

**Instructions:** Show all work. Give exact answers (improper fractions) and do not round unless specifically asked to do so. If you work the problem in your calculator you can write keystrokes to show work for partial credit.

1. Perform the following operations by hand.

$$a. 4\frac{5}{8} + 9\frac{3}{8} = \frac{32+5}{8} + \frac{72+3}{8} = \frac{37}{8} + \frac{75}{8} = \frac{112}{8} = 14$$

$$b. 5\frac{1}{3} - 1\frac{5}{6} = \frac{15+1}{3} - \frac{6+5}{6} = \frac{16}{3} - \frac{11}{6} = \frac{32}{6} - \frac{11}{6} = \frac{21}{6} = \frac{7}{2} = 3\frac{1}{2}$$

$$c. -5\frac{7}{12} \cdot 4\frac{4}{11} = -\left(\frac{60+7}{12}\right) \cdot \left(\frac{44+4}{11}\right) = -\frac{67}{12} \cdot \frac{48}{11} = -\frac{2688}{132} = -24\frac{4}{11}$$

$$d. 8\frac{2}{3} \div 1\frac{1}{12} = \left(\frac{24+2}{3}\right) \div \left(\frac{12+1}{12}\right) = \left(\frac{26}{3}\right) \cdot \left(\frac{12}{13}\right) = \left(\frac{26}{3}\right) \cdot \left(\frac{4}{13}\right) = 8$$

2. Simplify the expression.

$$\left(2\frac{1}{3} - 1\frac{5}{6}\right) + \frac{7}{8} \cdot \frac{4}{5}$$

$$\left(\frac{6+1}{3} - \frac{6+5}{6}\right) + \frac{7}{10} = \left(\frac{7}{3} - \frac{11}{6}\right) + \frac{7}{10} = \left(\frac{14}{6} - \frac{11}{6}\right) + \frac{7}{10} = \frac{3}{6} + \frac{7}{10} = \frac{1}{2} + \frac{7}{10} =$$

$$\frac{5}{10} + \frac{7}{10} = \frac{12}{10} = \frac{6}{5} = 1\frac{1}{5}$$