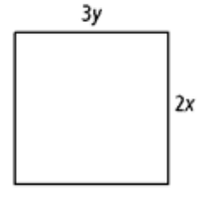
Bell Work:



12. If the area of the square at the right is 54 square units, what are the values of x and y?

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

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

$x = \frac{3}{2}(\sqrt{6})$

$x = \frac{3\sqrt{6}}{2}$

$3y(2x) = 54$

$6xy = 54$

$6\left(\frac{3}{2}y\right)y = 54$

$\frac{9y^2 = 54}{9}$

$y^2 = 6$

$y = \sqrt{6}$

Systems with Three Variables

Solve each system by elimination. Check your answers.

1.

1) $x + y + z = -1$
2) $2x - y + 2z = -5$
3) $-x + 2y - z = 4$

1 + 3

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

$3y = 3$

2 + 3

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

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

$3y = 3$

$y = 1$

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

$3 = 3$

No solution

9. $\begin{cases} 2x-3y+z=4 \\ -2x+3y-z=-4 \\ 6x-9y+3z=12 \end{cases}$

1 + 2

$2x-3y+z=4$

$-2x+3y-z=-4$

$0+0+0=0$

2 + 3

$-6x+9y-3z=-12$

$6x-9y+3z=12$

$0+0+0=0$

IMS

Infinitely Many Solutions

Solve each system of equations. Check your answers.

13. $\begin{cases} x + y + z = -8 \\ x - y - z = 6 \\ 2x - 3y + 2z = -1 \end{cases}$

1 + 2

$x + y + z = -8$

$x - y - z = 6$

$2x = -2$

$x = -1$

1 + 3

$(x + y + z = -8)(-2)$

$2x - 3y + 2z = -1$

$-2x - 2y - 2z = 16$

$2x - 3y + 2z = -1$

$-5y = 15$

$-5 \quad -5$

$y = -3$

$-1 + (-3) + z = -8$

$-4 + z = -8$

$+4 \quad +4$

$z = -4$

$(-1, -3, -4)$

3. $\begin{cases} 2x + y = 9 \\ x - 2z = -3 \\ 2y + 3z = 15 \end{cases}$

$x - 2z = -3$
$+2z \quad +2z$
$x = -3 + 2z$

$(3, 3, 3)$

$2(-3 + 2z) + y = 9$
$-6 + 4z + y = 9$
$+6 \quad +6$
$4z + y = 15$

$(4z + y = 15) - 2$
$3z + 2y = 15$

$-8z - 2y = -30$
$3z + 2y = 15$
$-5z = -15$
$z = 3$

$x - 2(3) = -3$
$x - 6 = -3$
$x = 3$

$2y + 3(3) = 15$
$2y + 9 = 15$
$2y = 6$
$y = 3$

(1, 2, 3)

11. $\begin{cases} x+y+z=6 \\ 2x-y+2z=6 \\ -x+y+3z=10 \end{cases}$

1 + 2

$x+y+z=6$

$2x-y+2z=6$

$3x+3z=12$

2 + 3

$2x-y+2z=6$

$-x+y+3z=10$

$x+5z=16$

$(x+5z=16)\cdot -3$

$3x+3z=12$

$-3x-15z=-48$

$3x+3z=12$

$-12z=-36$

-12

$z=3$

$x+5(3)=16$

$x+15=16$

$x=1$

$1+y+3=6$

$y+4=6$

$y=2$

Write and solve a system of equations for each problem. 11 = $1 bills, 5 – $10 bills, 7 – $5 bills

15. Monica has $1, $5, and $10 bills in her wallet that are worth $96. If she had one more $1 bill, she would have just as many $1 bills as $5 and $10 bills combined. She has 23 bills total. How many of each denomination does she have?

x (1), y ($5), z ($10)

$x + 5y + 10z = 96$

$x + 1 = y + z$

$x + y + z = 23$

$x + 1 = y + z$

$-1 \quad -1$

$x = y + z - 1$

$-y - z \quad -y - z$

$x - y - z = 1$

$x + y + z = 23$

$x - y - z = 1$

$2x = 22$

$x = 11$

$+3$

$11 + 5y + 10z = 96$

$11 + y + z = 23 \rightarrow$

$11 + y + 5 = 23$

$y + 16 = 23$

$y = 7$

$5y + 10z = 85$

$-5(y + z = 12)$

$5y + 10z = 85$

$-5y - 5z = 60$

$5z = 25$

$z = 5$