

$$1.) \quad x + \frac{4}{3} = -\frac{1}{9}$$

$$\quad \quad \quad -\frac{4}{3} \quad \quad -\frac{4}{3}$$

$$x = -\frac{1}{9} - \frac{4}{3}$$

$$x = -\frac{1}{9} + \left(-\frac{4}{3}\right)$$

$$-\frac{1}{9} = -\frac{1}{9}$$

$$x = -\frac{1}{9} - \frac{4}{3}$$

$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$

$$-\frac{1}{9} - \frac{12}{9} = -\frac{1}{9} + \left(-\frac{12}{9}\right) = \boxed{-\frac{13}{9}}$$

$$-\frac{4}{3} \xrightarrow{*3} -\frac{12}{9}$$

$$\xrightarrow{*3}$$

$$2.) \quad x - 1\frac{1}{3} = -\frac{47}{15}$$

$$\quad \quad \quad + 1\frac{1}{3} \quad \quad + 1\frac{1}{3}$$

$$x = -\frac{47}{15} + 1\frac{1}{3}$$

$$1\frac{1}{3} - \frac{47}{15}$$

$$\downarrow$$

$$\frac{20}{15} - \frac{47}{15}$$

$$47 - 20 = 27$$

$$1\frac{1}{3} = \frac{(3*1)+1}{3} = \frac{3+1}{3} = \frac{4}{3}$$

$$\frac{4}{3} - \frac{47}{15}$$

$$\frac{4}{3} \xrightarrow{*5} \frac{20}{15} \quad \quad -\frac{47}{15} = -\frac{47}{15}$$

3: 3, 6, 9, 12, 15, 18, 21, ...

15: 15, 30, 45, 60, 75, ...

$$\frac{20}{15} - \frac{47}{15} = \frac{-27}{15} \div 3 = \boxed{-\frac{9}{5}}$$

$$3.) a - \frac{13}{8} = -\frac{23}{4}$$

$$+ \frac{13}{8} \quad + \frac{13}{8}$$

$$a = \frac{13}{8} - \frac{23}{4}$$

$$\frac{13}{8} = \frac{13}{8}$$

$$\frac{23}{4} \xrightarrow{\times 2} \frac{46}{8}$$

$$\frac{13}{8} - \frac{46}{8} = \boxed{-\frac{33}{8}}$$

$$\frac{46}{8} - \frac{13}{8} = \frac{33}{8}$$

$$4.) -9\frac{5}{8} = n - 10\frac{15}{16}$$

$$+ 10\frac{15}{16}$$

$$+ 10\frac{15}{16}$$

$$\frac{15}{16} = \frac{15}{16}$$

$$\frac{5}{8} \xrightarrow{\times 2} \frac{10}{16}$$

$$n = 10\frac{15}{16} - 9\frac{5}{8}$$

$$\begin{array}{r} 10\frac{15}{16} \\ - 9\frac{5}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 10\frac{15}{16} \\ - 9\frac{10}{16} \\ \hline \boxed{1\frac{5}{16}} \end{array}$$

$$\frac{2}{3} X = \frac{7}{8}$$

Think:

$$\frac{2x}{2} = \frac{8}{2}$$

$$x = 4$$

Keep, Change, Flip!

$$X = \frac{\frac{7}{8}}{\frac{2}{3}}$$

$$\frac{7}{8} \div \frac{2}{3}$$

$$\frac{7}{8} * \frac{3}{2} = \frac{21}{16}$$

Alternative to dividing is to multiply by the inverse

$$\frac{2}{3} \rightarrow \frac{3}{2} \text{ inverse (flip)}$$

$$\frac{3}{2} \left( \frac{2}{3} X \right) = \left( \frac{7}{8} \right) \frac{3}{2} = \frac{21}{16}$$

$$\frac{8}{1} \left( \frac{1}{8} X \right) = \left( \frac{12}{17} \right) \frac{8}{1} = \frac{96}{17}$$

$$\frac{1}{8} X = \frac{12}{17}$$

$$\frac{12}{17} \div \frac{1}{8}$$

$$\frac{12}{17} * \frac{8}{1} = \frac{96}{17}$$

$$1\frac{4}{5} X = \frac{7}{11}$$

$$1\frac{4}{5} = \frac{(1*5)+4}{5} = \frac{5+4}{5} = \frac{9}{5}$$

$$\frac{\cancel{5}}{\cancel{9}} \left( \frac{\cancel{9}}{\cancel{5}} X \right) = \left( \frac{7}{11} \right) \frac{5}{9} = \boxed{\frac{35}{99}}$$

$$1.) \quad \frac{3}{5} X = 2\frac{7}{8}$$

$$2\frac{7}{8} = \frac{(2*8)+7}{8} = \frac{16+7}{8}$$

$$\frac{\cancel{5}}{\cancel{3}} \left( \frac{\cancel{3}}{\cancel{5}} X \right) = \left( \frac{23}{8} \right) \frac{5}{3} = \boxed{\frac{115}{24}}$$

$$\frac{23}{8}$$

$$2.) \quad 8\frac{1}{4} X = 6\frac{2}{3}$$

$$8\frac{1}{4} = \frac{(8*4)+1}{4} = \frac{32+1}{4} = \frac{33}{4}$$

$$6\frac{2}{3} = \frac{(6*3)+2}{3} = \frac{18+2}{3} = \frac{20}{3}$$

$$\frac{\cancel{4}}{\cancel{33}} \left( \overset{\text{flip}}{\frac{\cancel{33}}{\cancel{4}}} X \right) = \left( \frac{20}{3} \right) \frac{4}{33} = \boxed{\frac{80}{99}}$$