Order of Operations with Fractions (D)

Name: _____

Date: _____

Simplify each expression using the correct order of operations.

$\frac{1}{6} + \frac{8}{9} \times \left(\frac{3}{8} - \frac{1}{8}\right) \div \frac{1}{4} \div \left(\frac{4}{5} + \frac{1}{5}\right)$

$\frac{5}{8} \times \frac{4}{5} - \frac{2}{9} + \frac{3}{4} \div \left(\frac{2}{5} \div \left(\frac{7}{9} \times \frac{3}{5}\right)\right)$

$\frac{1}{9} \times \frac{1}{2} + \frac{7}{9} - \frac{2}{3} \div \left(\left(\frac{5}{6} + \frac{1}{6}\right) \div \frac{5}{9}\right)$

$\frac{3}{5} - \frac{2}{9} \times \left(\frac{5}{8} + \frac{1}{8}\right) \div \frac{2}{5} \div \left(\frac{7}{8} - \frac{1}{6}\right)$

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Problem 1 (top left):

$\dfrac{1}{6} + \dfrac{8}{9} \times \left(\dfrac{3}{8} - \dfrac{1}{8}\right) \div \dfrac{1}{4} \div \left(\dfrac{4}{5} + \dfrac{1}{5}\right)$

$= \dfrac{1}{6} + \dfrac{8}{9} \times \dfrac{1}{4} \div \dfrac{1}{4} \div \left(\dfrac{4}{5} + \dfrac{1}{5}\right)$

$= \dfrac{1}{6} + \dfrac{8}{9} \times \dfrac{1}{4} \div \dfrac{1}{4} \div 1$

$= \dfrac{1}{6} + \dfrac{2}{9} \div \dfrac{1}{4} \div 1$

$= \dfrac{1}{6} + \dfrac{8}{9} \div 1$

$= \dfrac{1}{6} + \dfrac{8}{9}$

$= \dfrac{19}{18}$

$= 1\dfrac{1}{18}$

Problem 2 (top right):

$\dfrac{5}{8} \times \dfrac{4}{5} - \dfrac{2}{9} + \dfrac{3}{4} \div \left(\dfrac{2}{5} \div \left(\dfrac{7}{9} \times \dfrac{3}{5}\right)\right)$

$= \dfrac{5}{8} \times \dfrac{4}{5} - \dfrac{2}{9} + \dfrac{3}{4} \div \left(\dfrac{2}{5} \div \dfrac{7}{15}\right)$

$= \dfrac{5}{8} \times \dfrac{4}{5} - \dfrac{2}{9} + \dfrac{3}{4} \div \dfrac{6}{7}$

$= \dfrac{1}{2} - \dfrac{2}{9} + \dfrac{3}{4} \div \dfrac{6}{7}$

$= \dfrac{1}{2} - \dfrac{2}{9} + \dfrac{7}{8}$

$= \dfrac{5}{18} + \dfrac{7}{8}$

$= \dfrac{83}{72}$

$= 1\dfrac{11}{72}$

Problem 3 (bottom left):

$\dfrac{1}{9} \times \dfrac{1}{2} + \dfrac{7}{9} - \dfrac{2}{3} \div \left(\left(\dfrac{5}{6} + \dfrac{1}{6}\right) \div \dfrac{5}{9}\right)$

$= \dfrac{1}{9} \times \dfrac{1}{2} + \dfrac{7}{9} - \dfrac{2}{3} \div \left(1 \div \dfrac{5}{9}\right)$

$= \dfrac{1}{9} \times \dfrac{1}{2} + \dfrac{7}{9} - \dfrac{2}{3} \div \dfrac{9}{5}$

$= \dfrac{1}{18} + \dfrac{7}{9} - \dfrac{2}{3} \div \dfrac{9}{5}$

$= \dfrac{1}{18} + \dfrac{7}{9} - \dfrac{10}{27}$

$= \dfrac{5}{6} - \dfrac{10}{27}$

$= \dfrac{25}{54}$

Problem 4 (bottom right):

$\dfrac{3}{5} - \dfrac{2}{9} \times \left(\dfrac{5}{8} + \dfrac{1}{8}\right) \div \dfrac{2}{5} \div \left(\dfrac{7}{8} - \dfrac{1}{6}\right)$

$= \dfrac{3}{5} - \dfrac{2}{9} \times \dfrac{3}{4} \div \dfrac{2}{5} \div \left(\dfrac{7}{8} - \dfrac{1}{6}\right)$

$= \dfrac{3}{5} - \dfrac{2}{9} \times \dfrac{3}{4} \div \dfrac{2}{5} \div \dfrac{17}{24}$

$= \dfrac{3}{5} - \dfrac{1}{6} \div \dfrac{2}{5} \div \dfrac{17}{24}$

$= \dfrac{3}{5} - \dfrac{5}{12} \div \dfrac{17}{24}$

$= \dfrac{3}{5} - \dfrac{10}{17}$

$= \dfrac{1}{85}$