#1 $\frac{3x+2}{5} = 7$ | Justification

$\frac{5}{1} \cdot \frac{3x+2}{5} = 7 \cdot 5$ | Mult. Prop of Equality

$3x+2 = 35$
$-2 \quad -2$ | Subtraction prop of Equality

$\frac{3x}{3} = \frac{33}{3}$ | Division prop of Equality

$\boxed{x = 11}$

#2 $\frac{5}{1} \cdot \frac{3x+2y}{5} = 7 \cdot 5$ | Justification

Multiplication prop of Equality

$3x+2y = 35$
$-2y \quad -2y$ | Subtraction Property of Equality

$\frac{3x}{3} = \frac{35-2y}{3}$ | Division property of Equality

$\boxed{x = \frac{35-2y}{3}}$

#3 $\frac{4x}{3} - 5 = 11$ | Justification

$+5 \quad +5$ | Addition Property of Equality

$\frac{3}{1} \cdot \frac{4x}{3} = 16 \cdot 3$ | Multiplication Property of Equality

$\frac{4x}{4} = \frac{48}{4}$ | Division Property of Equality

$\boxed{x = 12}$

#4 $\frac{4x}{3} - 5y = 11$ | Justification

$+5y \quad +5y$ | Addition Property of Equality

$\frac{3}{1}\frac{4x}{3} = (11+5y)3$ | Multiplication Property of Equality

$4x = 3(11+5y)$

$\frac{4x}{4} = \frac{33+15y}{4}$ | Distributive Property

| Division Property of Equality

$\boxed{x = \frac{33+15y}{4}}$ | To

#5 $\frac{5}{2}\frac{7}{5}(x+3) = \frac{6}{1}\cdot\frac{5}{2}$ | Justification

| Multiplication Property of Equality

$x+3 = \frac{30}{2}$

$x+3 = 15$ | subtraction Property of Equality

$-3 \quad -3$

$\boxed{x = 12}$

#6 $\frac{5}{2}\frac{7}{5}(x+y) = 6\cdot\frac{5}{2}$ | Justification

$x+y = \frac{30}{2}$ | Multiplication property of Equality

$x+y = 15$ | subtraction property of Equality

$-y \quad -y$

$x = 15-y$

#7

$2(3x+4) = 4x+12$ — Distributive Property

$6x+8 = 4x+12$

$-4x \quad -4x$ — subtraction property of Equality

$+2x+8 = 12$

$-8 \quad -8$ — subtraction property of Equality

$\frac{+2x}{+2} = \frac{4}{2}$ — Division property of Equality

$\boxed{x = +2}$

#8

$2(3x+4y) = 4x+12y$ — Justification

$6x+8y = 4x+12y$ — Distributive Property

$-8y \quad -8y$ — subtraction property of Equality

$6x = 4x+4y$ — subtraction property of Equality

$-4x \quad -4x$

$\frac{2x}{2} = \frac{4y}{2}$ — Division Property of Equality

$\boxed{x = 2y}$

#9

$\frac{ax+b}{c} - d = e$ — Justification

$+d \quad +d$ — Addition Property of Equality

$\frac{c}{1} \cdot \frac{ax+b}{c} = (e+d)c$ — Multiplication Property of Equality

$ax+b = c(e+d)$

$-b \quad -b$ — subtraction Property of Equality

$\frac{ax}{a} = \frac{c(e+d)-b}{a}$ — Division property of Equality

$x = \frac{c(e+d)-b}{a}$

#10

$$\sqrt{\frac{mx}{n}+s} = \frac{t}{r}$$

Justification

Division property of Equality

$$\left(\sqrt{\frac{mx}{n}+s}\right)^2 = \left(\frac{t}{r}\right)^2$$

squaring both sides

$$\frac{mx}{n} + s = \left(\frac{t}{r}\right)^2$$

$-s \quad -s$

subtraction property of equality

$$\frac{mx}{n} = \left[\left(\frac{t}{r}\right)^2 - s\right] n$$

Multiplication property of equality

$$\frac{mx}{m} = \frac{\left[\left(\frac{t}{r}\right)^2 - s\right] n}{m}$$

Division property of equality

$$x = \frac{\left[\left(\frac{t}{r}\right)^2 - s\right] n}{m}$$

#11

$$\frac{1}{1} \cdot \frac{x+2y}{7} = 4.7$$

Justification

multiplication property of equality

$$x+2y = 28$$

$-2y \quad -2y$

subtraction property of Equality

$$x = 28-2y$$

#12 Solution $Q = \pi r^2 h$ | Justification

$\frac{Q}{\pi r^2} = \frac{\pi r^2 h}{\pi r^2}$ | Division Property of Equality

$\boxed{\frac{Q}{\pi r^2} = h}$

#13 $\frac{2x}{5} - 9 = 6$ | Justification

$+9 \quad +9$ | Addition property of Equality

$\frac{5}{2} \cdot \frac{2x}{5} = 15 \cdot \frac{5}{2}$ | Multiplication property of Equality

$\boxed{x = \frac{75}{2}}$

$x = 37.5$