False. $x - 5 - a = x - (5 + a)$
- (h) False. The 4 is squared but it's not clear that the negative is also squared. $(-4)^2 = 16$
- (i) False. We must use FOIL (first-outside-inside-last) to expand the bracket on the right-hand side: $(x + 2)^2 = (x + 2)(x + 2) = (x)(x) + 2x + 2x + (2)(2) = x^2 + 4x + 4$. $x^2 + 4$ cannot be simplified (it's not a square).
- (j) True. We can simplify whatever is inside the square root. $\sqrt{45} = \sqrt{(9)(5)} = \sqrt{(3^2)(5)} = \sqrt{3^2}\sqrt{5} = 3\sqrt{5}$
- (k) False. Use FOIL. $u^2 = (8 + x^{1/2})^2 = (8 + x^{1/2})(8 + x^{1/2}) = 64 + 16x^{1/2} + 64$

- 2. (a) 3^8
- (b) 4^{11}
- (c) $9x^6$
- (d) $-8x^9y^3$
- (e) r^{18}
- (f) $q^{-(\gamma+2\alpha)}h^{\alpha-\gamma}$
- (g) $(x + 1)^2$
- (h) $\frac{2b}{3c^3} \left(\frac{3ab^2 - 2}{3} \right)$

3. 26.25 percent

4. 6 percent

5. 14.71 percent

6. 14 percent

7. 44 percent

8. $w_A r_A + w_B r_B = R$. 100 percent of her funds are invested in stock A and B, so $w_B = 1 - w_A$. Combine these two equations for $w_A r_A + (1 - r_A) = R$ and solve for $w_A = 0.167$. 16.7 percent of \$1,000,000 = \$167,000
9. One claim takes 3.4 minutes. There are $8 \times 60 = 480$ minutes in 8 hours, so $480/3.4 = 141.1765$ or 141 claims can be finished in one hour. Note: round down if its not possible to complete a fraction of a claim.
10. $\frac{5}{24}$
11. $\frac{19}{50}$
12. $\frac{1}{2} - \frac{300}{x} = \frac{1}{3}$ solve for x, $x = 1800$
13. 99 days
14. 108 in Hedge Fund A and 72 in Hedge Fund B
15. The task takes 96 worker/days to complete. $\frac{96}{x} = 16$ Solve for x. It takes six workers 16 days to complete the task.
16. $P = 2w + 2l$, $P = 36$, $l = 2w - 3$ combining gives $36 = 2w + 2(2w - 3)$ and solve for w , $w = 7$ then solve for length, $l = 11$



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