

Order of Operations with Fractions (A)

Name: _____

Date: _____

Simplify each expression using the correct order of operations.

$$\frac{2}{3} \div \left(\frac{5}{9} \times \left(\frac{4}{5} + \frac{3}{5} - \frac{1}{5} \right) \div \left(\frac{7}{9} \right)^2 \right)$$

$$\frac{3}{5} + \frac{7}{8} - \left(\frac{5}{6} \right)^2 \times \left(\frac{4}{9} \div \left(\frac{2}{3} \right)^3 \right)$$

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

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

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$$\begin{aligned} & \frac{2}{3} \div \left(\frac{5}{9} \times \left(\frac{4}{5} + \frac{3}{5} - \frac{1}{5} \right) \div \left(\frac{7}{9} \right)^2 \right) \\ &= \frac{2}{3} \div \left(\frac{5}{9} \times \left(\frac{7}{5} - \frac{1}{5} \right) \div \left(\frac{7}{9} \right)^2 \right) \\ &= \frac{2}{3} \div \left(\frac{5}{9} \times \frac{6}{5} \div \left(\frac{7}{9} \right)^2 \right) \\ &= \frac{2}{3} \div \left(\frac{5}{9} \times \frac{6}{5} \div \frac{49}{81} \right) \\ &= \frac{2}{3} \div \left(\frac{2}{3} \div \frac{49}{81} \right) \\ &= \frac{2}{3} \div \frac{54}{49} \\ &= \frac{49}{81} \end{aligned}$$

$$\begin{aligned} & \frac{3}{5} + \frac{7}{8} - \left(\frac{5}{6} \right)^2 \times \left(\frac{4}{9} \div \left(\frac{2}{3} \right)^3 \right) \\ &= \frac{3}{5} + \frac{7}{8} - \left(\frac{5}{6} \right)^2 \times \left(\frac{4}{9} \div \frac{8}{27} \right) \\ &= \frac{3}{5} + \frac{7}{8} - \left(\frac{5}{6} \right)^2 \times \frac{3}{2} \\ &= \frac{3}{5} + \frac{7}{8} - \frac{25}{36} \times \frac{3}{2} \\ &= \frac{3}{5} + \frac{7}{8} - \frac{25}{24} \\ &= \frac{59}{40} - \frac{25}{24} \\ &= \frac{13}{30} \end{aligned}$$

$$\begin{aligned} & \frac{8}{9} - \frac{5}{6} + \left(\frac{1}{2} \right)^2 \times \left(\left(\frac{5}{9} \right)^2 \div \frac{1}{9} \right) \\ &= \frac{8}{9} - \frac{5}{6} + \left(\frac{1}{2} \right)^2 \times \left(\frac{25}{81} \div \frac{1}{9} \right) \\ &= \frac{8}{9} - \frac{5}{6} + \left(\frac{1}{2} \right)^2 \times \frac{25}{9} \\ &= \frac{8}{9} - \frac{5}{6} + \frac{1}{4} \times \frac{25}{9} \\ &= \frac{8}{9} - \frac{5}{6} + \frac{25}{36} \\ &= \frac{1}{18} + \frac{25}{36} \\ &= \frac{3}{4} \end{aligned}$$

$$\begin{aligned} & \frac{3}{5} \times \left(\frac{2}{5} - \frac{1}{5} + \frac{4}{5} \div \frac{3}{4} - \left(\frac{1}{3} \right)^2 \right) \\ &= \frac{3}{5} \times \left(\frac{2}{5} - \frac{1}{5} + \frac{4}{5} \div \frac{3}{4} - \frac{1}{9} \right) \\ &= \frac{3}{5} \times \left(\frac{2}{5} - \frac{1}{5} + \frac{16}{15} - \frac{1}{9} \right) \\ &= \frac{3}{5} \times \left(\frac{1}{5} + \frac{16}{15} - \frac{1}{9} \right) \\ &= \frac{3}{5} \times \left(\frac{19}{15} - \frac{1}{9} \right) \\ &= \frac{3}{5} \times \frac{52}{45} \\ &= \frac{52}{75} \end{aligned}$$