Name _____

The only difference between the problems on this worksheet and the last worksheet is that these problems will have fractions.

Give this problem a try, taking care to show all work in an organized systematic manner.

$$12\frac{1}{2} \div 3\frac{1}{3} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(2\frac{2}{3} + 1\frac{1}{4}\right)$$

If you didn't have problems with the Order of Operations Rules worksheet, but you did have trouble with this problem, it is important to recognize that the problem isn't with doing Order of Operations, but instead is with fractions. That is why doing these longer order of operations problems is so valuable.

If you got $22\frac{1}{12}$ as an answer without too much trouble, you are a fraction rock star!

If you take a close look at the problem above, it is the same problem from the Order of Operations Rules worksheet that was worked two different ways... $12 \div 3 + 5 \cdot 6 - 4(2 + 1)$ with fractions substituted for most of the numbers. If you follow the same order of operations for the fraction problem as you did for the non-fraction problem, you should get $22\frac{1}{12}$ as an answer.

If you didn't get $22\frac{1}{12}$ as an answer to the problem above, give it another try, focusing on staying neat and organized.

Here is the same problem worked out using the same steps as we used in Methods 1 and 2 from the Order of Operations Rules worksheet. (Note: There is an occasional extra line added to clarify a particular step.) Also, if problems are written with mixed numbers, give the final answer as a simplified fraction with any fractions greater than 1 written as mixed numbers.

Method 1:

$$12\frac{1}{2} \div 3\frac{1}{3} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(2\frac{2}{3} + 1\frac{1}{4}\right)$$

$$12\frac{1}{2} \div 3\frac{1}{3} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(2\frac{8}{12} + 1\frac{3}{12}\right)$$

$$12\frac{1}{2} \div 3\frac{1}{3} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(3\frac{11}{12}\right)$$

$$\frac{25}{2} \div \frac{10}{3} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(3\frac{11}{12}\right)$$

$$\frac{25}{2} \cdot \frac{3}{10} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(3\frac{11}{12}\right)$$

$$\frac{\overset{5}{\cancel{25}}}{2} \cdot \frac{3}{\underset{2}{\cancel{10}}} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(3\frac{11}{12}\right)$$

$$\frac{5}{2} \cdot \frac{3}{2} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(3\frac{11}{12}\right)$$

$$\frac{15}{4} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(3\frac{11}{12}\right)$$

$$\frac{15}{4} + \frac{16}{3} \cdot \frac{51}{8} - 4\left(3\frac{11}{12}\right)$$

$$3\frac{3}{4} + \frac{16}{3} \cdot \frac{51}{8} - 4\left(3\frac{11}{12}\right)$$

$$3\frac{3}{4} + \frac{\overset{2}{\cancel{16}}}{\underset{1}{\cancel{3}}} \cdot \frac{\overset{17}{\cancel{51}}}{\underset{1}{\cancel{8}}} - 4\left(3\frac{11}{12}\right)$$

$$3\frac{3}{4} + 34 - 4\left(3\frac{11}{12}\right)$$

$$3\frac{3}{4} + 34 - 4 \cdot \frac{47}{12}$$

$$3\frac{3}{4} + 34 - \overset{1}{\cancel{4}} \cdot \frac{47}{\underset{3}{\cancel{12}}}$$

$$3\frac{3}{4} + 34 - \frac{47}{3}$$

$$3\frac{3}{4} + 34 - 15\frac{2}{3}$$

$$37\frac{3}{4} - 15\frac{2}{3}$$

$$37\frac{9}{12} - 15\frac{8}{12}$$

$$22\frac{1}{12}$$

Method 2:

$$12\frac{1}{2} \div 3\frac{1}{3} + 5\frac{1}{3} \cdot 6\frac{3}{8} - 4\left(2\frac{2}{3} + 1\frac{1}{4}\right)$$

$$\frac{25}{2} \div \frac{10}{3} + \frac{16}{3} \cdot \frac{51}{8} - 4\left(2\frac{8}{12} + 1\frac{3}{12}\right)$$

$$\frac{25}{2} \cdot \frac{3}{10} + \frac{\overset{2}{\cancel{16}}}{\underset{1}{\cancel{3}}} \cdot \frac{\overset{17}{\cancel{51}}}{\underset{1}{\cancel{8}}} - 4 \cdot 3\frac{11}{12}$$

$$\frac{\overset{5}{\cancel{25}}}{2} \cdot \frac{3}{\underset{2}{\cancel{10}}} + 34 - 4 \cdot \frac{47}{12}$$

$$\frac{15}{4} + 34 - \overset{1}{\cancel{4}} \cdot \frac{47}{\underset{3}{\cancel{12}}}$$

$$3\frac{3}{4} + 34 - \frac{47}{3}$$

$$3\frac{3}{4} + 34 - 15\frac{2}{3}$$

$$3\frac{9}{12} + 34 - 15\frac{8}{12}$$

$$37\frac{9}{12} - 15\frac{8}{12}$$

$$22\frac{1}{12}$$

If you still haven't gotten the correct answer to this problem, continue to rework it until you are able to get to the end correctly. There may be a few places where you might have done something at a slightly different time (like when you change improper fractions back to mixed numbers), but you should be able to see that choices like these won't change the end result.

Here are some additional problems to work through.

$$\frac{3}{4} - \frac{2}{3}\left(\frac{1}{2} + \frac{2}{5}\right)$$

$$\left(\frac{2}{3} + \frac{1}{4}\right) + \left(2\frac{1}{2} - 1\frac{1}{4}\right)$$

$$\frac{2}{3} + \left(2\frac{2}{5} - 1\frac{2}{3}\right)^2$$

$$2\frac{1}{2} + \frac{3}{4} \div \frac{7}{8} \cdot \frac{7}{2} - \frac{3}{4}$$

$$4\frac{1}{4} + \left(3\frac{3}{10} \div \frac{1}{2}\right)^2$$

$$2\frac{3}{5} + \frac{2}{7} \cdot \frac{5}{8} \cdot \frac{14}{15} - \frac{1}{2}$$