1)

$12x - 5x = 24 + 3x$

$7x = 24 + 3x$

$-3x \quad -3x$

$4x = 24$

$\frac{4x}{4} = \frac{24}{4}$

$x = 6$

2)

$3 \cdot \frac{r-2}{3} = 11 \cdot 3$

$r - 2 = 33$

$+2 \quad +2$

$r = 35$

3)

$7 \cdot \frac{x}{7} = -10 \cdot 7$

$x = -70$

4)

$3 - 2x = 7$

$-3 \quad -3$

$-2x = 4$

$\frac{-2x}{-2} = \frac{4}{-2}$

$x = -2$

5)

Write and solve an equation to represent the situation.

One health club charges a $50 sign up fee and $65 per month. Another club charges a $90 sign up fee and $45 per month. For what number of months is the costof the clubs equal? m = months

$50 + 65m = 90 + 45m$

$-45m \quad -45m$

$50 + 20m = 90$

$-50 \quad -50$

$m = 2$ months

6)

$-2(x + 5) = 18$

$-2x - 10 = 18$

$+10 \quad +10$

$-2x = 28$

$\frac{-2x}{-2} = \frac{28}{-2}$

$x = -14$

7)

$$\left(\frac{x}{3} + \frac{2x}{6} = 10\right) \cdot 6$$

$2x + 2x = 60$

$\frac{4x}{4} = \frac{60}{4}$

$\boxed{x = 15}$

8)

$-2 = \frac{1}{4}x + 10$

$-10 \qquad -10$

$\frac{4}{1} \cdot -12 = \frac{1}{4}x \cdot \frac{4}{1}$

$\boxed{-48 = x}$

9)

$4(x - 1/2) = x + 10 + 3x$

$4x - 2 = 4x + 10$

$-4x \qquad -4x$

$-2 = 10$

NO Solution!

10)

Write and solve an equation to represent the situation.

Pristine Printing will print business cards for $0.10 each plus a set up charge of $15. The Printing Place offers business cards for $0.15 each with a set up charge of $10. What number of business cards cost the same from either printer?

C = business cards

$.10C + 15 = .15C + 10$

$-.10C \qquad -.10C$

$15 = 0.05C + 10$

$-10 \qquad -10$

$\frac{5}{0.05} = \frac{0.05C}{0.05}$

$\boxed{C = 100 \text{ cards}}$

11)

$h + 5 - 8h = 3h - 6$

$-7h + 5 = 3h - 6$

$+7h \qquad +7h$

$5 = 10h - 6$

$+6 \qquad +6$

$\frac{11}{10} = \frac{10h}{10}$

$\boxed{h = 1.1}$

12)

$\frac{3}{4}(x - 1) = \frac{1}{4}$

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

$+3/4 \qquad +3/4$

$\frac{4}{3} \cdot \frac{3}{4}x = 1 \cdot \frac{4}{3}$

$\boxed{x = \frac{4}{3} \text{ or } 1\frac{1}{3}}$

13)

$8(x + 2) - x = 4 + 2(x + 1)$

$8x + 16 - 1x = 4 + 2x + 2$

$7x + 16 = 2x + 6$

$-2x \quad -2x$

$5x + 16 = 6$

$-16 \quad -16$

$\frac{5x}{5} = \frac{-10}{5}$

$x = -2$

14)

$x - 10 = -15$

$+10 \quad +10$

$x = -5$

15)

$\frac{-9x}{-9} = \frac{63}{-9}$

$x = -7$

16)

$2x - 6 = 11$

$+6 \quad +6$

$\frac{2x}{2} = \frac{17}{2}$

$x = 8\frac{1}{2}$ or 8.5

17)

$7 = x - 2$

$+2 \quad +2$

$9 = x$

$x = 9$

18)

$36 + 6x = 10x$

$-6x \quad -6x$

$\frac{36}{4} = \frac{4x}{4}$

$x = 9$

19)

Solve for x.

$$-3y + xy = 2x + 5$$

$-2x$ $\quad$ $-2x$

$$-2x - 3y + xy = 5$$

$+3y$ $\quad$ $+3y$

$$-2x + xy = 3y + 5$$

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

$$\boxed{x = \frac{3y+5}{y-2} \text{ or } x = \frac{5+3y}{-2+y}}$$

20)

Solve for x.

$$10xy + 5xz - 2yz = 20$$

$+2yz$ $\quad$ $+2yz$

$$xy + 5xz = 20 + 2yz$$

$$\frac{x(y+5z)}{y+5z} = \frac{20+2yz}{y+5z}$$

$$\boxed{x = \frac{20+2yz}{y+5z}}$$

21)

Solve for x.

$$\frac{x}{w} - 2 = \frac{y}{z}$$

$+2$ $\quad$ $+2$

$$w \cdot \frac{x}{w} = \left(\frac{y}{z} + 2\right)w$$

$$\boxed{x = \left(\frac{y}{z} + 2\right)w \quad \text{or} \quad x = \frac{wy}{z} + 2w}$$

22)

Solve for y:

$$ax + by = c$$

$-ax$ $\quad$ $-ax$

$$\frac{by}{b} = \frac{-ax+c}{b}$$

$$\boxed{y = \frac{-ax+c}{b} \quad \text{or} \quad y = \frac{c-ax}{b}}$$

23)

Solve for y:

$$xy + 2y = w$$

$$\frac{y(x+2)}{x+2} = \frac{w}{x+2}$$

$$\boxed{y = \frac{w}{x+2}}$$

24)

Solve for y:

$$3y + x = -y + 4$$

$+y$ $\quad$ $+y$

$$4y + x = 4$$

$-x$ $\quad$ $-x$

$$\frac{4y}{4} = \frac{-x+4}{4}$$

$$\boxed{y = \frac{-x+4}{4} \text{ or } y = \frac{-x}{4} + 1}$$

25)

A building is 1450 ft tall. How many meters tall is the building? Use 1m = 3.28 ft

$$1450\ \text{ft} \cdot \frac{1\ \text{m}}{3.28\ \text{ft}} = \frac{1450}{3.28}\ \text{m}$$

442.07 m

26)

An athlete ran a sprint of 100 ft in 3.1 seconds. At what speed was the athlete running in miles per hour?

$$\frac{100\ \text{ft}}{3.1\ \text{sec}} \cdot \frac{1\ \text{mi}}{5280\ \text{ft}} \cdot \frac{60\ \text{sec}}{1\ \text{min}} \cdot \frac{60\ \text{min}}{1\ \text{hr}} = \frac{360{,}000}{16{,}368}\ \frac{\text{mi}}{\text{hr}} = 21.99\ \text{mph}$$

27)

$$\frac{b-8}{5} = \frac{b+3}{4}$$

$$4(b-8) = 5(b+3)$$

$$4b - 32 = 5b + 15$$

$$-4b \qquad -4b$$

$$-32 = b + 15$$

$$-15 \qquad -15$$

$$-47 = b$$

28)

$$\frac{n}{5} = \frac{2n+4}{6}$$

$$6n = 5(2n+4)$$

$$6n = 10n + 20$$

$$-10n \quad -10n$$

$$\frac{-4n}{-4} = \frac{20}{-4}$$

$$n = -5$$

29)

You deposited $125 in a savings account that earns a simple interest rate of 1.75% per year. You earned a total of $8.75 in interest. For how long was your money in the account?

$$I = Prt$$

$$8.75 = 125 \cdot 0.0175 \cdot t$$

$$\frac{8.75}{2.1875} = \frac{2.1875\,t}{2.1875}$$

$$t = 4\ \text{years}$$

30)

125% of what number is 17.5?

$$\frac{1.25\,x}{1.25} = \frac{17.5}{1.25}$$

$$x = 14$$

31) *What percent of 56 is 42?*

$$\frac{X \cdot 56}{56} = \frac{42}{56}$$

$$X = 0.75$$

$$\boxed{75\%}$$

32) ***In one year, the toll for passenger cars to use a tunnel rose from $3 to $3.50. What is the percent increase?***

$$\frac{0.50}{3} = 0.1667$$

$$\boxed{16\frac{2}{3}\%}$$

33)

You think that the distance between your house and a friend's house is 5.5 miles. The actual distance is 4.75 miles. What is the percent error in your estimation?

$$\frac{0.75}{4.75} = 0.15789$$

$$\boxed{\approx 15.79\%}$$