Algebra 2   Name_____

Systems: Word Problems & Three Equations

Date_____ Period_____

Solve each system.

1) $x + y - 5z = 7$
$\quad 2y - z = 2$
$\quad 4y - 2z = 4$

2) $y + 5z = -18$
$\quad -x + y + 4z = -13$
$\quad -5x + y - 5z = 27$

3) $-3y - 6z = 12$
$\quad x = -6z - 4$
$\quad y = -5x + 5z + 13$

4) $x + 2y + z = 8$
$\quad -2x + 5y + 5z = 24$
$\quad 3y = 18$

5) $x + 2y - 4z = -20$
$\quad 5x - 2y + z = -25$
$\quad 4x + 3y + z = -24$

6) $4x + 3y - z = -2$
$\quad -5x + 2y + 2z = -17$
$\quad 6x + 6y - 2z = -6$

7) $-x + y - 2z = 3$
$\quad z = -2x - y + 6$
$\quad 6x + 6y = 30$

8) $-2x - y - 3z = -5$
$\quad 2x - 4y - z = 22$
$\quad x - 5y - 2z = 23$

9) Dan's school is selling tickets to a spring musical. On the first day of ticket sales the school sold 3 adult tickets and 8 student tickets for a total of $57. The school took in $39 on the second day by selling 5 adult tickets and 4 student tickets. What is the price each of one adult ticket and one student ticket?

10) Gabriella and Amanda each improved their yards by planting rose bushes and shrubs. They bought their supplies from the same store. Gabriella spent $43 on 1 rose bush and 4 shrubs. Amanda spent $31 on 7 rose bushes and 1 shrub. What is the cost of one rose bush and the cost of one shrub?

11) Yellowstone National Park is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 8 vans and 5 buses with 420 students. High School B rented and filled 10 vans and 10 buses with 750 students. Every van had the same number of students in it as did the buses. How many students can a van carry? How many students can a bus carry?

12) Maria and Rob are selling cheesecakes for a school fundraiser. Customers can buy pecan cheesecakes and strawberry cheesecakes. Maria sold 10 pecan cheesecakes and 5 strawberry cheesecakes for a total of $115. Rob sold 1 pecan cheesecake and 3 strawberry cheesecakes for a total of $34. What is the cost each of one pecan cheesecake and one strawberry cheesecake?

13) The sum of the digits of a certain two-digit number is 7. Reversing its digits increases the number by 27. Find the number.

Answers to Systems: Word Problems & Three Equations (ID: 1)

1) No unique solution

2) $(-1, 2, -4)$

3) $(2, -2, -1)$

4) $(-2, 6, -2)$

5) $(-6, -1, 3)$

6) $(1, -3, -3)$

7) No unique solution

8) $(2, -5, 2)$

9) adult ticket: $3, student ticket: $6

10) rose bush: $3, shrub: $10

11) Van: 15, Bus: 60

12) pecan cheesecake: $7, strawberry cheesecake: $9

13) 25