## Solving Systems of Three Equations WKST

Solve each system of equations using substitution.

| 1. | 2. | $-x-5 y-5 z=2$ |
| :--- | :--- | :--- |
| $x-6 y+4 z=-12$ |  |  |
| $x+y-4 z=12$ |  |  |
| $2 x+2 y+5 z=-15$ | $4 x-5 y+4 z=19$ |  |
|  | $x+5 y-z=-20$ |  |

Solve each system of equations using elimination.

| 3. $\begin{aligned} & -6 x-2 y+2 z=-8 \\ & 3 x-2 y-4 z=8 \\ & 6 x-2 y-6 z=-18 \end{aligned}$ | 4. $\begin{aligned} & x-y+4 z=5 \\ & 4 x+3 y-2 z=5 \\ & 2 x+z=2 \end{aligned}$ | 5. $\begin{gathered} -3 z=6 \\ 2 x+y-2 z=6 \\ -6 x-3 y=-6 \end{gathered}$ |
| :---: | :---: | :---: |

Set up and solve a system of equations to model the word problem.
6. The high school that Gabriella attends is selling tickets to the annual talent show. On the first day of ticket sales the school sold 4 senior citizen tickets and 5 student tickets for a total of \$102. The school took in $\$ 126$ on the second day by selling 7 senior citizen tickets and 5 student tickets. What is the price each of one senior citizen ticket and one student ticket?
7. A vending machine will accept nickels and dimes only. The attendant checks the machine and finds 42 coins whose value is $\$ 3.40$. How many coins of each type were there?

Set up but DO NOT SOLVE a system of equations to model the word problem.
8. The sum of three integers is 189 . The first integer is 28 less than the second. The second integer is 21 less than the sum of the first and third integers. Find the three integers.
9. I was working at the cash register at the local grocery store on the weekend. The first customer bought 3 apples, 5 bananas, and 4 oranges, for a total of $\$ 8.95$. The second customer bought 8 apples, 1 banana, and 3 oranges, for a total of $\$ 8.10$. The third customer bought 2 apples, 2 bananas, and 2 oranges, for a total of $\$ 4.40$. How much did each piece of fruit cost?

ANSWERS

| 1. $(0,0,-3)$ | 2. $(-2,-3,3)$ | 3. no solution |
| :---: | :---: | :---: |
| 4. $(0,3,2)$ | 5. infinitely many solutions | 6. senior citizen ticket: $\$ 8$, student ticket: \$14 |
| 7. 26 dimes, 16 nickels | $\begin{aligned} & \text { 8. Let } \mathrm{x}=1^{\text {st }} \text { number, } \mathrm{y}=2^{\text {nd }} \\ & \text { number, } \mathrm{z}=3^{\text {rd }} \text { number; } \\ & x+y+z=189 \\ & x=y-28 \\ & y=x+z-21 \end{aligned}$ | $\begin{aligned} & \text { 9. Let } \mathrm{a}=\text { apples, } \mathrm{b}=\text { bananas, } \\ & \mathrm{r}=\text { oranges } \\ & 3 a+5 b+4 r=8.95 \\ & 8 a+b+3 r=8.1 \\ & 2 a+2 b+2 r=4.4 \\ & \hline \end{aligned}$ |

