Fraction, Decimal, and Percent Challenge Name _____

Show work to support each of your solutions. You may use a calculator to check.

1. Simplify, expressing your answer as a power of 3. $27^{-3} \cdot 81^{5}$

2. Perform the operations, and simplify completely. $\left(2\frac{1}{2}\right)^{2}\left(3\frac{1}{3}\right)^{-2}$

   Give your answer as a fraction or mixed number.

3. Simplify: $1\frac{1}{2} + 3\frac{1}{4} + 5\frac{1}{8} + 7\frac{1}{16} + 9\frac{1}{32}$

4. Solve for m. $16^{-2} \cdot 64^{6} = 4^{m}$

5. Perform the operations, and write your answer in scientific notation. $\left(\frac{8 \cdot 10^{3}}{2 \cdot 10^{-3}}\right)^{2}$

6. Complete with <, >, or = to make the statement true. Show each decimal, rounding to the nearest thousandth.

   $\frac{\$1.19}{32 \text{ oz}}$ _____ $\frac{\$1.43}{48 \text{ oz}}$

7. Complete with <, >, or = to make the statement true. Show each decimal, rounding to the nearest thousandth.

$$15\% \text{ of } \$74.36 \_\_\_\_\_ \frac{\$12.50}{85\%}$$

8. Convert $4\frac{1}{2}\%$ to a simplified fraction _____ and to a decimal _____.

9. If $f(n) = \frac{5}{7} \cdot 2n$, find f(0) _____ , $f\left(\frac{1}{2}\right)$ _____ , and f(-1) _____.

10. Simplify: $\left(\frac{1}{2} + \frac{2}{3}\right)^0 \cdot \left(\frac{1}{2} - \frac{2}{3}\right)^0$

11. Simplify: $\frac{1}{2} \cdot \frac{2}{3} \cdot \frac{3}{4} \cdot \frac{4}{5} \cdot \frac{5}{6} \cdot \frac{6}{7} \cdot \frac{7}{8} \cdot \frac{8}{9} \cdot \frac{9}{10}$

12. Simplify (writing your answer as a simplified fraction): $\frac{3^{100} - 3^{98}}{3^{100} + 3^{98}}$

Do your best! Rise to the challenge! Live and learn!