

Solve each linear equation. Show your work.

1. $2(x-5) - 8 = 20$

$$2x - 10 - 8 = 20$$

$$2x - 18 = 20$$

$$\begin{array}{r} +18 +18 \\ \hline 2x = 38 \\ \hline x = 19 \end{array}$$

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

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

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

$$\begin{array}{r} +5 +5 \\ \hline 3x = 7\frac{1}{2} \\ \hline x = 2.5 \end{array}$$

3. $\frac{1}{4}(x+2) - 2 = 0.5$

$$\frac{1}{4}x + \frac{1}{2} - 2 = 0.5$$

$$\frac{1}{4}x - 1.5 = 0.5$$

$$\begin{array}{r} +1.5 +1.5 \\ \hline \frac{1}{4}x = 2 \\ \hline x = 8 \end{array}$$

Tell whether each equation has one solution, no solution, or infinite solutions. Show your work.

4. $2x + 4 = -2(\frac{1}{2} - x)$

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

NO SOLUTION

5. $6y + (16 - 2y) = 4(4 + y)$

$$6y + 16 - 2y = 16 + 4y$$

$$4y + 16 = 16 + 4y$$

Infinite Solutions

6. $(4x) + 5 = (2x) - 7$

$$\begin{array}{r} 4x + 5 = -7 \\ -2x -2x \\ \hline 2x + 5 = -7 \\ -5 -5 \\ \hline 2x = -12 \\ \hline x = -6 \end{array}$$

One Solution
 $x = -6$

7. $2x + 5 = -4(-\frac{5}{4} - \frac{1}{2}x)$

$$2x + 5 = 5 + 2x$$

Infinite Solutions

For #8 and 9, find the value of y when x = 4.

8. $4x - 2 = y + 5$

$$4(4) - 2 = y + 5$$

$$16 - 2 = y + 5$$

$$\frac{14}{-5} = \frac{y+5}{-5}$$

$$\boxed{y = 9}$$

9. $x - 4y = 2$

$$\begin{array}{r} 4x - 4y = 2 \\ -4x = -4 \\ \hline \end{array}$$

$$\begin{array}{r} -4y = -2 \\ -4y = -4 \\ \hline \end{array}$$

$$\boxed{y = 0.5}$$

For #10 and 11, find the value of x when y = -1

10. $4x - 2 = y + 5$

$$4x - 2 = (-1) + 5$$

$$\begin{array}{r} 4x - 2 = 4 \\ +2 +2 \\ \hline \end{array}$$

$$\frac{4x}{4} = \frac{6}{4}$$

$$\boxed{x = 1.5}$$

11. $x - 4y = 2$

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

$$\begin{array}{r} x + 4 = 2 \\ -4 -4 \\ \hline \end{array}$$

$$\boxed{x = -2}$$

12. JD, Michael and Aylin all have a different amount of t-shirts. JD has 6 more t-shirts than Aylin. Michael has twice as many t-shirts as Aylin. If the total number of t-shirts they all have together is 38, find the number of t-shirts that JD, Michael and Aylin all have.

name	shirts
14 = JD	x + 6
8 = Aylin	x
16 = Michael	2x

= 38

$$x + 6 + x + 2x = 38$$

$$4x + 6 = 38$$

$$\begin{array}{r} 4x + 6 = 38 \\ -6 -6 \\ \hline \end{array}$$

$$\boxed{x = 8}$$

13. A store has x hammers. It sold the hammers for \$15 at first. The last 5 that were left were sold at a discounted rate of \$10. If the total for all the sold hammer is \$575 how many hammers were sold at first?

x = # of hammer sold first

$$15x + 5(10) = 575$$

$$15x + 50 = 575$$

$$15x = 525$$

$$\boxed{x = 35}$$

14. Complete the table below for the missing solutions using the equation below:

$$y = 3x + 2$$

x	0	1	5	6	10
y	2	5	17	20	32

$$y = 3(0) + 2$$

$$y = 2$$

$$y = 3(1) + 2$$

$$y = 5$$

$$y = 3(6) + 2$$

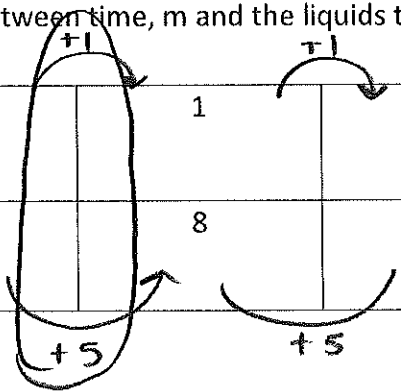
$$y = 20$$

$$\begin{array}{r} 17 = 3x + 2 \\ -2 -2 \\ \hline 15 = 3x \quad x = 5 \end{array}$$

$$\begin{array}{r} 32 = 3x + 2 \\ -2 -2 \\ \hline 30 = 3x \quad x = 10 \end{array}$$

15. Jason was making tea. He measured the temperature of the tea at various intervals. Write a linear equation for the relationship between time, m and the liquids temperature, T .

Time (m) In minutes	0	1	2	3	4
Temperature (T) In Celsius	3	8	13	18	23

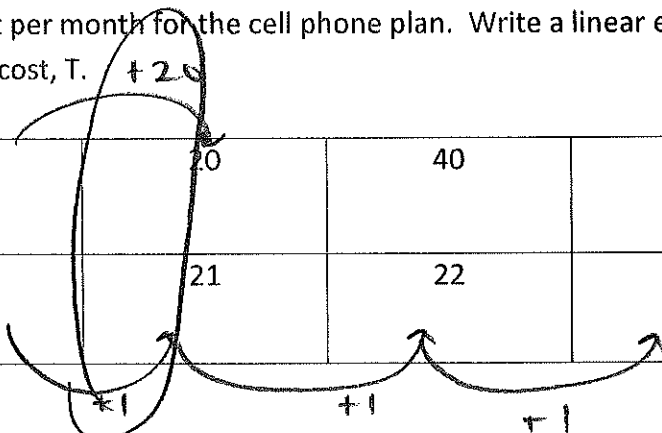


Equation: $T = \frac{5}{1}m + 3$

temp °C change (under 5)
min. change (under 1)
Temp when m=0 (under 3)

16. Bernadette's cell phone plan is listed in the chart below showing the relationship between the number of minutes used and the total cost per month for the cell phone plan. Write a linear equation for the relationship between time, m and the total cost, T .

Time (m) In minutes	0	20	40	60	80
Total Cost (T)	20	21	22	23	24



Equation: $T = \frac{1}{20}m + 20$

total cost change (under 1)
minutes change (under 20)
TOTAL cost when m=0 (under 20)