Chapter 4. Graphing Relations and Functions

Ex. 4.4

Answer 1CU.

The *x* values represent the domain and the *y* values represent the range.

The values of *x* come from the domain. Substitute each value of *y* into the equation to determine the values of *x* in the domain.

To find the domain of an equation if you are given the range. Substitute the values for *y* and solve for *x*.

Answer 2CU.

An example of an equation in two variables and state two solutions for equation .

For example: $x+y=5$

Let $(1,4)$ and $(2,3)$ be the solutions of an equation.

Since, $1+4=5$

$2+3=5$

Therefore, the example of an equation in two variables is $\boxed{x+y=5}$ and two solutions for equation is $\boxed{(1,4) \text{ and } (2,3)}$.

Answer 3CU.

Consider,

$$y=2x+3,(5,1)$$

Here replace *x* with 5 and *y* with 1.

Bryan is correct .

$$y=2x+3$$
$$1=2(5)+3$$
$$1=10+3$$
$$1\neq 13$$

Malena is wrong, since Malena replaces *x* with 1 and *y* with 5.

$$y=2x+3$$
$$5=2(1)+3 \qquad \text{The Error}$$

Answer 4CU.

Consider,

$y = 3x + 4; \{(-1,1),(2,10),(3,12),(7,1)\}$

Make a table. Substitute ordered pair into the equation.

x	y	$y = 3x + 4$	True or False
-1	1	$1 = 3(-1) + 4$ $1 = -3 + 4$ $1 = 1$	True
2	10	$10 = 3(2) + 4$ $10 = 6 + 4$ $10 = 10$	True
3	12	$12 = 3(3) + 4$ $12 = 9 + 4$ $12 = 13$	False
7	1	$1 = 3(7) + 4$ $1 = 21 + 4$ $1 = 25$	False

The ordered pairs $(-1,1)$ and $(2,10)$ result in true statements .

Therefore the solution set is $\boxed{(-1,1),(2,10)}$.

Answer 5CU.

Consider,

$2x-5y=1;\{(-7,-3),(7,3),(2,1),(-2,-1)\}$

Make a table. Substitute ordered pair into the equation.

x	y	$2x-5y=1$	True or False
-7	-3	$2(-7)-5(-3)=1$ $-14+15=1$ $1=1$	True
7	3	$2(7)-5(3)=1$ $14-15=1$ $-1=1$	False
2	1	$2(2)-5(1)=1$ $4-5=1$ $-1=1$	False
-2	-1	$2(-2)-5(-1)=1$ $-4+5=1$ $1=1$	True

The ordered pairs $(-7,-3)$ and $(-2,-1)$ result in true statements .

Therefore the solution set is $\boxed{(-7,-3),(-2,-1)}$.

Answer 6CU.

Consider,

$y = 2x - 1$

Solve the equation if the domain is $\{-3, -1, 0, 2\}$.

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y = 2x - 1$	*y*	(x, y)
-3	$y = 2(-3) - 1$ $= -6 - 1$ $= -7$	-7	(-3,-7)
-1	$y = 2(-1) - 1$ $= -2 - 1$ $= -3$	-3	(-1,-3)
0	$y = 2(0) - 1$ $= 0 - 1$ $= -1$	-1	(0,-1)
2	$y = 2(2) - 1$ $= 4 - 1$ $= 3$	3	(2,3)

Therefore the solution set is $\boxed{\{(-3,-7),(-1,-3),(0,-1),(2,3)\}}$.

Answer 7CU.

Consider,

$y = 4 - x$

Solve the equation if the domain is $\{-3, -1, 0, 2\}$.

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y = 4 - x$	*y*	(x, y)
-3	$y = 4 - (-3)$ $= 4 + 3$ $= 7$	7	(-3,7)
-1	$y = 4 - (-1)$ $= 4 + 1$ $= 5$	5	(-1,5)
0	$y = 4 - 0$ $= 4$	4	(0,4)
2	$y = 4 - 2$ $= 2$	2	(2,2)

Therefore the solution set is $\boxed{\{(-3,7),(-1,5),(0,4),(2,2)\}}$.

Answer 8CU.

Consider,

$2y+2x=12$

Solve the equation if the domain is $\{-3,-1,0,2\}$.

First solve the equation for y in terms of x.

$$\begin{aligned} 2y+2x &= 12 \\ 2y+2x-2x &= 12-2x && \text{Subtract } 2x \text{ from both sides} \\ 2y &= 12-2x && \text{Simplify} \\ \frac{2y}{2} &= \frac{12-2x}{2} && \text{Divide each side by 2} \end{aligned}$$

$y=6-x$ Simplify

Make a table. The values of x come from the domain. Substitute each value of x into the equation to determine the values of y in the range.

x	$y=6-x$	y	(x,y)
-3	$y=6-(-3)$ $=6+3$ $=9$	9	(-3,9)
-1	$y=6-(-1)$ $=6+1$ $=7$	7	(-1,7)
0	$y=6-0$ $=6$	6	(0,6)
2	$y=6-2$ $=4$	4	(2,4)

Therefore the solution set is $\boxed{\{(-3,9),(-1,7),(0,6),(2,4)\}}$.

Answer 9CU.

Consider,

$3x+2y=13$

Solve the equation if the domain is $\{-3,-1,0,2\}$.

First solve the equation for *y* in terms of *x*.

$$\begin{aligned} 3x+2y&=13 \\ 3x+2y-3x&=13-3x && \text{Subtract } 3x \text{ from both sides} \\ 2y&=13-3x && \text{Simplify} \\ \frac{2y}{2}&=\frac{13-3x}{2} && \text{Divide each side by 2} \end{aligned}$$

$y=\frac{1}{2}(13-3x)$ Simplify

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y=\frac{1}{2}(13-3x)$	*y*	(x,y)
-3	$y=\frac{1}{2}[13-3(-3)]$ $=\frac{1}{2}(13+6)$ $=\frac{19}{2}$	$\frac{19}{2}$	$\left(-3,\frac{19}{2}\right)$
-1	$y=\frac{1}{2}[13-3(-1)]$ $=\frac{1}{2}(13+3)$ $=\frac{16}{2}$ $=8$	8	$(-1,8)$
0	$y=\frac{1}{2}[13-3(0)]$ $=\frac{1}{2}(13+0)$ $=\frac{13}{2}$	$\frac{13}{2}$	$\left(0,\frac{13}{2}\right)$
2	$y=\frac{1}{2}[13-3(2)]$ $=\frac{1}{2}(13-6)$ $=\frac{7}{2}$	$\frac{7}{2}$	$\left(0,\frac{7}{2}\right)$

Therefore the solution set is $\boxed{\left\{\left(-3,\frac{19}{2}\right),(-1,8),\left(0,\frac{13}{2}\right),\left(2,\frac{7}{2}\right)\right\}}$

Answer 10CU.

Consider,

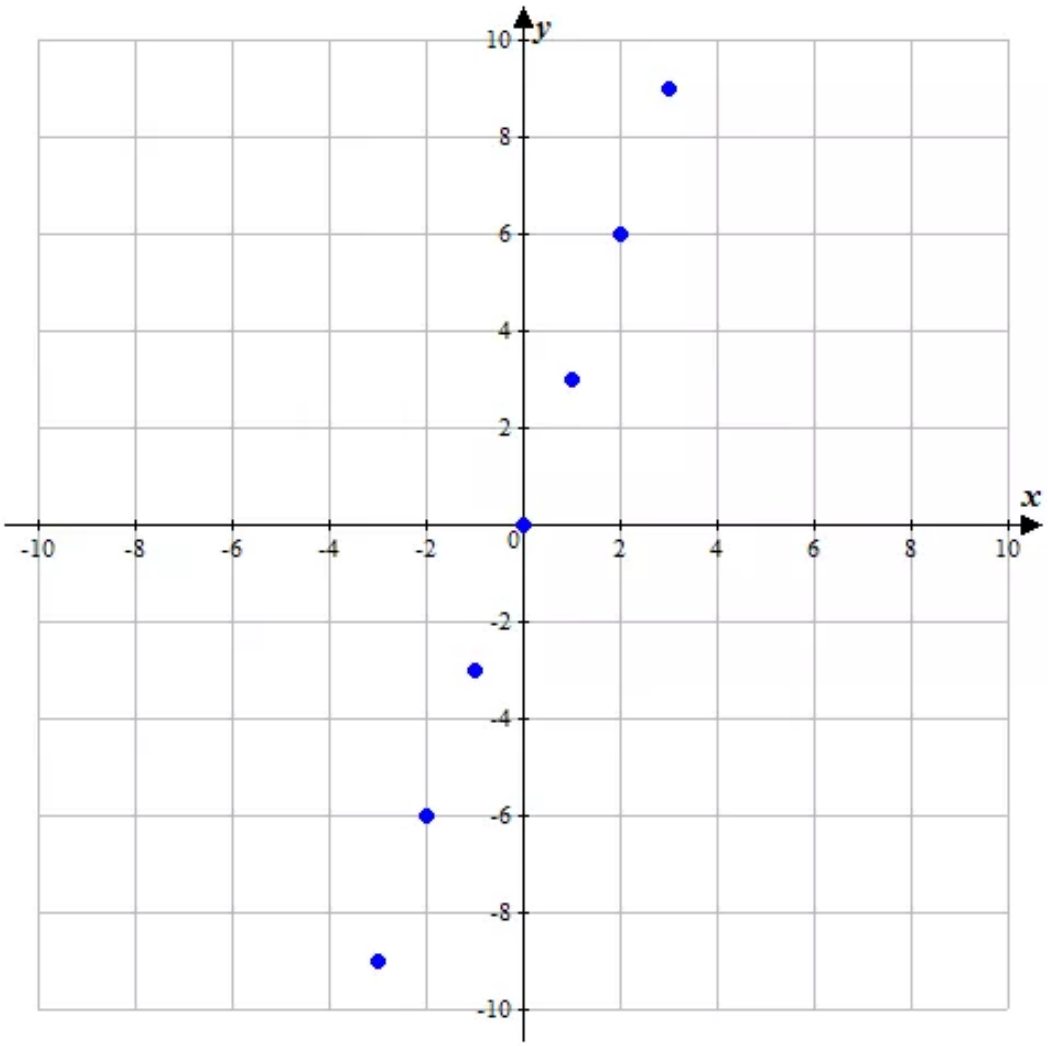
$y = 3x$ for $x = \{-3, -2, -1, 0, 1, 2, 3\}$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the corresponding values of *y* in the range.

x	$y = 3x$	*y*	(x, y)
-3	$y = 3(-3) = -9$	-9	(-3,-9)
-2	$y = 3(-2) = -6$	-6	(-2,-6)
-1	$y = 3(-1) = -3$	-3	(-1,-3)
0	$y = 3(0) = 0$	0	(0,0)
1	$y = 3(1) = 3$	3	(1,3)
2	$y = 3(2) = 6$	6	(2,6)
3	$y = 3(3) = 9$	9	(3,9)

Therefore the solution set is $\{(-3,-9),(-2,-6),(-1,-3),(0,0),(1,3),(2,6),(3,9)\}$.

Graph the solution set $\{(-3,-9),(-2,-6),(-1,-3),(0,0),(1,3),(2,6),(3,9)\}$.



Answer 11CU.

Consider,

$2y = x + 2$ for $x = \{-4,-2,0,2,4\}$

First solve the equation in terms of *y*.

$$2y = x + 2$$

$$\frac{2y}{2} = \frac{x+2}{2}$$ Divide both sides with 2

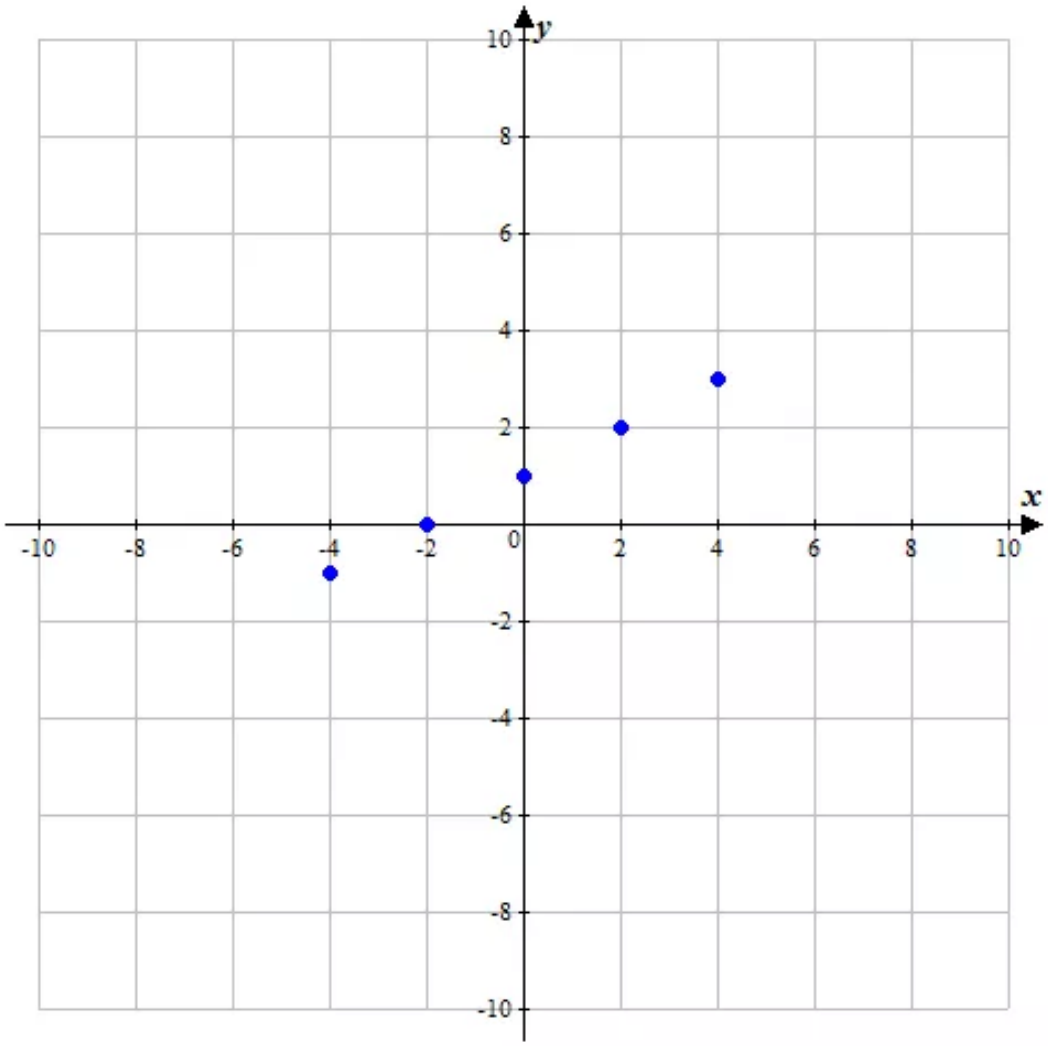
$$y = \frac{1}{2}(x+2)$$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the corresponding values of *y* in the range.

x	$y=\frac{1}{2}(x+2)$	y	(x,y)
-4	$y=\frac{1}{2}(-4+2)$ $=\frac{1}{2}(-2)$ $=-1$	-1	(-4,-1)
-2	$y=\frac{1}{2}(-2+2)$ $=\frac{1}{2}(0)$ $=0$	0	(-2,0)
0	$y=\frac{1}{2}(0+2)$ $=\frac{1}{2}(2)$ $=1$	1	(0,1)
2	$y=\frac{1}{2}(2+2)$ $=\frac{1}{2}(4)$ $=2$	2	(2,2)
4	$y=\frac{1}{2}(4+2)$ $=\frac{1}{2}(6)$ $=3$	3	(4,3)

Therefore the solution set is $\{(-4,-1),(-2,0),(0,1),(2,2),(4,3)\}$.

Graph the solution set $\{(-4,-1),(-2,0),(0,1),(2,2),(4,3)\}$.



Answer 12CU.

Consider,

$$g=\frac{25k}{6}$$

Solve the equation if the domain is $\{10,14,18,24\}$.

Make a table. The values of *k* come from the domain. Substitute each value of *k* into the equation to determine the values of *g* in the range.

k	$g=\frac{25k}{6}$	g	(k,g)
	$g=\frac{25(10)}{}$		

10	$g = \frac{6}{}$ $= \frac{250}{6}$ $= 41.6666$	41.66	(10,41.66)
14	$g = \frac{25(14)}{6}$ $= \frac{350}{6}$ $= 58.3333$	58.33	(14,58.33)
18	$g = \frac{25(18)}{6}$ $= \frac{450}{6}$ $= 75$	75	(18,75)
24	$g = \frac{25(24)}{6}$ $= \frac{600}{6}$ $= 100$	100	(24,100)

Therefore the solution set is $\{(10,41.66),(14,58.33),(18,75),(24,100)\}$.

Answer 13CU.

Consider,

The formula for the relationship is

$$g = \frac{25k}{6}$$

Where k is the number of karats and g is the percent of gold in the jewelry .

To find karats are in a ring that is 50% gold is

$$50 = \frac{25k}{6}$$

$$\frac{6}{25}(50) = \frac{6}{25}\left(\frac{25k}{6}\right)$$ Multpily both sides with $\frac{6}{25}$

$$6(2) = k$$

$$\frac{6}{25}\left(\frac{25}{6}\right) = 1$$

$$12 = k$$

Therefore, $\boxed{12 \text{ karats}}$ are in a ring that is 50% gold .

Answer 14PA.

Consider,

$y=4x+1;\{(2,-1),(1,5),(9,2),(0,1)\}$

Make a table. Substitute ordered pair into the equation.

x	y	$y=4x+1$	True or False
2	-1	$-1=4(2)+1$ $-1=8+1$ $-1=9$	False
1	5	$5=4(1)+1$ $5=4+1$ $5=5$	True
9	2	$2=4(9)+1$ $2=36+1$ $2=37$	False
0	1	$1=4(0)+1$ $1=0+1$ $1=1$	True

The ordered pairs $(1,5)$ and $(0,5)$ result in true statements .

Therefore the solution set is $\boxed{(1,5),(0,5)}$.

Answer 15PA.

Consider,

$$y=8-3x;\{(4,-4),(8,0),(2,2),(3,3)\}$$

Make a table. Substitute ordered pair into the equation.

x	y	$y=8-3x$	True or False
4	-4	$-4=8-3(4)$ $-4=8-12$ $-4=-4$	True
8	0	$0=8-3(8)$ $0=8-24$ $0=-16$	False
2	2	$2=8-3(2)$ $2=8-6$ $2=2$	True
3	3	$3=8-3(3)$ $3=8-9$ $3=-1$	False

The ordered pairs $(4,-4)$ and $(2,2)$ result in true statements .

Therefore the solution set is $\boxed{(4,-4),(2,2)}$.

Answer 16PA.

Consider,

$$x-3y=-7;\{(-1,2),(2,-1),(2,4),(2,3)\}$$

First solve the equation for y in terms of x .

$$x-3y=-7$$

$$x-3y-x=-7-x \qquad \text{Subtract } x \text{ from both sides}$$

$$-3y=-x-7 \qquad \text{Simplify}$$

$$\frac{-3y}{-3}=\frac{-x-7}{-3} \qquad \text{Divide both sides by } -3$$

$$y=\frac{1}{3}(x+7)$$

Make a table. Substitute ordered pair into the equation.

x	y	$y=\frac{1}{3}(x+7)$	True or False
-1	2	$2=\frac{1}{3}(-1+7)$ $2=\frac{1}{3}(6)$ $2=2$	True
2	-1	$-1=\frac{1}{3}(2+7)$ $-1=\frac{1}{3}(9)$ $-1=3$	False
2	4	$4=\frac{1}{3}(2+7)$ $4=\frac{1}{3}(9)$ $4=3$	False
2	3	$3=\frac{1}{3}(2+7)$ $3=\frac{1}{3}(9)$ $3=3$	True

The ordered pairs $(-1,2)$ and $(2,3)$ result in true statements .

Therefore the solution set is $\boxed{(-1,2),(2,3)}$.

Answer 17PA.

Consider,

$$2x+2y=6;\{(3,0),(2,1),(-2,-1),(4,-1)\}$$

First solve the equation for y in terms of x.

$$\begin{aligned} 2x+2y&=6 \\ 2x+2y-2x&=6-2x && \text{Subtract } 2x \text{ from both sides} \\ 2y&=6-2x && \text{Simplify} \\ \frac{2y}{2}&=\frac{6-2x}{2} && \text{Divide both sides by 2} \end{aligned}$$

$$y=3-x$$

Make a table. Substitute ordered pair into the equation.

x	y	$y=3-x$	True or False
3	0	$0=3-3$ $0=0$	True
2	1	$1=3-2$ $1=1$	True
-2	-1	$-1=3-(-2)$ $-1=5$	False
4	-1	$-1=3-4$ $-1=-1$	True

The ordered pairs $(3,0),(2,1)$ and $(4,-1)$ result in true statements.

Therefore the solution set is $\boxed{(3,0),(2,1) \text{ and } (4,-1)}$.

Answer 18PA.

Consider,

$$3x-8y=-4;\{(0,0.5),(4,1),(2,0.75),(2,4)\}$$

First solve the equation for y in terms of x.

$$\begin{aligned} 3x-8y&=-4 \\ 3x-8y-3x&=-4-3x && \text{Subtract } 3x \text{ from both sides} \\ -8y&=-4-3x && \text{Simplify} \\ \frac{-8y}{-8}&=\frac{-4-3x}{-8} && \text{Divide both sides by } -8 \end{aligned}$$

$$y=\frac{1}{8}(3x+4)$$

Make a table. Substitute ordered pair into the equation.

x	y	$y=\frac{1}{8}(3x+4)$	True or False
0	0.5	$0.5=\frac{1}{8}[3(0)+4]$ $0.5=\frac{4}{8}$ $0.5=0.5$	True
4	1	$1=\frac{1}{8}[3(4)+4]$ $1=\frac{1}{8}(12+4)$ $1=2$	False
2	0.75	$0.75=\frac{1}{8}[3(2)+4]$ $0.75=\frac{1}{8}(6+4)$ $0.75=1.25$	False
2	4	$4=\frac{1}{8}[3(2)+4]$ $4=\frac{1}{8}(10)$ $4=1.25$	False

The ordered pairs $(0,0.5)$ result in true statements .

Therefore the solution set is $\boxed{(0,0.5)}$.

Answer 19PA.

Consider,

$$2y+4x=8;\{(0,2),(-3,0.5),(0.25,3.5),(1,2)\}$$

First solve the equation for y in terms of x .

$$\begin{aligned} 2y+4x &= 8 \\ 2y+4x-4x &= 8-4x && \text{Subtract } 4x \text{ from both sides} \\ 2y &= 8-4x && \text{Simplify} \\ \frac{2y}{2} &= \frac{8-4x}{2} && \text{Divide both sides by 2} \end{aligned}$$

$$y=4-2x$$

Make a table. Substitute ordered pair into the equation.

x	y	$y=4-2x$	True or False
0	2	$2=4-2(0)$ $2=4-0$ $2=4$	False
-3	0.5	$0.5=4-2(-3)$ $0.5=4+6$ $0.5=10$	False
0.25	3.5	$3.5=4-2(0.25)$ $3.5=4-0.5$ $3.5=3.5$	True
1	2	$2=4-2(1)$ $2=4-2$ $2=2$	True

The ordered pairs $(0.25,3.5)$ and $(1,2)$ result in true statements .

Therefore the solution set is $\boxed{(0.25,3.5),(1,2)}$.

Answer 20PA.

Consider,

$y = 4 - 5x$

Solve the equation if the domain is $\{-2, -1, 1, 3, 4\}$.

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y = 4 - 5x$	*y*	(x, y)
-2	$y = 4 - 5(-2)$ $= 4 + 10$ $= 14$	14	(-2,14)
-1	$y = 4 - 5(-1)$ $= 4 + 5$ $= 9$	9	(-1,9)
1	$y = 4 - 5(1)$ $= 4 - 5$ $= -1$	-1	(1,-1)
3	$y = 4 - 5(3)$ $= 4 - 15$ $= -11$	-11	(3,-11)
4	$y = 4 - 5(4)$ $= 4 - 20$ $= -16$	-16	(4,-16)

Therefore the solution set is $\boxed{\{(-2,14),(-1,9),(1,-1),(3,-11),(4,16)\}}$.

Answer 21PA.

Consider,

$y = 2x + 3$

Solve the equation if the domain is $\{-2, -1, 1, 3, 4\}$.

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y = 2x + 3$	*y*	(x, y)
-2	$y = 2(-2) + 3$ $= -4 + 3$ $= -1$	-1	(-2,-1)
-1	$y = 2(-1) + 3$ $= -2 + 3$ $= 1$	1	(-1,1)
1	$y = 2(1) + 3$ $= 2 + 3$ $= 5$	5	(1,5)
3	$y = 2(3) + 3$ $= 6 + 3$ $= 9$	9	(3,9)
4	$y = 2(4) + 3$ $= 8 + 3$ $= 11$	11	(4,11)

Therefore the solution set is $\boxed{\{(-2,-1),(-1,1),(1,5),(3,9),(4,11)\}}$.

Answer 22PA.

Consider,

$x = y + 4$

Solve the equation if the domain is $\{-2, -1, 1, 3, 4\}$.

First solve the equation in terms of *y*.

$$x = y + 4$$

$x - 4 = y + 4 - 4$ Subtract 4 from both sides

$x - 4 = y$ Simplify

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y = x - 4$	*y*	(x, y)
-2	$y = -2 - 4$ $= -6$	-6	(-2,-6)
-1	$y = -1 - 4$ $= -5$	-5	(-1,-5)
1	$y = 1 - 4$ $= -3$	-3	(1,-3)
3	$y = 3 - 4$ $= -1$	-1	(3,-1)
4	$y = 4 - 4$ $= 0$	0	(4,0)

Therefore the solution set is $\boxed{\{(-2,-6),(-1,-5),(1,-3),(3,-1),(4,0)\}}$.

Answer 23PA.

Consider,

$$x = 7 - y$$

Solve the equation if the domain is $\{-2, -1, 1, 3, 4\}$.

First solve the equation in terms of *y*.

$$\begin{aligned} x &= 7 - y \\ x - 7 &= 7 - y - 7 && \text{Subtract 7 from both sides} \\ x - 7 &= -y && \text{Simplify} \\ y &= 7 - x && \text{Multiply with } -1 \end{aligned}$$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y = 7 - x$	*y*	(x, y)
-2	$y = 7 - (-2)$ $= 7 + 2$ $= 9$	9	(-2,9)
-1	$y = 7 - (-1)$ $= 7 + 1$ $= 8$	8	(-1,8)
1	$y = 7 - 1$ $= 6$	6	(1,6)
3	$y = 7 - 3$ $= 4$	4	(3,4)
4	$y = 7 - 4$ $= 3$	3	(4,3)

Therefore the solution set is $\boxed{\{(-2,9), (-1,8), (1,6), (3,4), (4,3)\}}$.

Answer 24PA.

Consider,

$6x-3y=18$

Solve the equation if the domain is $\{-2,-1,1,3,4\}$.

First solve the equation in terms of *y*.

$$\begin{aligned} 6x-3y&=18 \\ 6x-3y-6x&=18-6x && \text{Subtract 7 from both sides} \\ -3y&=18-6x && \text{Simplify} \\ \frac{-3y}{-3}&=\frac{18-6x}{-3} && \text{Multiply with } -3 \end{aligned}$$

$y=-6+2x$

$y=2x-6$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y=2x-6$	*y*	(x,y)
-2	$y=2(-2)-6$ $=-4-6$ $=-10$	-10	(-2-10)
-1	$y=2(-1)-6$ $=-2-6$ $=-8$	-8	(-1,-8)
1	$y=2(1)-6$ $=2-6$ $=-4$	-4	(1,-4)
3	$y=2(3)-6$ $=6-6$ $=0$	0	(3,0)
4	$y=2(4)-6$ $=8-6$ $=2$	2	(4,2)

Therefore the solution set is $\boxed{\{(-2,-10),(-1,-8),(1,-4),(3,0),(4,2)\}}$.

Answer 25PA.

Consider,

$$6x - y = -3$$

Solve the equation if the domain is $\{-2,-1,1,3,4\}$.

First solve the equation in terms of *y*.

$$\begin{aligned} 6x - y &= -3 \\ 6x - y - 6x &= -3 - 6x && \text{Subtract } 6x \text{ from both sides} \\ -y &= -3 - 6x && \text{Simplify} \\ \frac{-y}{-1} &= \frac{-3-6x}{-1} && \text{Multiply with } -1 \end{aligned}$$

$$y = 3 + 6x$$

$$y = 6x + 3$$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y = 6x + 3$	*y*	(x, y)
-2	$y = 6(-2) + 3$ $= -12 + 3$ $= -9$	-9	(-2-9)
-1	$y = 6(-1) + 3$ $= -6 + 3$ $= -3$	-3	(-1,-3)
1	$y = 6(1) + 3$ $= 6 + 3$ $= 9$	9	(1,9)
3	$y = 6(3) + 3$ $= 18 + 3$ $= 21$	21	(3,21)
4	$y = 6(4) + 3$ $= 24 + 3$ $= 27$	27	(4,27)

Therefore the solution set is $\boxed{\{(-2,-9),(-1,-3),(1,9),(3,21),(4,27)\}}$.

Answer 26PA.

Consider,

$$8x+4y=12$$

Solve the equation if the domain is $\{-2,-1,1,3,4\}$.

First solve the equation in terms of *y*.

$$8x+4y=12$$

$8x+4y-8x=12-8x$ Subtract $8x$ from both sides

$4y=12-8x$ Simplify

$\frac{4y}{4}=\frac{12-8x}{4}$ Multiply with 4

$$y=3-2x$$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y=3-2x$	*y*	(x,y)
-2	$y=3-2(-2)$ $=3+4$ $=7$	7	(-2,7)
-1	$y=3-2(-1)$ $=3+2$ $=5$	5	(-1,5)
1	$y=3-2(1)$ $=3-2$ $=1$	1	(1,1)
3	$y=3-2(3)$ $=3-6$ $=-3$	-3	(3,-3)
4	$y=3-2(4)$ $=3-8$ $=-5$	-5	(4,-5)

Therefore the solution set is $\boxed{\{(-2,7),(-1,5),(1,1),(3,-3),(4,-5)\}}$.

Answer 27PA.

Consider,

$2x-2y=0$

Solve the equation if the domain is $\{-2,-1,1,3,4\}$.

First solve the equation in terms of *y*.

$$\begin{aligned} 2x-2y&=0 \\ 2x-2y-2x&=0-2x && \text{Subtract } 2x \text{ from both sides} \\ -2y&=-2x && \text{Simplify} \\ \frac{-2y}{-2}&=\frac{-2x}{-2} && \text{Divide with } -2 \end{aligned}$$

$y=x$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y=x$	y	(x,y)
-2	$y=-2$	-2	(-2,-2)
-1	$y=-1$	-1	(-1,-1)
1	$y=1$	1	(1,1)
3	$y=3$	3	(3,3)
4	$y=4$	4	(4,4)

Therefore the solution set is $\boxed{\{(-2,-2),(-1,-1),(1,1),(3,3),(4,4)\}}$.

Answer 28PA.

Consider,

$5x-10y=20$

Solve the equation if the domain is $\{-2,-1,1,3,4\}$.

First solve the equation in terms of *y*.

$$\begin{aligned} 5x-10y&=20 \\ 5x-10y-5x&=20-5x && \text{Subtract } 5x \text{ from both sides} \\ -10y&=20-5x && \text{Simplify} \\ \frac{-10y}{-10}&=\frac{20-5x}{-10} && \text{Divide with } -10 \end{aligned}$$

$y=-2+\frac{1}{2}x$

$y=\frac{1}{2}x-2$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y=\frac{1}{2}x-2$	y	(x,y)
-2	$y=\frac{1}{2}(-2)-2$ $=-1-2$ $=-3$	-3	(-2,-3)
-1	$y=\frac{1}{2}(-1)-2$ $=-\frac{5}{2}$ $=-2.5$	-2.5	(-1,-1)
1	$y=\frac{1}{2}(1)-2$ $=-\frac{3}{2}$ $=-1.5$	-1.5	(1,-1.5)
3	$y=\frac{1}{2}(3)-2$ $=-\frac{1}{2}$ $=-0.5$	-0.5	(3,-0.5)
4	$y=\frac{1}{2}(4)-2$ $=2-2$ $=0$	0	(4,0)

Therefore the solution set is $\boxed{\{(-2,-3),(-1,-2.5),(1,-1.5),(3,-0.5),(4,0)\}}$

Answer 29PA.

Consider,

$$3x+2y=14$$

Solve the equation if the domain is $\{-2,-1,1,3,4\}$.

First solve the equation in terms of *y*.

$$\begin{aligned} 3x+2y&=14 \\ 3x+2y-3x&=14-3x && \text{Subtract } 3x \text{ from both sides} \\ 2y&=14-3x && \text{Simplify} \\ \frac{2y}{2}&=\frac{14-3x}{2} && \text{Divide with 2} \end{aligned}$$

$$y=7-\frac{3}{2}x$$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y=7-\frac{3}{2}x$	*y*	(x,y)
-2	$y=7-\frac{3}{2}(-2)$ $=7+3$ $=10$	10	(-2,10)
-1	$y=7-\frac{3}{2}(-1)$ $=7+\frac{3}{2}$ $=\frac{17}{2}$ $=8.5$	8.5	(-1,8.5)
1	$y=7-\frac{3}{2}(1)$ $=7-\frac{3}{2}$ $=11$	5.5	(1,5.5)

	$=\frac{11}{2}$ $=5.5$		
3	$y=7-\frac{3}{2}(3)$ $=7-\frac{9}{2}$ $=\frac{5}{2}$ $=2.5$	2.5	(3,2.5)
4	$y=7-\frac{3}{2}(4)$ $=7-6$ $=1$	1	(4,1)

Therefore the solution set is $\boxed{\{(-2,10),(-1,8.5),(1,5.5),(3,2.5),(4,1)\}}$.

Answer 30PA.

Consider,

$$x+\frac{1}{2}y=8$$

Solve the equation if the domain is $\{-2,-1,1,3,4\}$.

First solve the equation in terms of *y*.

$$x+\frac{1}{2}y=8$$

$x+\frac{1}{2}y-x=8-x$ Subtract x from both sides

$\frac{1}{2}y=8-x$ Simplify

$2\left(\frac{1}{2}y\right)=2(8-x)$ Multiply with 2

$$y=16-2x$$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y=16-2x$	y	(x,y)
-2	$y=16-2(-2)$ $=16+4$ $=20$	20	(-2,20)
-1	$y=16-2(-1)$ $=16+2$ $=18$	18	(-1,18)
1	$y=16-2(1)$ $=16-2$ $=14$	14	(1,14)
3	$y=16-2(3)$ $=16-6$ $=10$	10	(3,10)
4	$y=16-2(4)$ $=16-8$ $=8$	8	(4,8)

Therefore the solution set is $\boxed{\{(-2,20),(-1,18),(1,14),(3,10),(4,8)\}}$

Answer 31PA.

Consider,

$$2x-\frac{1}{3}y=4$$

Solve the equation if the domain is $\{-2,-1,1,3,4\}$.

First solve the equation in terms of y.

$$2x-\frac{1}{3}y=4$$

$2x-\frac{1}{3}y-2x=4-2x$ Subtract $2x$ from both sides

$-\frac{1}{3}y=4-2x$ Simplify

$-3\left(-\frac{1}{3}y\right)=-3(4-2x)$ Multiply with -3

$$y=-12+6x$$
$$y=6x-12$$

Make a table. The values of x come from the domain. Substitute each value of x into the equation to determine the values of y in the range.

x	$y=6x-12$	y	(x,y)
-2	$y=6(-2)-12$ $=-12-12$ $=-24$	-24	(-2,-24)
-1	$y=6(-1)-12$ $=-6-12$ $=-18$	-18	(-1,-18)
1	$y=6(1)-12$ $=6-12$ $=-6$	-6	(1,-6)
3	$y=6(3)-12$ $=18-12$ $=6$	6	(3,6)
4	$y=6(4)-12$ $=24-12$ $=12$	12	(4,12)

Therefore the solution set is $\boxed{\{(-2,-24),(-1,-18),(1,-6),(3,6),(4,12)\}}$.

Answer 32PA.

Consider,

$$y=2x+3 \text{ for } x=\{-3,-2,-1,1,2,3\}$$

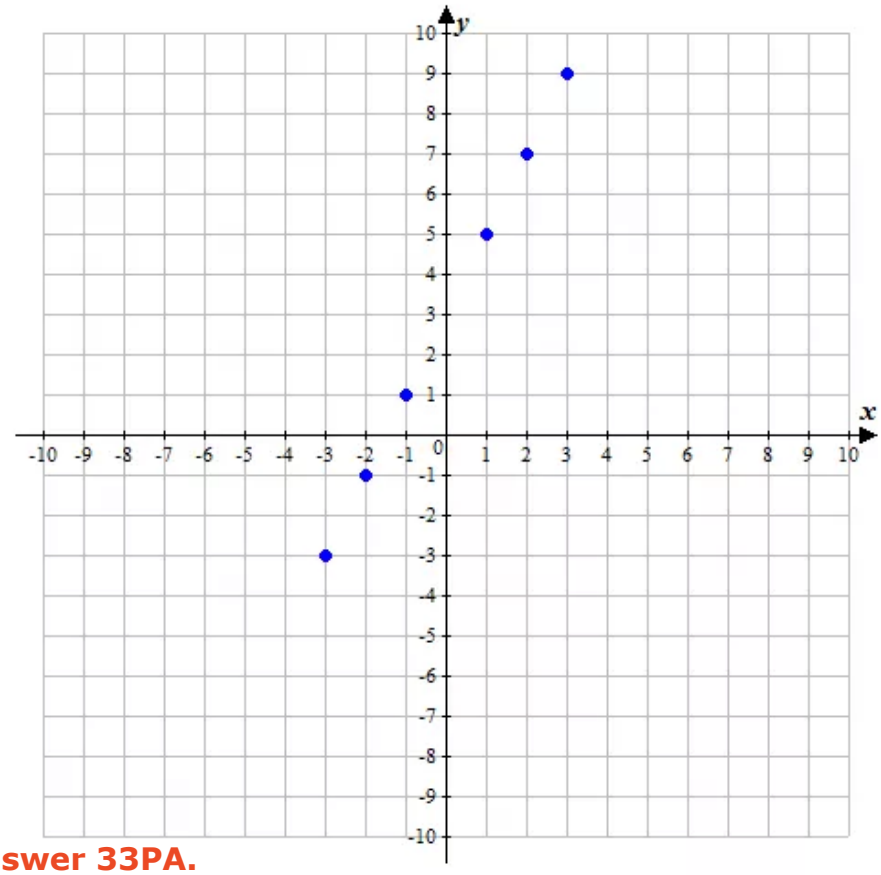
Make a table. The values of x come from the domain. Substitute each value of x into the equation to determine the corresponding values of y in the range.

x	$y=2x+3$	y	(x,y)

-3	$y=2(-3)+3$ $=-6+3$ $=-3$	-3	(-3,-3)
-2	$y=2(-2)+3$ $=-4+3$ $=-1$	-1	(-2,-1)
-1	$y=2(-1)+3$ $=-2+3$ $=1$	1	(-1,1)
1	$y=2(1)+3$ $=2+3$ $=5$	5	(1,5)
2	$y=2(2)+3$ $=4+3$ $=7$	7	(2,7)
3	$y=2(3)+3$ $=6+3$ $=9$	9	(3,9)

Therefore the solution set is $\{(-3,-3),(-2,-1),(-1,1),(1,5),(2,7),(3,9)\}$.

Graph the solution set $\{(-3,-3),(-2,-1),(-1,1),(1,5),(2,7),(3,9)\}$.



Answer 33PA.

Consider,

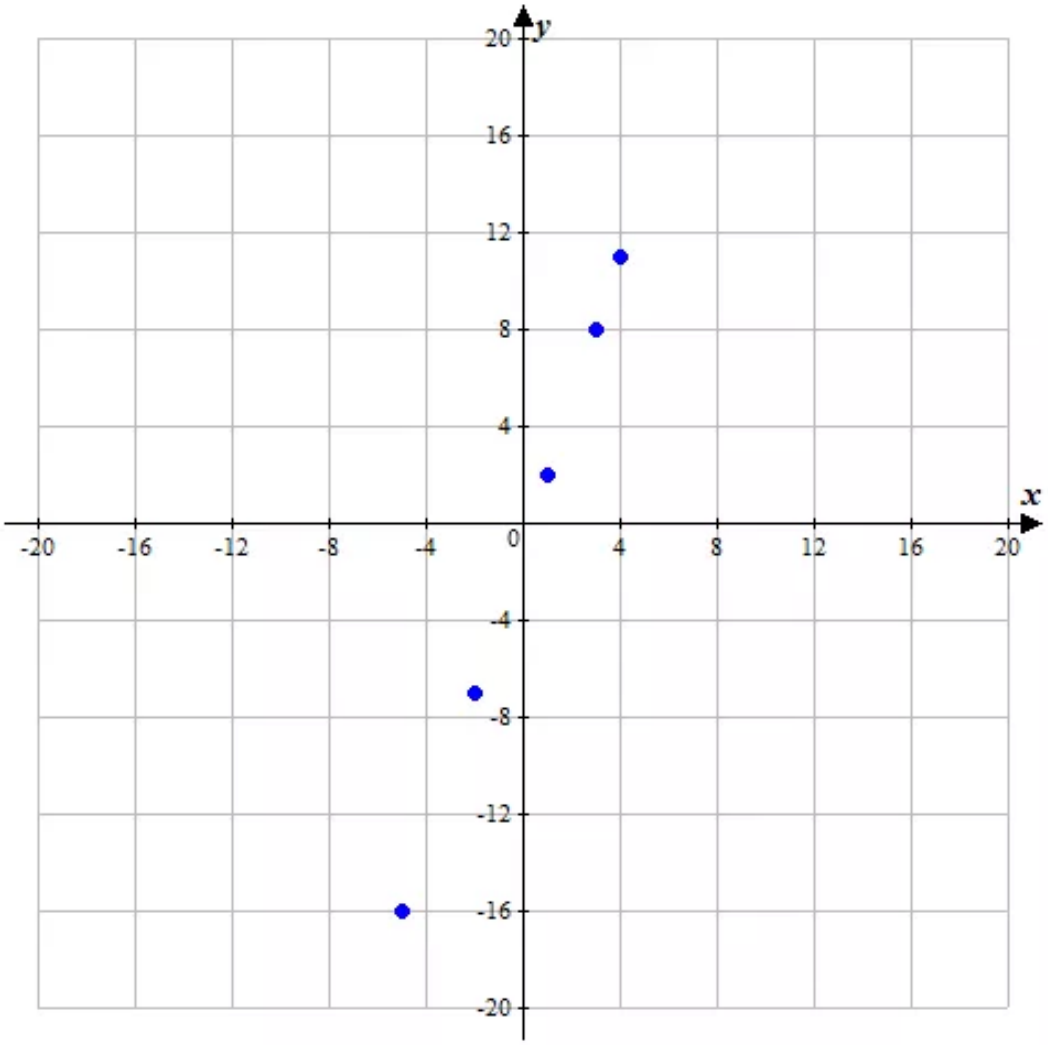
$y = 3x - 1$ for $x = \{-5,-2,1,3,4\}$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the corresponding values of *y* in the range.

x	$y = 3x - 1$	*y*	(x, y)
-5	$y = 3(-5) - 1$ $= -15 - 1$ $= -16$	-16	(-5,-16)
-2	$y = 3(-2) - 1$ $= -6 - 1$ $= -7$	-7	(-2,-7)
1	$y = 3(1) - 1$ $= 3 - 1$ $= 2$	2	(1,2)
3	$y = 3(3) - 1$ $= 9 - 1$ $= 8$	8	(3,8)
4	$y = 3(4) - 1$ $= 12 - 1$ $= 11$	11	(4,11)

Therefore the solution set is $\{(-5,-16),(-2,-7),(1,2),(3,8),(4,11)\}$.

Graph the solution set $\{(-5,-16),(-2,-7),(1,2),(3,8),(4,11)\}$.



Answer 34PA.

Consider,

$3x-2y=5$ for $x=\{-3,-1,2,4,5\}$

First solve the equation in terms of y.

$$3x-2y=5$$

$3x-2y-3x=5-3x$ Subtract $3x$ from both sides

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

$\frac{-2y}{-2}=\frac{5-3x}{-2}$ Divide both sides with -2

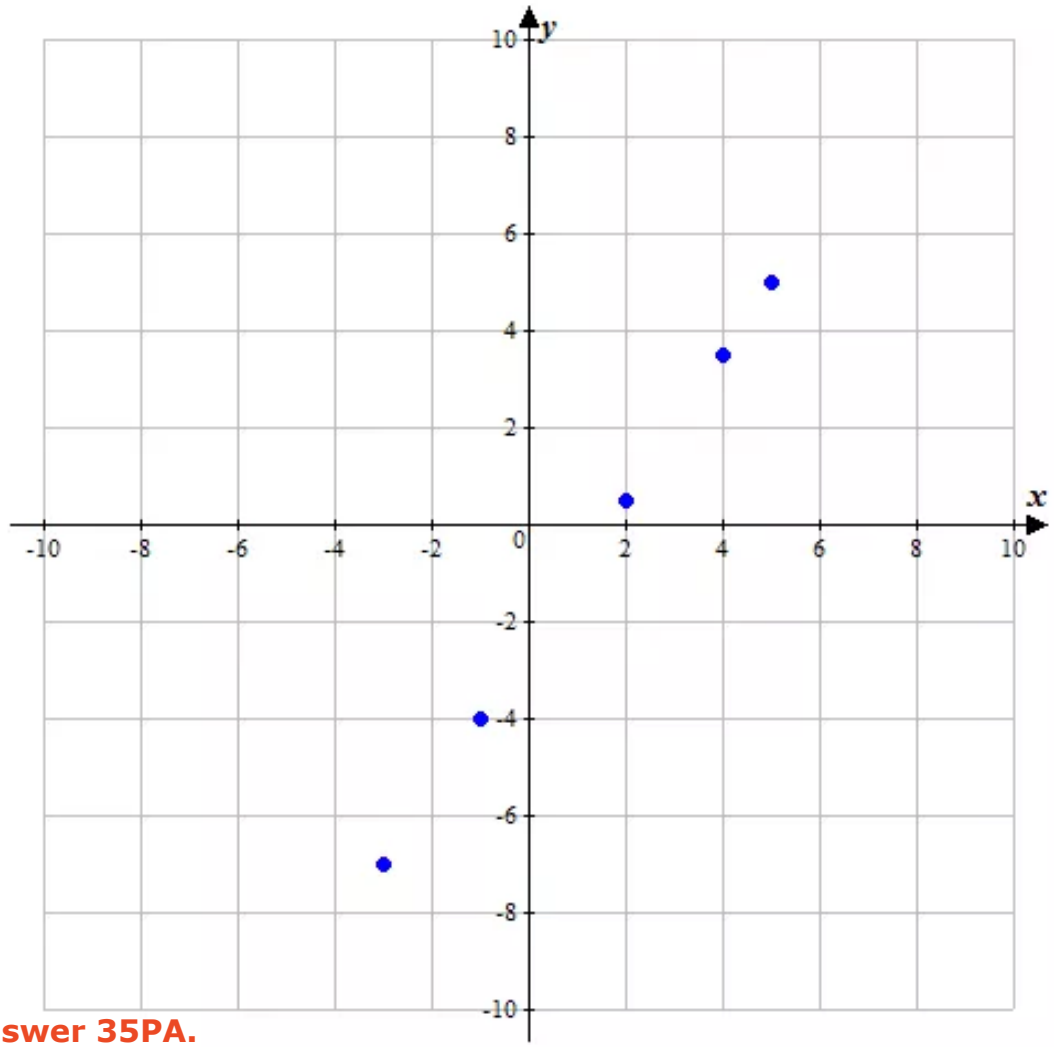
$$y=\frac{1}{2}(3x-5)$$

Make a table. The values of x come from the domain. Substitute each value of x into the equation to determine the corresponding values of y in the range.

x	$y=\frac{1}{2}(3x-5)$	y	(x,y)
-3	$y=\frac{1}{2}[3(-3)-5]$ $=\frac{1}{2}(-14)$ $=-7$	-7	(-3,-7)
-1	$y=\frac{1}{2}[3(-1)-5]$ $=\frac{1}{2}(-8)$ $=-4$	-4	(-1,-4)
2	$y=\frac{1}{2}[3(2)-5]$ $=\frac{1}{2}(1)$ $=0.5$	0.5	(2,0.5)
4	$y=\frac{1}{2}[3(4)-5]$ $=\frac{1}{2}(7)$ $=3.5$	3.5	(4,3.5)
5	$y=\frac{1}{2}[3(5)-5]$ $=\frac{1}{2}(10)$ $=5$	5	(5,5)

Therefore the solution set is $\{(-3,-7),(-1,-4),(2,0.5),(4,3.5),(5,5)\}$.

Graph the solution set $\{(-3,-7),(-1,-4),(2,0.5),(4,3.5),(5,5)\}$.



Answer 35PA.

Consider,

$5x+4y=8$ for $x=\{-4,-1,0,2,4,6\}$

First solve the equation in terms of *y*.

$$5x+4y=8$$

$5x+4y-5x=8-5x$ Subtract $5x$ from both sides

$$4y=8-5x$$

$\frac{4y}{4}=\frac{8-3x}{4}$ Divide both sides with 4

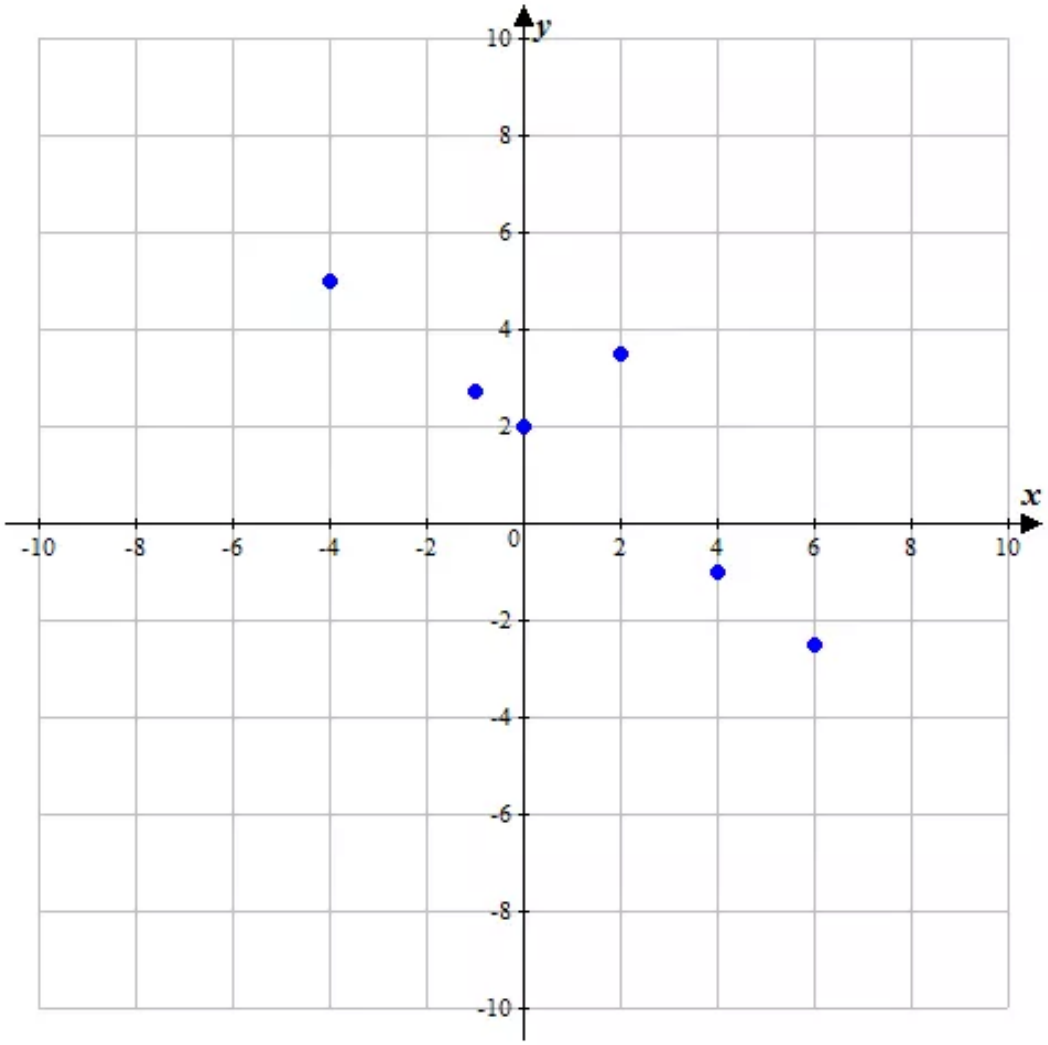
$$y=\frac{1}{4}(8-3x)$$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the corresponding values of *y* in the range.

x	$y=\frac{1}{4}(8-3x)$	y	(x,y)
-4	$y=\frac{1}{4}[8-3(-4)]$ $=\frac{1}{4}(20)$ $=5$	5	(-4,5)
-1	$y=\frac{1}{4}[8-3(-1)]$ $=\frac{1}{4}(11)$ $=2.75$	2.75	(-1,2.75)
0	$y=\frac{1}{4}[8-3(0)]$ $=\frac{1}{4}(8)$ $=2$	2	(0,2)
2	$y=\frac{1}{4}[8-3(-4)]$ $=\frac{1}{4}(20)$ $=5$	3.5	(2,3.5)
4	$y=\frac{1}{4}[8-3(4)]$ $=\frac{1}{4}(-4)$ $=-1$	-1	(4,-1)
6	$y=\frac{1}{4}[8-3(6)]$ $=\frac{1}{4}(-10)$ $=-2.5$	-2.5	(6,-2.5)

Therefore the solution set is $\{(-4,5),(-1,2.75),(0,2),(2,3.5),(4,-1),(6,-2.5)\}$

Graph the solution set $\{(-4,5),(-1,2.75),(0,2),(2,3.5),(4,-1),(6,-2.5)\}$.



Answer 36PA.

Consider,

$$\frac{1}{2}x+y=2 \text{ for } x=\{-4,-1,1,4,7,8\}$$

First solve the equation in terms of *y*.

$$\frac{1}{2}x+y=2$$

$$\frac{1}{2}x+y-\frac{1}{2}x=2-\frac{1}{2}x \qquad \text{Subtract } \frac{1}{2}x \text{ from both sides}$$

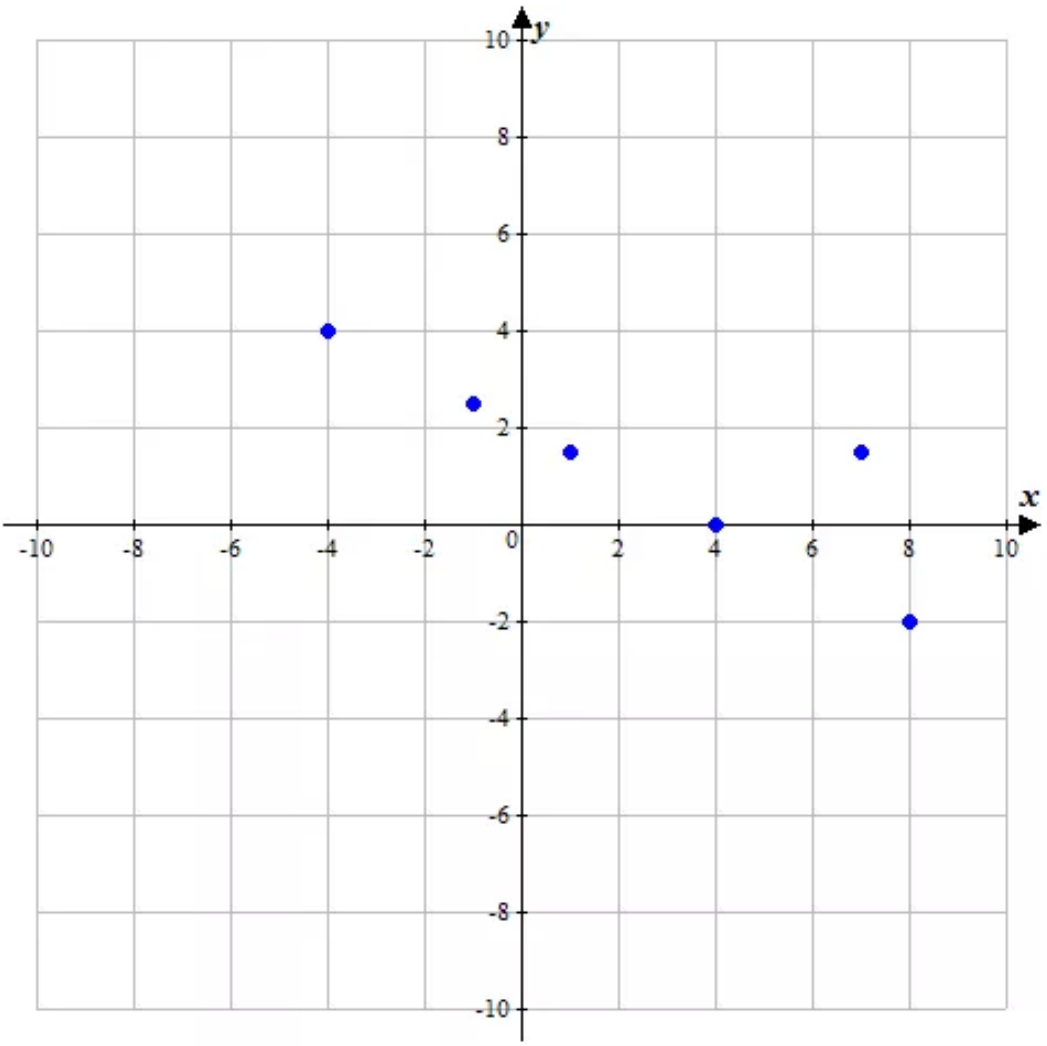
$$y=2-\frac{1}{2}x$$

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the corresponding values of *y* in the range.

x	$y=2-\frac{1}{2}x$	y	(x,y)
-4	$y=2-\frac{1}{2}(-4)$ $=2+2$ $=4$	4	(-4,4)
-1	$y=2-\frac{1}{2}(-1)$ $=2+0.5$ $=2.5$	2.5	(-1,2.5)
1	$y=2-\frac{1}{2}(1)$ $=2-0.5$ $=1.5$	1.5	(1,1.5)
4	$y=2-\frac{1}{2}(4)$ $=2-2$ $=0$	0	(4,0)
7	$y=2-\frac{1}{2}(7)$ $=2-3.5$ $=-1.5$	-1.5	(7,-1.5)
8	$y=2-\frac{1}{2}(8)$ $=2-4$ $=-2$	-2	(8,-2)

Therefore the solution set is $\{(-4,4),(-1,2.5),(1,1.5),(4,0),(7,1.5),(8,-2)\}$

Graph the solution set $\{(-4,4),(-1,2.5),(1,1.5),(4,0),(7,1.5),(8,-2)\}$.



Answer 37PA.

Consider,

$$y=\frac{1}{4}x-3 \text{ for } x=\{-4,-2,0,2,4,6\}$$

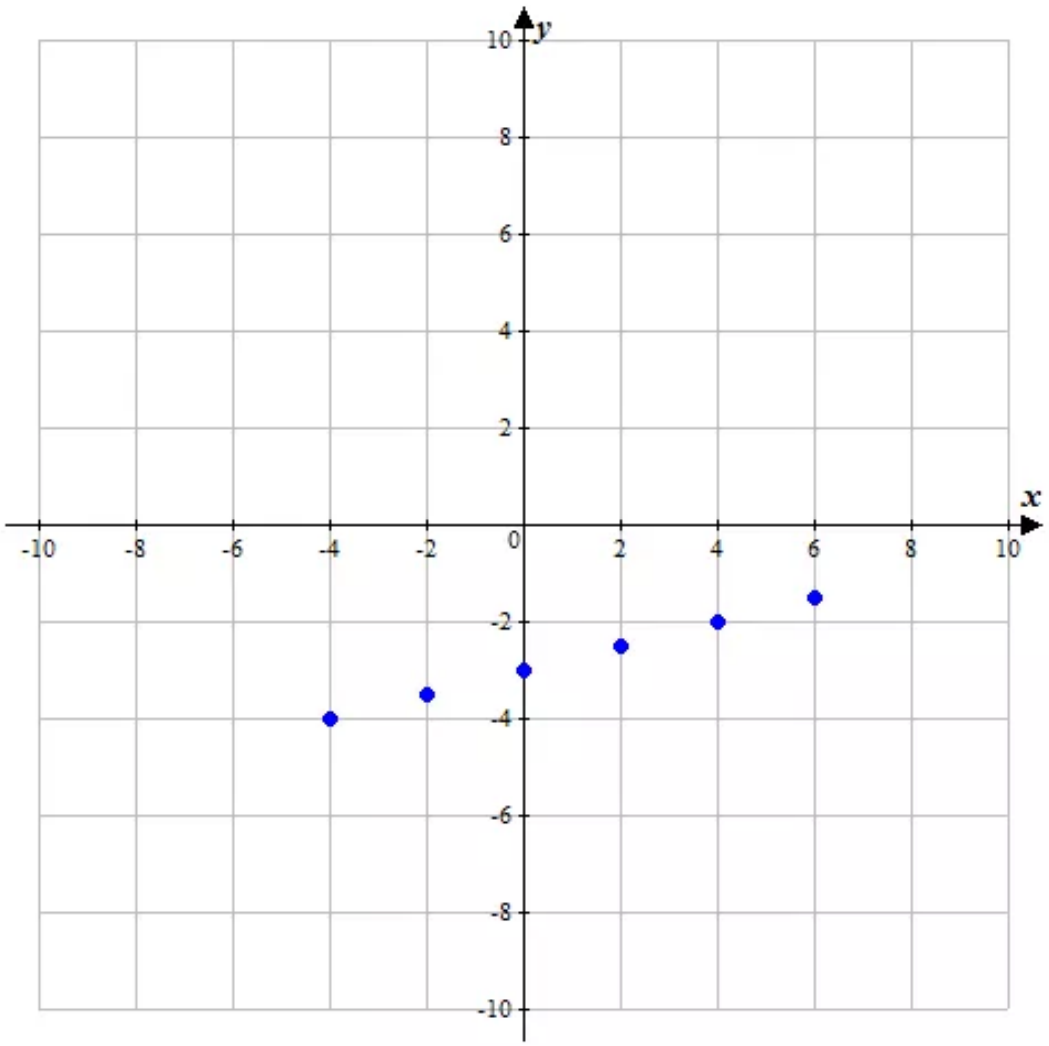
Make a table. The values of x come from the domain. Substitute each value of x into the equation to determine the corresponding values of y in the range.

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

	$=-4$		
-2	$y=\frac{1}{4}(-2)-3$ $=-0.5-3$ $=-3.5$	-3.5	(-2,-3.5)
0	$y=\frac{1}{4}(0)-3$ $=0-3$ $=-3$	-3	(0,-3)
2	$y=\frac{1}{4}(2)-3$ $=0.5-3$ $=-2.5$	-2.5	(2,-2.5)
4	$y=\frac{1}{4}(4)-3$ $=1-3$ $=-2$	-2	(4,-2)
6	$y=\frac{1}{4}(6)-3$ $=1.5-3$ $=-1.5$	-1.5	(6,-1.5)

Therefore the solution set is $\{(-4,-4),(-2,-3.5),(0,-3),(2,-2.5),(4,-2),(6,-1.5)\}$.

Graph the solution set $\{(-4,-4),(-2,-3.5),(0,-3),(2,-2.5),(4,-2),(6,-1.5)\}$.



Answer 38PA.

Consider,

$3x+y=8$ for $x=\{-1,2,5,8\}$

First solve the equation in terms of *y*.

$$\begin{aligned} 3x+y &= 8 \\ 3x+y-3x &= 8-3x \qquad \text{Subtract } 3x \text{ from both sides} \\ y &= 8-3x \end{aligned}$$

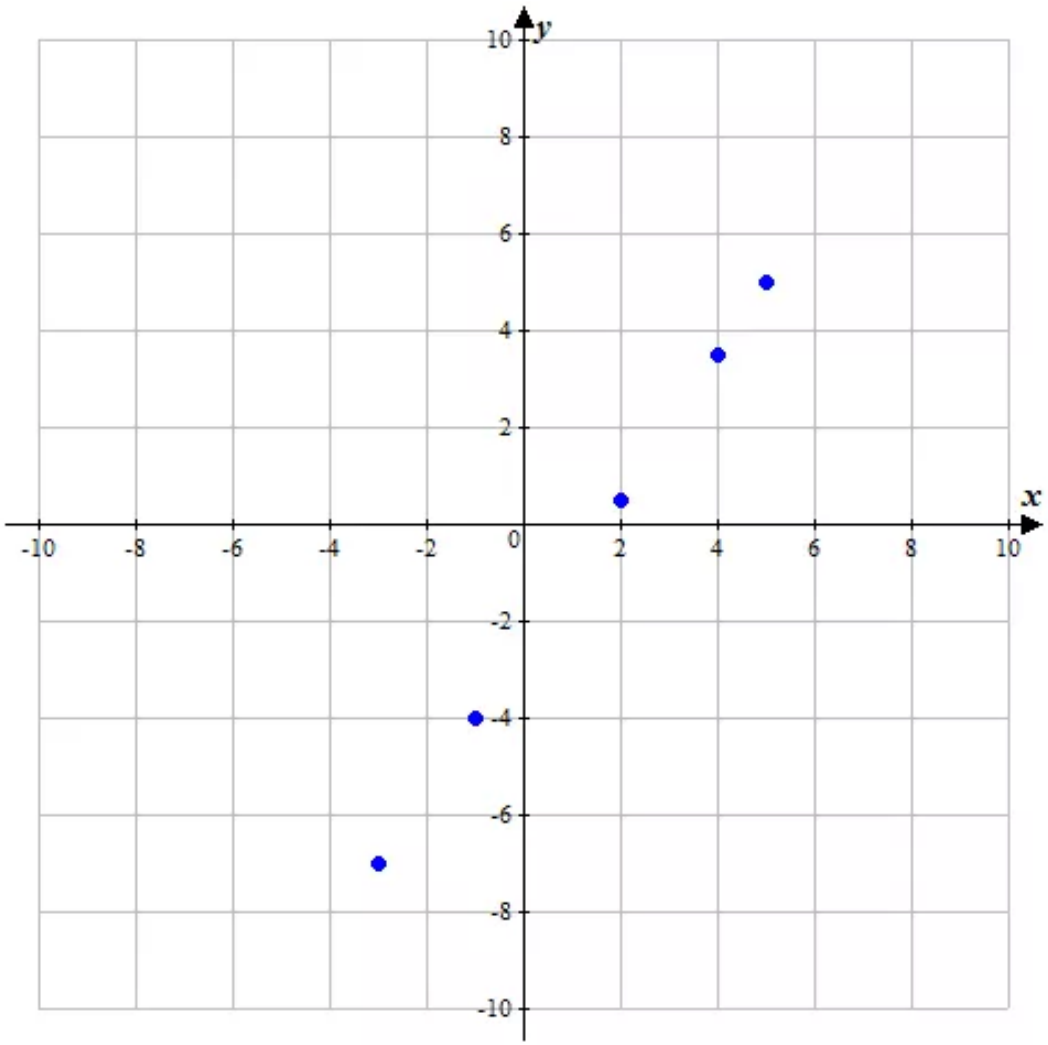
Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the corresponding values of *y* in the range.

x	$y=8-3x$	*y*
-1	$\begin{aligned} y &= 8-3(-1) \\ &= 8+3 \\ &= 11 \end{aligned}$	11
2	$\begin{aligned} y &= 8-3(-2) \\ &= 8+6 \\ &= 14 \end{aligned}$	14
5	$\begin{aligned} y &= 8-3(5) \\ &= 8-15 \\ &= -7 \end{aligned}$	-7
8	$\begin{aligned} y &= 8-3(8) \\ &= 8-24 \\ &= -16 \end{aligned}$	-16

Therefore the range is $\boxed{\{11,14,-7,-16\}}$.

Therefore the solution set is $\{(-3,-7),(-1,-4),(2,0.5),(4,3.5),(5,5)\}$.

Graph the solution set $\{(-3,-7),(-1,-4),(2,0.5),(4,3.5),(5,5)\}$.



Answer 39PA.

Consider,

$2y-x=6$ for $\{-4,-3,1,6,7\}$

First solve the equation in terms of x.

$$\begin{aligned} 2y-x&=6 \\ 2y-x-2y&=6-2y \qquad \text{Subtract } 2y \text{ from both sides} \\ x&=6-2y \\ x&=2y-6 \end{aligned}$$

Make a table. Substitute each value of y into the equation to determine the corresponding values of x in the domain.

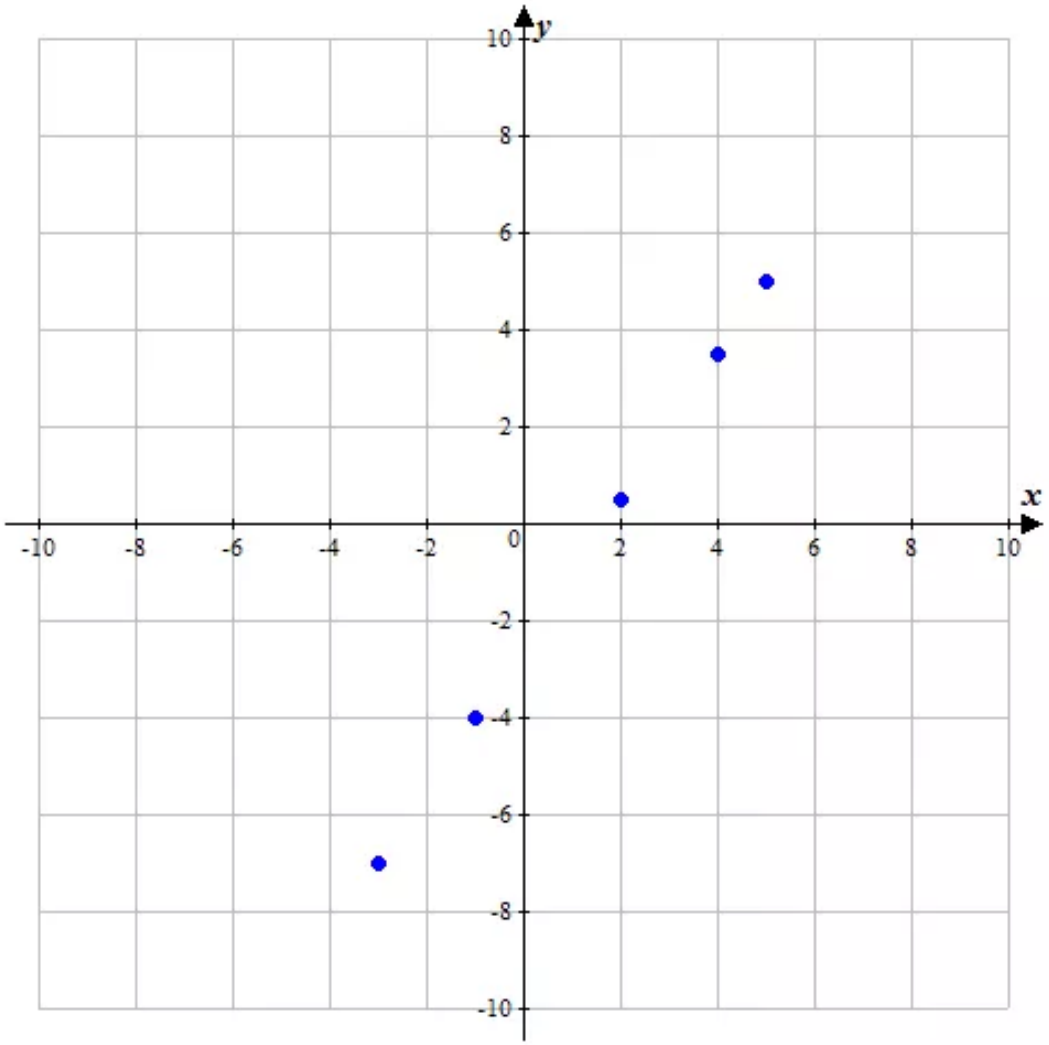
y	$x=2y-6$	x

-4	$x = 2(-4) - 6$ $= -8 - 6$ $= -14$	-14
-3	$x = 2(-3) - 6$ $= -6 - 6$ $= -12$	-12
1	$x = 2(1) - 6$ $= 2 - 6$ $= -4$	-4
6	$x = 2(6) - 6$ $= 12 - 6$ $= 6$	6
7	$x = 2(7) - 6$ $= 14 - 6$ $= 8$	8

Therefore the domain is $\boxed{\{-14, -12, -4, 6, 8\}}$.

Therefore the solution set is $\{(-3, -7), (-1, -4), (2, 0.5), (4, 3.5), (5, 5)\}$.

Graph the solution set $\{(-3,-7),(-1,-4),(2,0.5),(4,3.5),(5,5)\}$.



Answer 40PA.

Consider,

The equation of the temperature in degrees Celsius C to degrees in Fahrenheit F is

$$F = 1.8C + 32$$

Solving the equation for C,

$$F = 1.8C + 32$$

$F - 32 = 1.8C + 32 - 32$ Subtract 32 from both sides

$$F - 32 = 1.8C$$

$\frac{F-32}{1.8} = \frac{1.8C}{1.8}$ Divide both sides by 1.8

$\frac{F-32}{1.8} = C$ Simplify

$$C = \frac{1}{1.8}(F - 32)$$

Therefore, the solved equation is $\boxed{C = \frac{1}{1.8}(F-32)}$.

City	Temperature(F)	$C=\frac{1}{1.8}(F-32)$
New York	34	$C=\frac{1}{1.8}(34-32)$ $=\frac{2}{1.8}$ $=1.11$
Chicago	23	$C=\frac{1}{1.8}(23-32)$ $=\frac{-9}{1.8}$ $=-5$
San Francisco	55	$C=\frac{1}{1.8}(55-32)$ $=\frac{23}{1.8}$ $=12.78$
Miami	72	$C=\frac{1}{1.8}(72-32)$ $=\frac{40}{1.8}$ $=22.22$
Washington, D.C.	40	$C=\frac{1}{1.8}(40-32)$ $=\frac{8}{1.8}$ $=4.44$

Answer 41PA.

Consider,

City	Temperature(F)
New York	34
Chicago	23
San Francisco	55
Miami	72
Washington, D.C.	40

The equation of the temperature in degrees Celsius C to degrees in Fahrenheit F is

$$F = 1.8C + 32$$

Solving the equation for C,

$$F = 1.8C + 32$$

$$F - 32 = 1.8C + 32 - 32 \qquad \text{Subtract 32 from both sides}$$

$$F - 32 = 1.8C$$

$$\frac{F-32}{1.8} = \frac{1.8C}{1.8} \qquad \text{Divide both sides by 1.8}$$

$$\frac{F-32}{1.8} = C \qquad \text{Simplify}$$

$$C = \frac{1}{1.8}(F - 32)$$

To find the temperature in degrees Celsius for each city make a table.

City	Temperature(F)	$C=\frac{1}{1.8}(F-32)$
New York	34	$C=\frac{1}{1.8}(34-32)$ $=\frac{2}{1.8}$ $=1.11$
Chicago	23	$C=\frac{1}{1.8}(23-32)$ $=\frac{-9}{1.8}$ $=-5$
San Francisco	55	$C=\frac{1}{1.8}(55-32)$ $=\frac{23}{1.8}$ $=12.78$
Miami	72	$C=\frac{1}{1.8}(72-32)$ $=\frac{40}{1.8}$ $=22.22$
Washington, D.C.	40	$C=\frac{1}{1.8}(40-32)$ $=\frac{8}{1.8}$ $=4.44$

Answer 42PA.

Consider,

The equation of the perimeter of a rectangle is

$$P = 2l + 2w$$

The perimeter of rectangle is 24 centimeters, then the equation is

$$2l + 2w = 24$$

Solving the equation for l,

$$2l + 2w = 24$$

$$2l + 2w - 2w = 24 - 2w \qquad \text{Subtract } 2w \text{ from both sides}$$

$$2l = 24 - 2w \qquad \text{Simplify}$$

$$\frac{2l}{2} = \frac{24 - 2w}{2} \qquad \text{Divide both sides by 2}$$

$$l = 12 - w$$

Therefore, the solved equation for l is $\boxed{l = 12 - w}$.

Answer 43PA.

Consider,

The equation of the perimeter of a rectangle is

$$P = 2l + 2w$$

Here the perimeter P is dependent on the length l and width w.

Hence length l and width w are independent variables.

Therefore, $\boxed{\text{length and width}}$ are independent variables and the $\boxed{\text{perimeter}}$ is dependent variable.

Answer 44PA.

Consider,

The equation of the perimeter of a rectangle is

$$P = 2l + 2w$$

The perimeter of rectangle is 24 centimeters, then the equation is

$$2l + 2w = 24$$

Solving the equation for l,

$$2l + 2w = 24$$

$$2l + 2w - 2w = 24 - 2w \qquad \text{Subtract } 2w \text{ from both sides}$$

$$2l = 24 - 2w \qquad \text{Simplify}$$

$$\frac{2l}{2}=\frac{24-2w}{2}$$ Divide both sides by 2

$l=12-w$

The solved equation for l is $l=12-w$.

Let us choose, $w=\{1,2,3,4,5\}$.

Make a table to find the corresponding values of l,

w	$l=12-w$	l
1	$l=12-1$ $=11$	11
2	$l=12-2$ $=10$	10
3	$l=12-3$ $=9$	9
4	$l=12-4$ $=8$	8
5	$l=12-5$ $=7$	7

Therefore, the corresponding values of l are $\{11,10,9,8,7\}$.

Answer 45PA.

Consider,

The formula for males is $H = 81.7 + 2.4T$ and for females is $H = 72.6 + 2.5T$.

Make a tables for males and females using formula that relates the length of the tibia T and to the person's height H both measured in centimeters .

Male		
Length of tibia (cm)	$H = 81.7 + 2.4T$	(T, H)
30.5	$H = 81.7 + 2.4(30.5)$ $= 81.7 + 73.2$ $= 154.9$	(30.5,154.9)
34.8	$H = 81.7 + 2.4(34.8)$ $= 81.7 + 83.52$ $= 165.22$	(34.8,165.22)
36.3	$H = 81.7 + 2.4(36.3)$ $= 81.7 + 87.12$ $= 168.82$	(36.3,168.82)
37.9	$H = 81.7 + 2.4(37.9)$ $= 81.7 + 90.96$ $= 172.66$	(37.9,172.66)

The set of ordered pairs for Males are

$\{(30.5,154.9),(34.8,165.22),(36.3,168.82),(37.9,172.66)\}$.

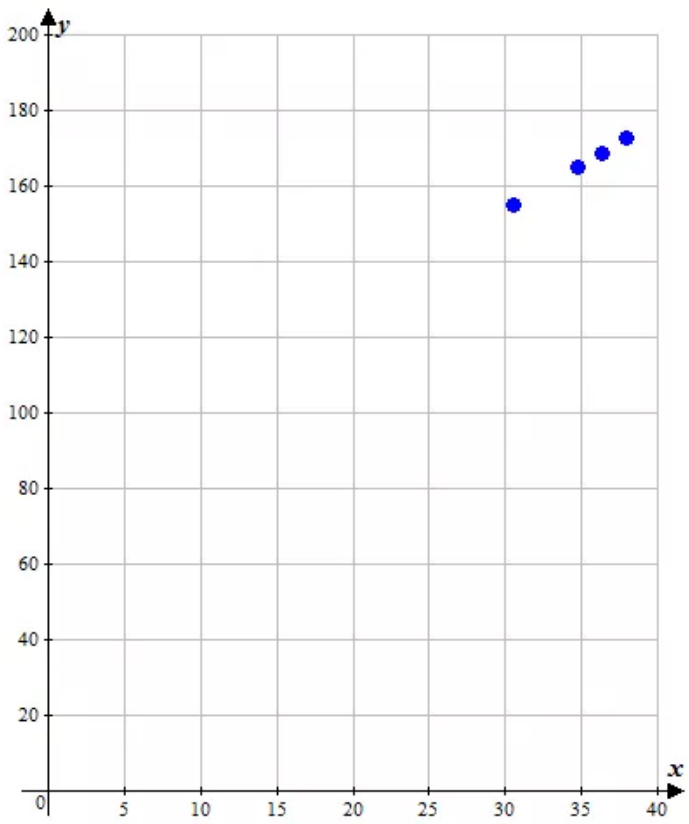
Female		
Length of tibia (cm)	$H = 72.6 + 2.5T$	(T, H)
30.5	$H = 72.6 + 2.5(30.5)$ $= 72.6 + 76.25$ $= 148.85$	(30.5,148.85)
34.8	$H = 72.6 + 2.5(34.8)$ $= 72.6 + 87$ $= 159.6$	(34.8,159.6)
36.3	$H = 72.6 + 2.5(36.3)$ $= 72.6 + 90.75$ $= 163.35$	(36.3,163.35)
37.9	$H = 72.6 + 2.5(37.9)$ $= 72.6 + 94.75$ $= 167.35$	(37.9,167.35)

The set of ordered pairs for Females are

$\{(30.5,148.85),(34.8,159.6),(36.3,163.35),(37.9,167.35)\}$.

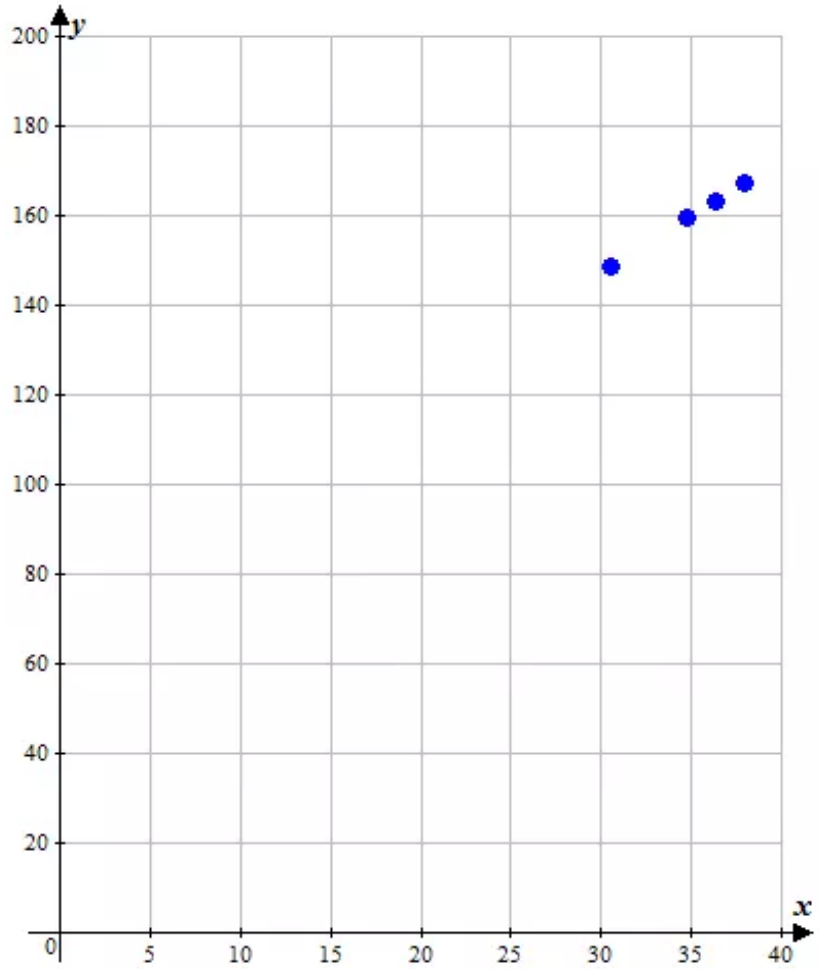
Graph for Males set of ordered pairs

$\{(30.5,154.9),(34.8,165.22),(36.3,168.82),(37.9,172.66)\}$.



Graph for Females set of ordered pairs

$\{(30.5,148.85),(34.8,159.6),(36.3,163.35),(37.9,167.35)\}$.



Answer 47PA.

Consider,

The range is $\{0,16,36\}$.

(a) $x^2 = y$

Make a table. Substitute each value of *y* into the equation to determine the corresponding values of *x* in the domain.

y	$x^2 = y$	x
0	$x^2 = 0$ $x = 0$	0
16	$x^2 = 16$ $x = \sqrt{16}$ $x = \pm 4$	± 4
36	$x^2 = 36$ $x = \sqrt{36}$ $x = \pm 6$	± 6

Therefore, the range is $\boxed{\{0,\pm 4,\pm 6\}}$.

(b) $y=|4x|-16$

Make a table. Substitute each value of y into the equation to determine the corresponding values of x in the domain.

y	$y=\|4x\|-16$	x
0	$0=\|4x\|-16$ $\|4x\|=16$ $\|x\|=4$ $x=\pm4$	±4
16	$16=\|4x\|-16$ $\|4x\|=32$ $\|x\|=8$ $x=\pm8$	±8
36	$36=\|4x\|-16$ $\|4x\|=52$ $\|x\|=13$ $x=\pm13$	±13

Therefore, the range is $\boxed{\{\pm4,\pm8,\pm13\}}$.

(c) $y=|4x-16|$

Make a table. Substitute each value of y into the equation to determine the corresponding values of x in the domain.

y	$y=\|4x-16\|$	x
0	$0=\|4x-16\|$ $0=4x-16$ $4x=16$ $x=4$	4
16	$16=\|4x-16\|$ $4x-16=\pm16$ $4x=16\pm16$ $x=0,8$	0,8
36	$36=\|4x-16\|$ $4x-16=\pm36$ $4x=16\pm36$ $x=-5,13$	−5,13

Therefore, the range is $\boxed{\{-5,0,4,8,13\}}$.

Answer 48PA.

Choose five values for the domain as $\{0,1,2,3,4\}$.

Make a table. The values of *x* come from the domain. Substitute each value of *x* into the equation to determine the values of *y* in the range.

x	$y=x+4$	y	(x,y)
0	$y=0+4$ $=4$	4	(0,4)
1	$y=1+4$ $=5$	5	(1,5)
2	$y=2+4$ $=6$	6	(2,6)
3	$y=3+4$ $=7$	7	(3,7)
4	$y=4+4$ $=8$	8	(4,8)

The values of range is $\{4,5,6,7,8\}$.

Relation: The set of first columns in the table are *x*-coordinates and the set of second column are *y*-coordinates.

The set of ordered pairs are $\{(0,4),(1,5),(2,6),(3,7),(4,8)\}$.

Inverse: Exchange *x* and *y* in each ordered pair to write the inverse relation, then the inverse relation is $\{(4,0),(5,1),(6,2),(7,3),(8,4)\}$.

Answer 49PA.

When travelling to other countries, currency and measurement system are often different.

You need to convert these systems to the system with which you are familiar .

(a) At the current exchange rate, 15 pounds is roughly 10 dollars and 10 pounds is roughly 7 dollars. Keeping track of every 15 pounds you spend would be relatively easy.

(b) If the exchange rate is 0.90 compared to the dollar, then items will cost less in dollars. For example, an item that is 10 in local currency is equivalent to $\$9$. If the exchange rate is 1.04, then items will cost more in dollars.

For example, an item that costs 10 in local currency is equivalent to $\$10.40$.

Answer 50PA.

Consider,

$3x-y=18$ and $y=3$

To find the value of x, when $y=3$

$$\begin{aligned} 3x-y&=18 \\ 3x-3&=18 && \text{Substitute } y=3 \\ 3x-3+3&=18+3 && \text{Add 3 from both sides} \\ 3x&=21 && \text{Simplify} \end{aligned}$$

$$\frac{3x}{3}=\frac{21}{3} \qquad \text{Divide both sides with 3}$$

$$x=7 \qquad \text{Simplify}$$

Therefore, if $3x-y=18$ and $y=3$, then $x=7$.

The correct option is $\boxed{\text{D}}$.

Answer 51PA.

The perimeter of a rectangle is 14 units and the area is 12 square units.

The perimeter of a rectangle is $P=2l+2w$,

$$\begin{aligned} 14&=2l+2w \\ 7&=l+w \\ l&=7-w \qquad \ldots.(1) \end{aligned}$$

The area of a rectangle is $A=l\times w$,

$$12=l\times w \qquad \ldots.(2)$$

Substitute equation (1) in (2),

$$\begin{aligned} 12&=(7-w)w \\ 12&=7w-w^2 \\ w^2-7w+12&=0 \\ w^2-4w-3w+12&=0 \\ (w-4)(w-3)&=0 \\ w&=3,4 \end{aligned}$$

Now substitute $w=3,4$ in equation (1),

$$\begin{aligned} l&=7-3 \\ &=4 \\ l&=7-4 \\ &=3 \end{aligned}$$

Therefore, the dimensions of the rectangle is $\boxed{3\times 4}$.

The correct option is $\boxed{\text{C}}$.

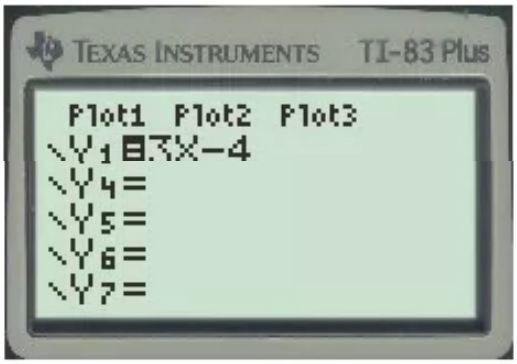
Answer 52PA.

Consider,

$$y=3x-4; x=\{-11,15,23,44\}$$

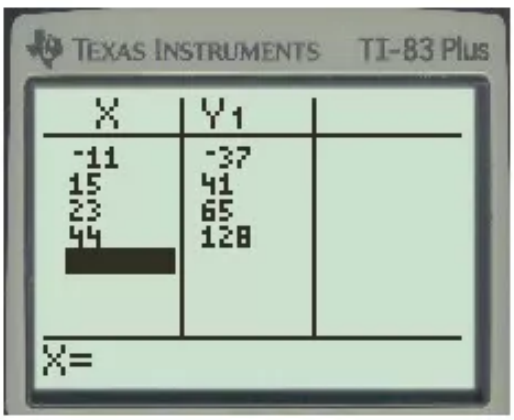
Finding the solution set for the given equation, using Graphing Calculator.

Enter an equation into the $Y=$ list



Now go to TBLST and highlight Ask under the Independent variable.

Now use the Table function to enter any domain value and the corresponding range value will appear in the second column.



Therefore the solution set for the equation $y=3x-4$ and domain $x=\{-11,15,23,44\}$ is

$\boxed{\{-37,41,65,128\}}$.

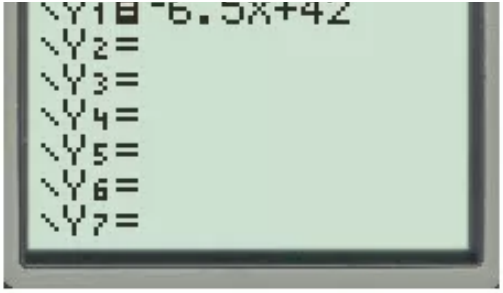
Answer 53PA.

Consider,

$$y=-6.5x+42; x=\{-8,-5,0,3,7,12\}$$

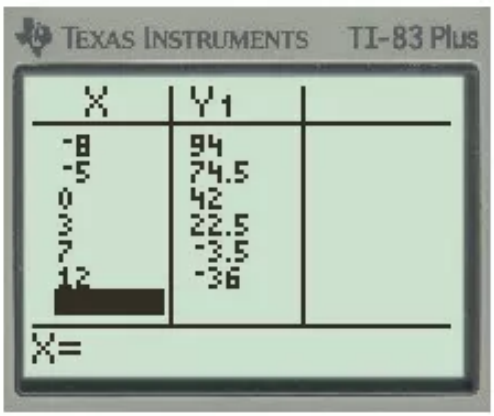
Finding the solution set for the given equation, using Graphing Calculator.

Enter an equation into the $Y=$ list



Now go to TBLST and highlight Ask under the Independent variable.

Now use the Table function to enter any domain value and the corresponding range value will appear in the second column.



Therefore the solution set for the equation $y=-6.5x+42$ and domain $x=\{-8,-5,0,3,7,12\}$ is $\boxed{\{-4.26,-3.21,-0.76,0.99,3.902\}}$.

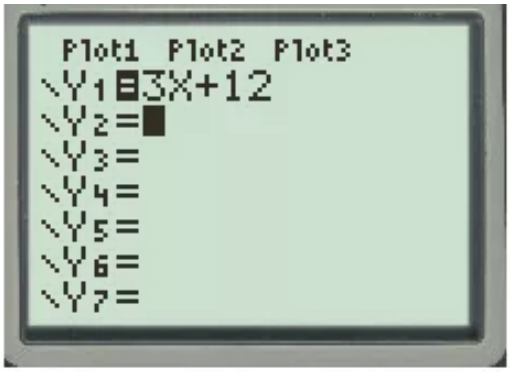
Answer 54PA.

Consider,

$$y=3x+12; x=\{0.4,0.6,1.8,2.2,3.1\}$$

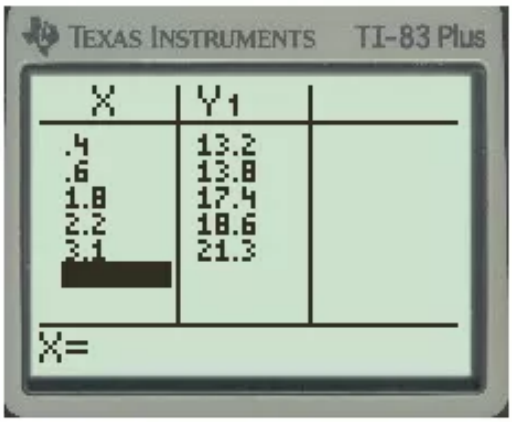
Finding the solution set for the given equation, using Graphing Calculator.

Enter an equation into the $y=$ list



Now go to TBLST and highlight Ask under the Independent variable.

Now use the Table function to enter any domain value and the corresponding range value will appear in the second column.



Therefore the solution set for the equation $y = 3x + 12$ and domain $x = \{0.4, 0.6, 1.8, 2.2, 3.1\}$ is $\boxed{\{13.2, 13.8, 17.4, 18.6, 21.3\}}$.

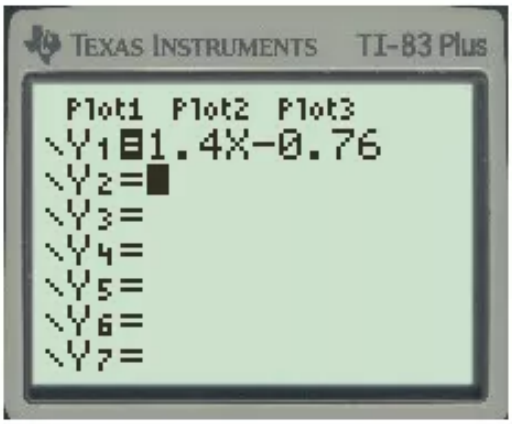
Answer 55PA.

Consider,

$$y = 1.4x - 0.76; x = \{-2.5, -1.75, 0, 1.25, 3.33\}$$

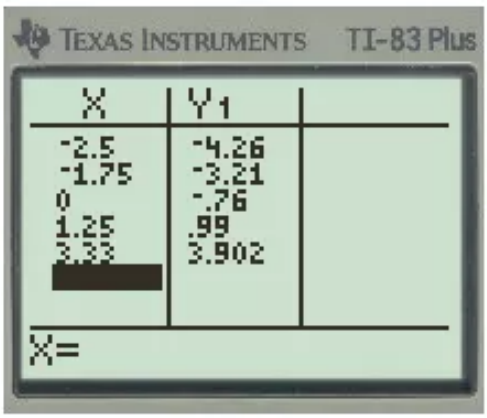
Finding the solution set for the given equation, using Graphing Calculator.

Enter an equation into the $Y =$ list



Now go to TBLST and highlight Ask under the Independent variable.

Now use the Table function to enter any domain value and the corresponding range value will appear in the second column.



Therefore the solution set for the equation $y = 1.4x - 0.76$ and domain $x = \{-2.5, -1.75, 0, 1.25, 3.33\}$ is $\boxed{\{-4.26, -3.21, -0.76, 0.99, 3.902\}}$.

Answer 56MYS.

Consider,

x	y
4	9
3	-2
1	5
-4	2

Relation: The set of first columns in the table are x-coordinates and the set of second column are y-coordinates.

The set of ordered pairs are $\{(4,9),(3,-2),(1,5),(-4,2)\}$.

Inverse: Exchange x and y in each ordered pair to write the inverse relation, then the inverse relation is $\{(9,4),(-2,3),(5,1),(2,-4)\}$.

Answer 57MYS.

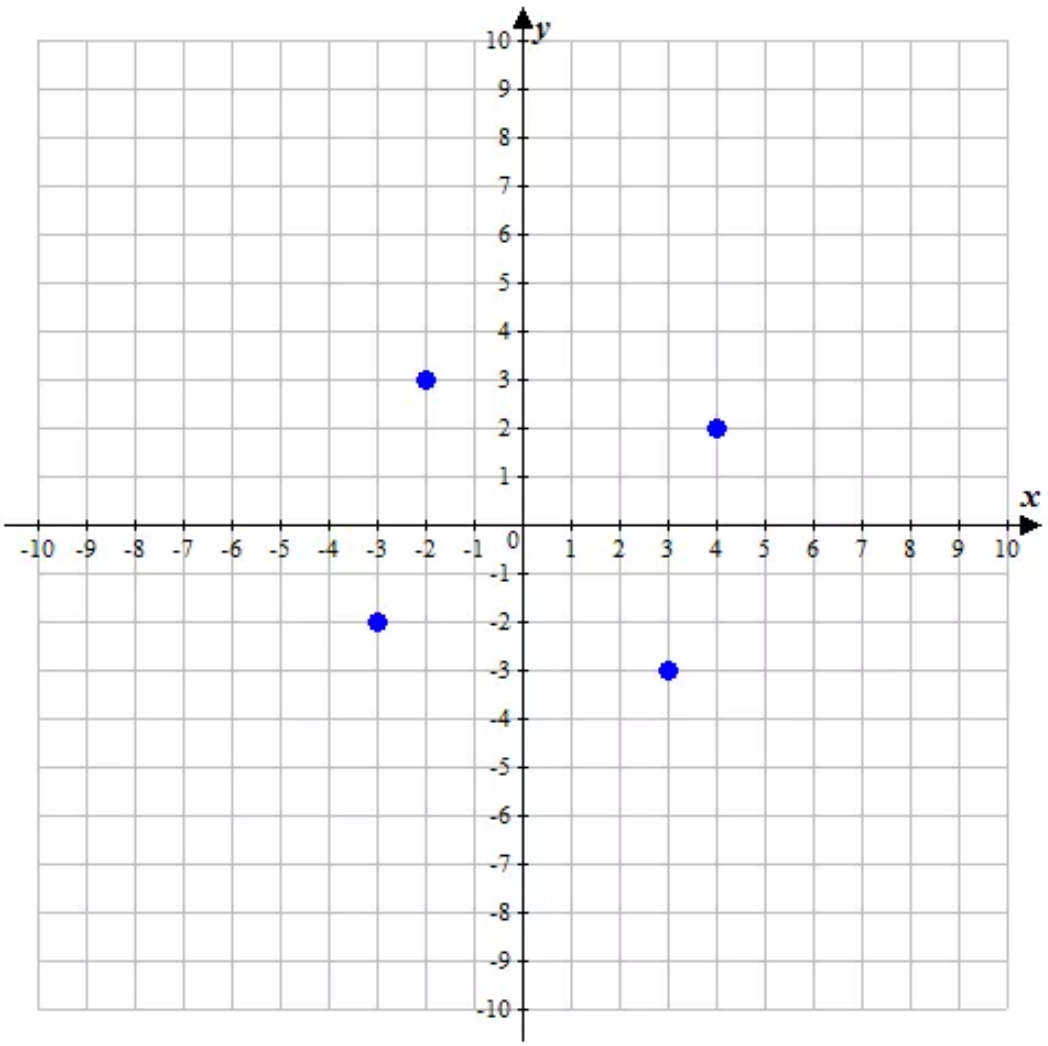
Relation: The set of domain values are x-coordinates and the paired range values are y-coordinates.

Therefore, the set of ordered pairs are $\boxed{\{(2,7),(6,-4),(6,-1),(11,8)\}}$.

Inverse: Exchange x and y in each ordered pair to write the inverse relation, then the inverse relation is $\boxed{\{(7,2),(-4,6),(-1,6),(8,11)\}}$.

Answer 58MYS.

Consider,



Relation: The set of ordered pairs are $\{(-2,3),(-3,2),(4,2),(3,-3)\}$.

Inverse: Exchange *x* and *y* in each ordered pair to write the inverse relation, then the inverse relation is $\{(3,-2),(2,-3),(2,4),(-3,3)\}$.

Answer 59MYS.

Consider,

Triangle *XYZ* with $X(-6,4), Y(-5,0)$ and $Z(3,3)$ reflected over the *y*-axis .

(a) To reflect the figure over the *y*-axis, multiply each *x*-coordinate by -1 .

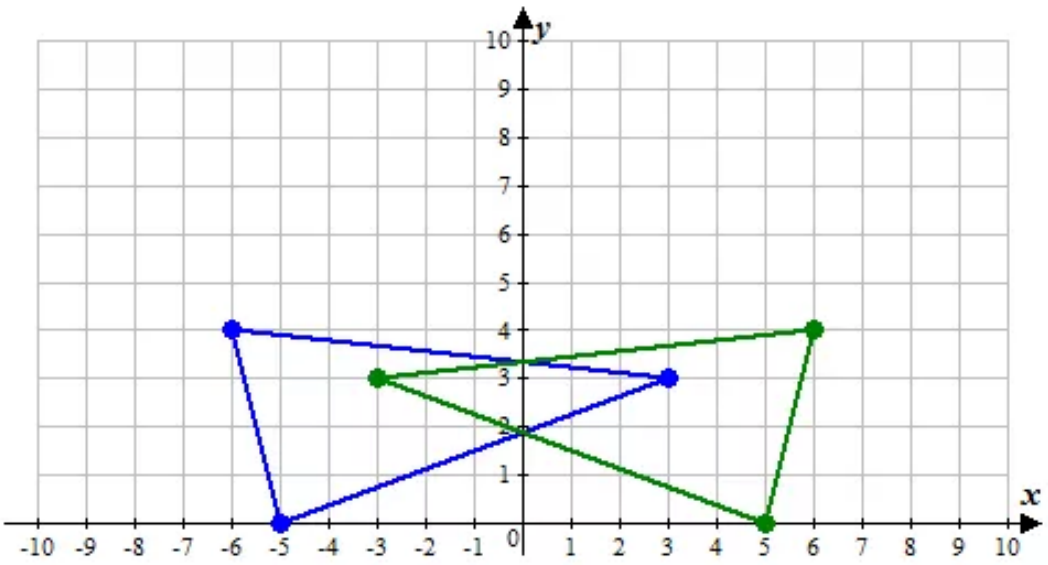
$$(x,y)\to(-x,y)$$
$$X(-6,4)\to X'(6,4)$$
$$Y(-5,0)\to Y'(5,0)$$
$$Z(3,3)\to Z'(-3,3)$$

The coordinates of the vertices of the image are $X'(6,4), Y'(5,0)$ and $Z'(-3,3)$

(b) Graph the pre image and its image .

Graph each vertex of the triangle *XYZ*. Connect the points.

Graph each vertex of the reflected image $X'Y'Z'$. Connect the points.



The Graph with blue color is pre image and with green color is image.

Answer 60MYS.

Consider,

Triangle *QRST* with $Q(2,2), R(3,-3), S(-1,-4)$ and $T(-4,-3)$ rotated 900 counterclockwise about the origin.

(a) To find the coordinates of the vertices after a 900 rotation, switch the coordinates of each point and then multiply the new first coordinate by -1.

$$(x,y)\to(-y,x)$$

$$Q(2,2)\to Q'(-2,2)$$
$$R(3,-3)\to R'(3,3)$$
$$S(-1,-4)\to S'(4,-1)$$
$$T(-4,-3)\to T'(3,-4)$$

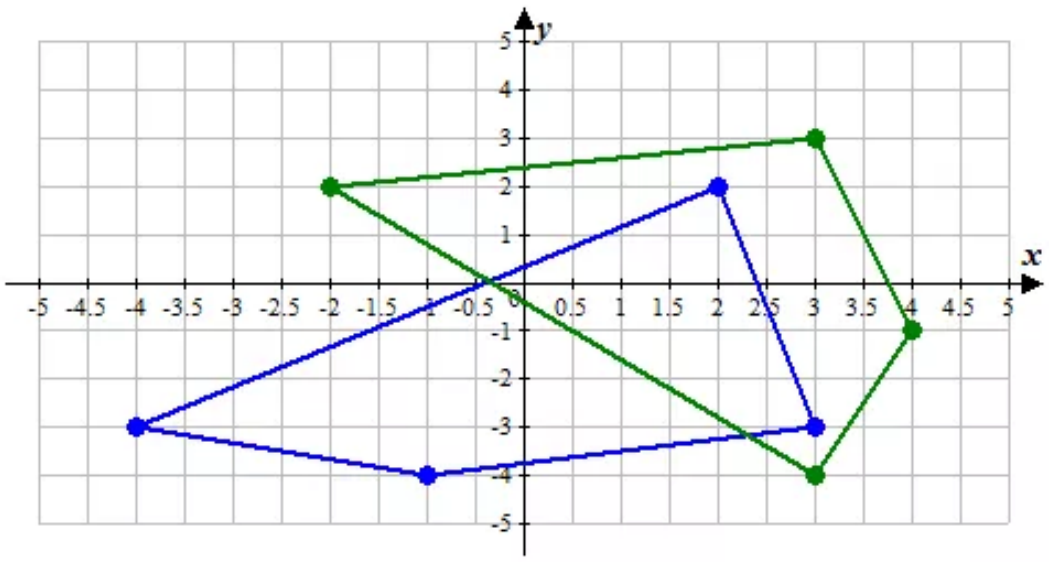
The coordinates of the vertices of the image are

$Q'(-2,2), R'(3,3), S'(4,-1)$ and $T'(3,-4)$.

(b) Graph the pre image and its image .

Graph each vertex of the triangle *QRST*. Connect the points.

Graph each vertex of the reflected image $Q'R'S'T'$. Connect the points.



The Graph with blue color is pre image and with green color is image.

Answer 61MYS.

Consider,

$$\frac{6}{15},\frac{18}{45}$$

A proportion is an equation stating that two ratios are equivalent. $\frac{a}{b}=\frac{c}{d}, b\neq 0 \text{ and } d\neq 0$.

The cross products of a proportion are equal. If $\frac{a}{b}=\frac{c}{d}$, then $ad=cb$.

The cross products are 6×45 and 18×15.

$$6\times 45=270$$
$$18\times 15=270$$

Since the cross products are equal, $270=270$.

Therefore the pair of ratios form a proportion.

Answer 62MYS.

Consider,

$$\frac{11}{12},\frac{33}{34}$$

A proportion is an equation stating that two ratios are equivalent. $\frac{a}{b}=\frac{c}{d}, b\neq 0 \text{ and } d\neq 0$.

The cross products of a proportion are equal. If $\frac{a}{b}=\frac{c}{d}$, then $ad=cb$.

The cross products are 11×34 and 33×12.

$$11\times 34=374$$
$$12\times 33=396$$

Since the cross products are equal, $374\neq 396$.

Therefore the pair of ratios not form a proportion.

Answer 63MYS.

Consider,

$$\frac{8}{22},\frac{20}{55}$$

A proportion is an equation stating that two ratios are equivalent. $\frac{a}{b}=\frac{c}{d}, b\neq 0 \text{ and } d\neq 0$.

The cross products of a proportion are equal. If $\frac{a}{b}=\frac{c}{d}$, then $ad=cb$.

The cross products are 8×55 and 22×20.

$$8\times 55=440$$
$$22\times 20=440$$

Since the cross products are equal, $440=440$.

Therefore the pair of ratios form a proportion.

Answer 64MYS.

Consider,

$$\frac{6}{8},\frac{3}{4}$$

A proportion is an equation stating that two ratios are equivalent. $\frac{a}{b}=\frac{c}{d}, b\neq 0 \text{ and } d\neq 0$.

The cross products of a proportion are equal. If $\frac{a}{b}=\frac{c}{d}$, then $ad=cb$.

The cross products are 6×4 and 8×3.

$6\times 4=24$

$8\times 3=24$

Since the cross products are equal, $24=24$.

Therefore the pair of ratios form a proportion.

Answer 65MYS.

Consider,

$$\frac{3}{5},\frac{9}{25}$$

A proportion is an equation stating that two ratios are equivalent. $\frac{a}{b}=\frac{c}{d}, b\neq 0 \text{ and } d\neq 0$.

The cross products of a proportion are equal. If $\frac{a}{b}=\frac{c}{d}$, then $ad=cb$.

The cross products are 3×25 and 5×9.

$3\times 25=75$

$5\times 9=45$

Since the cross products are not equal, $75\neq 45$.

Therefore the pair of ratios not form a proportion.

Answer 66MYS.

Consider,

$$\frac{26}{35},\frac{12}{15}$$

A proportion is an equation stating that two ratios are equivalent. $\frac{a}{b}=\frac{c}{d}, b\neq 0 \text{ and } d\neq 0$.

The cross products of a proportion are equal. If $\frac{a}{b}=\frac{c}{d}$, then $ad=cb$.

The cross products are 26×15 and 35×12.

$26\times 15=390$

$35\times 12=420$

Since the cross products are not equal, $390\neq 420$.

Therefore the pair of ratios not forms a proportion.

Consider,

If it is hot, then we will go swimming .

Identifying the hypothesis and the conclusion .

The hypothesis is the part of the conditional following the word if and the conclusion is the part of the conditional following the word then.

Hypothesis: it is hot

Conclusion: we will go swimming

Answer 68MYS.

Consider,

If you do your chores, then you get an allowance .

Identifying the hypothesis and the conclusion .

The hypothesis is the part of the conditional following the word if and the conclusion is the part of the conditional following the word then.

Hypothesis: you do your chores

Conclusion: you get an allowance

Answer 69MYS.

Consider,

If $3n-7=17$, then $n=8$.

Identifying the hypothesis and the conclusion .

The hypothesis is the part of the conditional following the word if and the conclusion is the part of the conditional following the word then.

Hypothesis: $3n-7=17$

Conclusion: $n=8$

Answer 70MYS.

Consider,

If $a>b$ and $b>c$, then $a>c$.

Identifying the hypothesis and the conclusion .

The hypothesis is the part of the conditional following the word if and the conclusion is the part of the conditional following the word then.

Hypothesis: $a>b$ and $b>c$

Conclusion: $a>c$

Answer 71MYS.

Consider,

$$a+15=20$$

Solving the equation,

$$\begin{aligned} a+15&=20 \\ a+15-15&=20-15 && \text{Subtract 15 from both sides} \\ a&=5 && \text{Simplify} \end{aligned}$$

Therefore, the solution set of the equation $a+15=20$ is $\boxed{a=5}$.

Answer 72MYS.

Consider,

$$r-9=12$$

Solving the equation,

$$\begin{aligned} r-9&=12 \\ r-9+9&=12+9 && \text{Add 9 from both sides} \\ r&=21 && \text{Simplify} \end{aligned}$$

Therefore, the solution set of the equation $r-9=12$ is $\boxed{r=21}$.

Answer 73MYS.

Consider,

$$-4=5n+6$$

Solving the equation,

$$\begin{aligned} -4&=5n+6 \\ -4-6&=5n+6-6 && \text{Subtract 6 from both sides} \\ -10&=5n && \text{Simplify} \\ \frac{-10}{5}&=\frac{5n}{5} && \text{Divide both sides with 5} \\ -2&=n && \text{Simplify} \end{aligned}$$

Therefore, the solution set of the equation $-4=5n+6$ is $\boxed{n=-2}$.

Answer 74MYS.

Consider,

$$3-8w=35$$

Solving the equation,

$$\begin{aligned} 3-8w&=35 \\ 3-8w-3&=35-3 && \text{Subtract 3 from both sides} \\ -8w&=32 && \text{Simplify} \\ \frac{-8w}{-8}&=\frac{32}{-8} && \text{Divide both sides with } -8 \\ w&=-4 && \text{Simplify} \end{aligned}$$

Therefore, the solution set of the equation $3-8w=35$ is $\boxed{w=-4}$

Answer 75MYS.

Consider,

$$\frac{g}{4}+2=5$$

Solving the equation,

$$\frac{g}{4}+2=5$$

$$\frac{g}{4}+2-2=5-2 \qquad \text{Subtract 2 from both sides}$$

$$\frac{g}{4}=3 \qquad \text{Simplify}$$

$$4\left(\frac{g}{4}\right)=4(3) \qquad \text{Multiply both sides with 3}$$

$$g=12 \qquad \text{Simplify}$$

Therefore, the solution set of the equation $\frac{g}{4}+2=5$ is $\boxed{g=12}$.

Answer 76MYS.

Consider,

$$\frac{m}{5}+\frac{3}{5}=2$$

Solving the equation,

$$\frac{m}{5}+\frac{3}{5}=2$$

$$5\left(\frac{m}{5}+\frac{3}{5}\right)=5(2) \qquad \text{Multiply both sides with 5}$$

$$m+3=10 \qquad \text{Simplify}$$

$$m+3-3=10-3 \qquad \text{Subtract with 3 from both sides}$$

$$m=7 \qquad \text{Simplify}$$

Therefore, the solution set of the equation $\frac{m}{5}+\frac{3}{5}=2$ is $\boxed{m=7}$.