

NEWTON'S SECOND LAW OF MOTION

FBD



$$\sum F'_x = ma_x$$



$$+F_R - F_f = ma_x = \text{NET FORCE}$$

$$22\text{N} - 7 = 15\text{N} = ma_x$$

$$1\text{N} = (1\text{kg}) \left(1 \frac{\text{m}}{\text{s}^2}\right)$$

$$15\text{N} = (3\text{kg}) a_x$$

$$a_x = 5 \text{ m/s}^2$$

$$1) \frac{x-8}{2} \\ x=4$$

$$\frac{3x}{3} = \frac{17}{3} \\ x = 5.\bar{6}$$

$$\begin{array}{r} x+4=13 \\ -4 \quad -4 \\ \hline x=9 \end{array}$$

$$\begin{array}{r} 4 \cdot 4 - x = 81 \\ -4 \quad -4 \\ \hline -x = 77 \\ \frac{-x}{-1} = \frac{77}{-1} \\ x = -77 \end{array}$$

$$\begin{array}{r} 2x-11=7 \\ +11 \quad +11 \\ \hline 2x=18 \\ x=9 \end{array}$$

$$\begin{array}{r} 6x+21=20 \\ -21 \quad -21 \\ \hline 6x = -1 \\ \frac{6x}{6} = \frac{-1}{6} \\ x = -\frac{1}{6} \end{array}$$

$$\begin{array}{r} 4x+3=9x-6 \\ -4x+6 \quad -4x+6 \\ \hline 5x=9 \\ \frac{5x}{5} = \frac{9}{5} \\ x = 1.8 \end{array}$$

$$\begin{array}{r} 8 \cdot x - 9y = 5 \\ +9y \quad +9y \\ \hline x - y = 14 \end{array}$$

$$\begin{array}{r} x = 5 + 9y \\ +9y \\ \hline x = 5 + 9y \end{array}$$

$$x = (5 + 9y)$$

$$\begin{array}{r} (x+9) = 25(3) \\ \frac{x+9}{3} \\ x+9=75 \quad (x=66) \\ -9 \quad -9 \end{array}$$

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

$$\boxed{x=4}$$

$$2. \frac{3x}{3} = \frac{17}{3} = 5.\bar{6}$$

$$3.) \begin{array}{r} x+4=13 \\ -4 \quad -4 \\ \hline x=9 \end{array}$$

$$4.) \begin{array}{r} 4-x=8 \\ -4 \quad -4 \\ \hline -x=4 \\ \hline x=-4 \end{array}$$

$$5. \begin{array}{r} 2x-y=7 \\ +11 \quad +11 \\ \hline 13x=18 \end{array}$$

$$\boxed{x=1.8}$$

$$6. \begin{array}{r} 6x+24=6 \\ -24 \quad -24 \\ \hline 6x=-18 \\ \hline x=-3 \end{array}$$

$$7.) \begin{array}{r} 4x+3=9x-6 \\ -4x \quad -4x \\ \hline 3=5x-6 \\ +6 \quad +6 \\ \hline 9=5x \\ \frac{9}{5} = \frac{5x}{5} \quad x=1.8 \end{array}$$

$$8.) \begin{array}{r} x+y=5 \\ +14 \quad +14 \\ \hline x=5+14 \end{array}$$

$$\boxed{x=19}$$

$$9.) \frac{(x+9)^3}{3} = 25^3$$

10)

$$\begin{array}{r} x+9=75 \\ -9 \quad -9 \\ \hline x=66 \end{array}$$

$$\frac{13}{(x-6)} = 11(x-6)$$

$$\begin{array}{r} 13 = 11x - 66 \\ +66 \quad +66 \\ \hline 79 = 11x \\ \hline x=7.18 \end{array}$$

$$11.) \begin{array}{r} 7xy-8=6 \\ +8 \quad +8 \\ \hline 7xy=16 \\ \frac{7xy}{7} = \frac{16}{7} \\ \hline \boxed{xy=2.29} \end{array}$$

$$12. \begin{array}{r} x^2+3y+18=0 \\ -18 \quad -18 \\ \hline x^2+3y=-18 \\ -3y \quad -3y \\ \hline \sqrt{x^2} = \sqrt{-18-3y} \\ x = \sqrt{-18-3y} \end{array}$$