**Common Mathematics Student Misconceptions**

Find the mistake or misconception, and fix the mistake/offer suggestions to correct the misconception. A few problems are given as examples.

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| #12 1/3 × 4 ½ = 8 1/6 | Example 1:10 × 6 ÷ 2 × 5= 60 ÷ 10 = 6This is an order of operation problem: do multiplication and division from left to right. 10 × 6 ÷ 2 × 5= 60 ÷ 2 × 5 = 30 × 5 = 150 | Example 2:(3 + 5)2 = 32 + 52Again, this is an order of operation problem: do parentheses before exponents.(3 + 5)2 = 82= 64versus32 + 52  = 9 + 25 = 34 |
| #2 7 2 6̶ 1 7 4 6 5 2 | #37 ̶ 2(5 ̶ 1) = 5(4) = 20 | #4-52 = -5 × -5 = 25 |
| #53-2 = -9 | #6 4 ÷ 0 = 0 | Example 3:2 ÷ 8 = 42 ÷ 8 = ¼ or 0.25versus8 ÷ 2 = 4 |
| #70.2 + 0.07 = 0.09 | #81/6 + 1/6 = 2/12 = 1/6 | Example 4:0.3 × 0.3 = 0.9Relating this to fraction multiplication helps students remember that the sum of the decimal places in the problem equals the number of decimals places in the answer. I.e., 0.3 x 0.3 = 3/10 x 3/10 = 9/100 = 0.09 |
| #91 ÷ 10 = 10 | #105/9  > 5/6 | #11-53 + 50 = 3 |
| #12-6x = 30+6 +6 x = 36 | #137/8  ̶ 1/4 = 6/4 | #140.00000126 in scientific notation is 1.26 × 10-5 |
| #150.014 × 0.3 = 0.042 | #16 The part that is shaded in the  diagram is ¼. | #17 150 is what percentage of 500?$$\frac{x}{500}=\frac{150}{100}$$ |
| #18$$\frac{20x^{8}}{5x^{2}}=4x^{4}$$ | #19$$\sqrt{25-16}=\sqrt{25}-\sqrt{16}$$ | #20$$\frac{0.25}{0.05}=0.05$$ |