Math 8 Name_____

Solving Systems Word Problems

Score_____Per____

Sonic the Hedgehog and the Road Runner are running a race. Sonic can run 15 meters per second, and he gets a 100-meter head start. The Road Runner can run 20 meters per second, and he gets no head start. At what time will Sonic and the Road Runner be tied? At what distance from the start will they be tied?

1. Write an equation to represent Sonic's distance and time:
How fast is he going?_____ (That is your rate of change/slope.)
Where did he start?_____ (That is your initial value/y-intercept.)
Write the equation: _____

2. Write an equation to represent Road Runner's distance and time:
How fast is he going?_____ (That is your rate of change/slope.)
Where did he start?_____ (That is your initial value/y-intercept.)
Write the equation: _____

3. Solve the system using **substitution**:

4. They will be tied after _____ seconds. They will be _____ meters from the start when they tie.

The students at Mapleton Jr. High and Spanish Fork Jr. High are going to Lagoon. Mapleton Jr. High rented and filled 1 van and 6 buses with 372 students. Spanish Fork Jr. High rented and filled 4 vans and 12 buses with 780 students. How many students can a van carry? How many students can a bus carry?

5. Write an equation to represent Mapleton Jr. High's vans and buses: _____

6. Write an equation to represent Spanish Fork Jr. High's vans and buses: _____

7. Solve the system using **elimination**:

8. A van carries _____ students. A bus carries _____ students.

Topanga and Corey are having a hot dog eating contest at school. Topanga can eat 3 hotdogs per minute, but she was given a head start and ate 6 hotdogs before the race began. Cory can eat 5 hotdogs per minute but was given no head start. At what time will Cory and Topanga have eaten the same amount of hotdogs? At that time, how many hotdogs will they have eaten?

1. ***x*** represents _____	**2.** ***y*** represents _____
3. Write an equation to represent Topanga's hot dogs eaten and time: How many hot dogs can she eat per minute?_____ How many hotdogs did she eat before the race started?_____ Write the equation: _____	**4.** Write an equation to represent Corey's hot dogs eaten and time: How many hot dogs can he eat per minute?_____ How many hotdogs did he eat before the race started?_____ Write the equation: _____
5. Solve the system using **substitution**:	
6. They will have eaten the same amount of hotdogs after _____ minutes. At that time, they will have eaten _____ hotdogs.	

Kelsi buys 4 concert tickets for Imagine Dragons and 2 concert tickets for Neon Trees and spends a total of $136. Bella buys 2 concert tickets for Imagine Dragons and 6 concert tickets for Neon Trees and spends a total of $208. Find the price of an Imagine Dragons concert ticket, and a Neon Trees concert ticket.

7. Pick a variable to represent the cost of an Imagine Dragons' concert ticket: _____	**8.** Pick a variable to represent the cost of a Neon Trees' concert ticket: _____
9. Write an equation to represent the amount of money Kelsi spent on tickets for the two different concerts: _____	**10.** Write an equation to represent the amount of money Bella spent on tickets for the two different concerts: _____
11. Solve the system using **elimination:**	
12. An Imagine Dragons ticket costs _____. A Neon Trees ticket costs _____.	

Mapleton Junior High is selling tickets to their school musical. On the first day of ticket sales the school sold 12 adult tickets and 20 child tickets for a total of $120. On the second day, the school sold 18 adult tickets and 20 child tickets for a total of $150. Find the price of an adult ticket and the price of a child ticket.

13. Pick a variable to represent the price of an adult ticket: _____	**14.** Pick a variable to represent the price of a child ticket: _____
15. Write an equation to represent the amount of tickets sold on the first day: _____	**16.** Write an equation to represent the amount of tickets sold on the second day: _____
17. Solve the system using **elimination:**	
18. A adult ticket costs _____. A child ticket costs _____.	