Worksheet: Top 10 mistakes

Problem: As a teacher, you have some experience in errors. Make your own top 10 mistake list.

Maybe only flip over the page after you have collected some items already.

Here are some examples of lists.

Ed Burger's legendary Youtube clip. Given in count down order:

- 10. Squaring the negative $-8^2 = 64$.

- 9. Log mistake. The log of a sum is not the sum of the log.

- 8. Shifting function mistake: add to y go high, add to x, go west

- 7. Multiplying an inequality $-3(x < 5) = -3x < -15$.

- 6. The exponent mistake. When in doubt, write it out $x^4 = xxxx$.

- 5. The fractional exponent. Don't flip over the root. $25^{1/2} = 1/(25)^2$

- 4. The subtracting mistake. $x - (3 + x) = x - 3 + x$

- 3. $x/(x - 5) \neq 1/(-5)$.

- 2. The quadratic mistake; Exponents 2, answers 2. $x^2 = 25$ gives $x = 5, x = -5$.

- 1. The squaring mistake. Don't forget to foil $(x - 3)^2 = x^2 - 9$.

Dr Math: 10 Algebra Mistakes from 05/23/98

- 1. Arithmetic errors (example: 2+3 does not $= 6$)

- 2. Copy errors within the problem

- 3. Distribute the negative 2x*-4(3x-3) does not $=$ 2x -12x-12

- 4. Factoring out the negative incorrectly -5y-15 does not $=$ -5(y-3)

- 5. Rational expressions by "canceling" incorrectly x+3/(x+4)=3/4

- 6. Forget of foil: $(3y + 2)(2y + 1)$ is not$6y^2 + 2$

- 7. $y^2 + 9 = (y + 3)^2$.

- 8. Only operate on one side of the equation

- 9. Do not find the right variable

- 10. Translation from word to math

Valery Beaman Hackle list

- 1. Pemdas: $(10 * 6)/(2 * 5)$ is not $(10 * 5/2) * 5 = 125$.

- 2. Distributivity $7 - 2(5 - 1) = -1$.

- 3. Minus in exponent $(5)^{-2}$ is not $(-5)^2$

- 4. No jumping over the fence $x + 3 = 0$ gives $x = 3$.

- 5. flip operations $-6 * x$ is not $-6 + x$

- 6. Leaving away parenthesis $(x + 3) - (x - 1) = x + 3 - x - 1$.

- 7. Rational functions $3x/5 - 2x = 1/2$

- 8. Order with square roots $\sqrt{(1 + x)} = 1 + \sqrt{(x)}$

- 9. Rational function $x^2 - 25/(x - 5) = (x + 5)$

- 10. Foil $(x + 3)^2 = x^2 + 9$.

Worksheet: Finding Errors

In each of the following cases, try to find the source of the error.

Problem: $\log_{10}(10 + 100) = \log_{10}(10) + \log_{10}(100)$.

Problem: $x/(x + y) = 1 + x/y$

Problem: $3 - (4 - 5) = (3 - 4) - 5$

Problem: $\sqrt{2x}/x = \sqrt{2}$.

Problem: We once saw the following error. $51x^{50} - 51 = x^{50}$.

Problem: Explain why $2^{3^1} = (2^3)^1$ but $2^{3^2} = 2^{3^2}$ is not true.

Problem: What went wrong with $\log(1 + 1) = \log(1) + \log(1) = 0 + 0 = 0$.

The next computation might come up when a curious student tries to explore unknown territory:

Problem: What is wrong with $0 = \log(1) = \log((-1)(-1)) = \log(-1) + \log(-1) = 2 \, log(-1)$ so that $\log(-1) = 0$. But our teacher tells us that $\log(-1)$ is imaginary and given by $i\pi$. So, $\pi = 0$.

Subject: Algebra errors