**Algebra 3 – Review Packet 1**

*SHOW ALL WORK FOR FULL CREDIT. NO/MINIMAL WORK WILL RECEIVE ZERO CREDIT.*

**Determine if each pair of equations is parallel, perpendicular, or neither.**

1. \[10x + 5y = 5 \text{ and } -x = 2y + 16\]
2. \[8x - 6y = 42 \text{ and } -3y = 9 - 4x\]

3. \[-8x + 8y = 0 \text{ and } x - y = 4\]
4. \[x = 2 \text{ and } y = 2\]

**Write a linear equation in slope-intercept form using the given information.**

5. \[\text{slope} = -6; \text{ passes through } (-4, 1)\]
6. \[\text{slope} = \frac{4}{3}; \text{ passes through } (-5, -6)\]

7. \[\text{passes through } (-4, 11) \text{ and } (2, 8)\]
8. \[\text{passes through } (5, 3) \text{ and } (14, -5)\]
Solve each system of equations by substitution.

9. \[ y = -7x - 1 \]
   \[ y = x - 9 \]

10. \[ y = -5x + 30 \]
    \[ 7x + 3y = 42 \]

11. \[ 6x - 5y = -28 \]
    \[ 7x + y = 22 \]

12. \[ x - 7y = 53 \]
    \[ -4x - 5y = 19 \]

Solve each system of equations by elimination.

13. \[ 4x - 9y = -42 \]
    \[ x + 5y = 4 \]

14. \[ 7x - 6y = -53 \]
    \[ 2x - 3y = -13 \]
Solve each application using a system of equations.

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<td>DEFINE YOUR VARIABLES - What are you solving for?</td>
<td>SET UP TWO EQUATIONS using the information given.</td>
<td>SOLVE the system using your method of choice.</td>
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17. Marcie bought a total of 20 used books and CDs during a yard sale for a total of $54.50. If books costs $1.50 each and CDs cost $5 each, how many of each did she buy?

18. Landon babysits and works part time at the water park over the summer. One week, he babysat for 3 hours and worked at the water park for 10 hours and made $109. The next week he babysat for 8 hours and worked at the water park for 12 hours and made $177. How much does Landon make per hour at each job?

19. Kent has a collection of pennies and nickels with a value of $1.98. The number of pennies he has is five less than twice the number of nickels. How many of each coin does Kent have?
Use matrices to solve the following systems of equations in 3 variables.

20. \[2x - 6y + 9z = -8\]
    \[5x + y + 2z = 10\]
    \[3x + y - 8z = -28\]

21. \[4x - y - 3z = 45\]
    \[6x - 4y + 3z = 41\]
    \[2x - 7y - 11z = 85\]

22. \[5x - 3y + 8z = -59\]
    \[9x - 4y - z = -60\]
    \[5x + 2y + 4z = -47\]

23. \[x - 5y + 3z = 39\]
    \[3x + 8y - z = -19\]
    \[2x - 6y - 5z = -29\]

Solve each application using matrices.

24. The three medals earned in the Olympics are the gold, silver, and bronze medals. In the 2014 Winter Olympics, the United States had 28 total medal winners. There were two more gold medals than silver medals and the number of bronze medals was four less than the sum of the number of gold and silver medals. How many winners were there of each type of medal?

25. Enrique has a pay-per-use plan on his cell phone. It costs $0.10 per minute talk, $0.20 per text message, and $0.25 per picture message. His total bill last month was $30.95. The total number of text and picture messages sent was 87. The cost for the use of minutes was $1.60 less than the cost of the text messages. Find the number of talk minutes, text messages, and picture messages he used.