FM Algebra	Name:	
Using Linear Systems WS#2	Date:	Pd:

For each problem, write and solve a system of equations. You must use one of the THREE approved methods. Make sure you define your variables and answer in a complete sentence!

1. A rectangle has a perimeter of 14 feet. The length is equal to 1 less than 4 times its width. Find the dimensions of the rectangle.

2. Two cars get an oil change at the same service center. Each customer is charged a fixed fee for the oil change plus a certain amount per quart of oil used. The oil change for a car that requires 5 quarts of oil costs \$22.45. The oil change for a car that requires 7 quarts of oil costs \$25.45. Find the fixed fee and the cost per quart of oil.

3. For a floral arrangement class, Alice has to create an arrangement of twigs and flowers that has a total of 9 objects. She has to pay for the twigs and flowers that she uses in her arrangement. Each twig costs \$1 and each flower costs \$3. If Alice spent \$15 on her arrangement, how many of each object did she use?

4. Thomas and Patrick each downloaded some songs on Saturday. The site they use charges the same price for each "regular song" and a different price for each "new release". Thomas bought 3 regular songs and 2 new releases for \$12.85. Patrick bought 1 regular song and 2 new releases for \$8.95. Determine what the site charges for each type of song. 5. A sports equipment store is having a sale on soccer balls. A soccer coach purchases 10 soccer balls and 2 soccer ball bags for \$155. Another soccer coach purchases 12 soccer balls and 3 soccer ball bags for \$189. Find the cost of a soccer ball and a soccer ball bag.

6. You are planning a birthday party for your 8 year old cousin. You can have a party at a pizza place for \$8 per person plus a \$30 "party fee" for favors and clean-up. A taco place has a similar deal but it costs \$12 per person plus a \$14 "party fee". How many children would you have to invite for the party to cost the same at both places? What would this party cost?

7. A test has only 2-point and 5-point questions. It is worth 70 points and has 23 questions. How many of each type of question are on the test?

8. Your toilets clog up and you have to hire a plumber to come and ream out your pipes. The first plumber you call only charges \$35 to walk in, but charges \$50 an hour. The second plumber you call only charges \$40 an hour, but she charges \$60 to walk in. When is it better to use each plumber?

9. A website allows users to download individual songs or an entire album. All individual songs cost the same to download, and all albums cost the same to download. Ryan paid \$14.94 to download 5 individual songs and 1 album. Seth paid \$22.95 to download 3 individual songs and 2 albums. How much does the website charge to download an individual song and how much does it charge for an entire album?

- 10. A new on-line movie rental company is advertising two different plans for "vintage" pay-per-view movies (movies that came out more than 10 years ago).
  - Plan A: You pay \$2 per movie.
  - Plan B: You pay a yearly member ship fee of \$18 and movies are discounted to \$1.50 per movie.

Which plan would you choose? You must provide a mathematical explanation for your choice.

11. Matt invested \$2000 in stocks and bonds. This year the bonds paid 8% interest, and the stocks paid 6% in dividends. Matt received a total of \$144 in interest and dividends. How much money did he put in each type of investment?

12. At a grocery store, a customer paid a total of \$9.70 for 1.8 pounds of potato salad and 1.4 pounds of coleslaw. Another customer paid a total of \$6.55 for 1 pound of potato salad and 1.2 pounds of coleslaw. How much does the grocery store charge for 1 pound of potato salad and how much does the grocery store charge for 1 pound of coleslaw?