

3-6-2 Proportion Problems

$$\textcircled{a} \frac{x+4}{5} = \frac{2}{3}$$

$$\begin{aligned} 3(x+4) &= 10 \\ 3x+12 &= 10 \\ \underline{-12 \quad -12} \\ 3x &= -2 \\ \frac{3x}{3} &= \frac{-2}{3} \\ x &= -\frac{2}{3} \end{aligned}$$

$$\frac{x-2}{6} = \frac{3x}{5}$$

$$\begin{aligned} 5(x-2) &= 6(3x) \\ 5x-10 &= 18x \\ \underline{-5x \quad -5x} \\ -10 &= 13x \\ \frac{-10}{13} &= \frac{13x}{13} \\ -\frac{10}{13} &= x \end{aligned}$$

$$\frac{8}{2x-7} = \frac{5}{3x}$$

$$\begin{aligned} 8(3x) &= 5(2x-7) \\ 24x &= 10x-35 \\ \underline{-10x \quad -10x} \\ 14x &= -35 \\ \frac{14x}{14} &= \frac{-35}{14} \\ x &= -2\frac{1}{2} \end{aligned}$$

$$\textcircled{b} \frac{-x-2}{6} = \frac{3}{8}$$

$$\begin{aligned} 8(-x-2) &= 18 \\ -8x-16 &= 18 \\ \underline{+16 \quad +16} \\ -8x &= 34 \\ \frac{-8x}{-8} &= \frac{34}{-8} \\ x &= -4\frac{1}{4} \end{aligned}$$

$$\frac{5}{8} = \frac{2x-5}{3x+8}$$

$$\begin{aligned} 5(3x+8) &= 8(2x-5) \\ 15x+40 &= 16x-40 \\ \underline{-15x \quad -15x} \\ 40 &= x-40 \\ \underline{+40 \quad +40} \\ 80 &= x \quad x=80 \end{aligned}$$

$$\frac{2x-6}{7} = \frac{3x-5}{8}$$

$$\begin{aligned} 8(2x-6) &= 7(3x-5) \\ 16x-48 &= 21x-35 \\ \underline{-16x \quad -16x} \\ -48 &= 5x-35 \\ \underline{35 \quad +35} \\ -13 &= 5x \\ \frac{-13}{5} &= \frac{5x}{5} \quad x = -2\frac{3}{5} \end{aligned}$$

$$\textcircled{c} \frac{2x+4}{9} = \frac{1}{3}$$

$$\begin{aligned} 3(2x+4) &= 9 \\ 6x+12 &= 9 \\ \underline{-12 \quad -12} \\ 6x &= -3 \\ \frac{6x}{6} &= \frac{-3}{6} \\ x &= -\frac{1}{2} \end{aligned}$$

$$\frac{5}{3} = \frac{2(x-7)}{3x+8}$$

$$\begin{aligned} 5(3x+8) &= 6(x-7) \\ 15x+40 &= 6x-42 \\ \underline{-6x \quad -6x} \\ 9x+40 &= -12 \\ \underline{-40 \quad -40} \\ 9x &= -52 \\ \frac{9x}{9} &= \frac{-52}{9} \quad x = -5\frac{7}{9} \end{aligned}$$

$$\frac{x-6}{2} = \frac{3(x-5)}{5}$$

$$\begin{aligned} 5(x-6) &= 6(x-5) \\ 5x-30 &= 6x-30 \\ \underline{-5x \quad -5x} \\ -30 &= x-30 \\ \underline{+30 \quad +30} \\ 0 &= x \end{aligned}$$

$$\textcircled{d} \frac{3x-4}{5} = \frac{2}{5}$$

$$\begin{aligned} 5(3x-4) &= 10 \\ 15x-20 &= 10 \\ \underline{+20 \quad 20} \\ 15x &= 30 \\ \frac{15x}{15} &= \frac{30}{15} \\ x &= 2 \end{aligned}$$

$$\frac{2x-7}{3(x+8)} = 8$$

$$\begin{aligned} 2x-7 &= 8(3(x+8)) \\ 2x-7 &= 24(x+8) \\ 2x-7 &= 24x+192 \\ \underline{-2x-192 \quad -2x-192} \\ -199 &= 22x \\ -9\frac{1}{2} &= x \end{aligned}$$

$$\frac{6-x}{3} = \frac{3x+1}{-2}$$

$$\begin{aligned} -2(6-x) &= 3(3x+1) \\ -12+2x &= 9x+3 \\ \underline{-2x \quad -2x} \\ -12 &= 7x+3 \\ \underline{-3 \quad -3} \\ -15 &= 7x \\ \frac{-15}{7} &= \frac{7x}{7} \quad x = -2\frac{1}{7} \end{aligned}$$