Algebra II 3.1-3.3 Word Problems

1. Big Dog Snowboarding Co. charges $15 for equipment rental plus $35 per hour for snowboarding lessons. Half-Pipe Snowboards, Inc. charges $40 for equipment rental plus $25 per hour for lessons. For what number of hours is the cost of equipment and lessons the same for each company?
2. Ravi is comparing the costs of long distance calling cards. To use card A, it costs $0.50 to connect and then $0.05 per minute. To use card B, it costs $0.20 to connect and then $0.08 per minute. For what number of minutes does it cost the same amount to use each card for a single call?
3. David and Mary sell home theater systems. David earns a base salary of $2400 per month, plus $100 for each system he sells. Mary earns a base salary of $2200 per month, plus $120 for each system she sells. How many systems do David and Mary have to sell before they earn the same amount of money?
4. A zookeeper needs to mix feed for the prairie dogs so that the feed has the right amount of protein. Feed A has 12% protein. Feed B has 5% protein. How many pounds of each does he need to mix to get 100 lb of feed that is 8% protein?
5. Denise owns a car that runs on a mixture of gasoline and ethanol. She can buy fuels that have 85% ethanol or 25% ethanol. How much of each type of fuel should she buy if she wants to fill her 20 gal tank with a mixture of fuel that contains 50% ethanol?
6. An office is printing 1200 copies of a document using two printers. During the process, printer A gets a paper jam and prints only half as many copies as printer B. Write and solve a system of equations to determine the number of copies each printer will produce.
7. The band and the orchestra are attending a concert. The band bought 16 student tickets and 3 adult tickets for $110.50. The orchestra bought 12 student tickets and 4 adult tickets for $96. Find the cost of each type of ticket.
8. An organization is holding a banquet in honor of its member of the year. Tables must be rented in order to seat all the guests. A large table seats 12 and costs $50. A small table seats 8 and costs $25. How many of each type of table must be rented to seat 100 guests for $350?
9. A polar expedition is 240 miles away from base camp, and a snowstorm is predicted to reach the area in 48 hours. The expedition will travel as far as possible by boat and then walk the remaining distance to camp before the storm hits. The explorers can navigate the boat through the ice at a rate of 12 miles per hour or walk with the equipment at a rate of 3 miles per hour. Write and graph a system of inequalities that can be used to determine how long the explorers may travel by foot or by boat to reach base camp before the storm.
10. Leyla is selling hot dogs and spicy sausages at the fair. She has only 40 buns, so she can sell no more than a total of 40 hot dogs and sausages. Each hot dog sells for $2, and each sausage sells for $2.50. She needs at least $90 om sales to meet her goal. Write and graph a system of inequalities that models this situation.
11. In 2003, LaDainian Tomlinson led the NFL in yards from scrimmage, a combination of rushing yards and receiving yards. He had a total of 2370 yards from scrimmage, including 1645 rushing yards. The runner-up, Jamal Lewis, had fewer yards from scrimmage but more rushing yards. Write and graph a system of inequalities that models the possible rushing and receiving yardage for Jamal Lewis.
12. Kira is investing $30,000 divided between two separate simple interest accounts. One pays 5% and has very low risk, and the other pays 7% and has slightly higher risk. What is the least she can invest in the riskier account and still earn at least $1900 after one year?

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Algebra II Homework

3.1-3.3 Word Problems

1. Jenna has $1500 in a savings account. She adds $30 to her account each month. Luis has

$2400 in his savings account. He withdraws $30 from his account each month. In how many

months will they have the same balance in their savings accounts? What will be the balance

in each account?

2. Juan started with 50 gallons of water in his pool, and he is filling it at a rate of 10 gallons per

minute. His next-door neighbor Sam started with 20 gallons of water in his pool, and he is

filling it at a rate of 15 gallons per minute. When will the pools contain the same amount of

water? Write a system of equations to determine the answer.

3. Cora bought 4 pounds of nuts and 2 pounds of raisins for $23.50. Mark bought 2 pounds

of nuts and 4 pounds of raisins for $18.50. Write a system of equations to answer the

question: How much should should a pound of nuts and a pound of raisins cost together?

4. Susan wants to divide a maximum of $20,000 between two simple interest investment accounts.

One pays 6% interest and the other pays 7.5% interest. Write and graph a system of inequalities

that shows the amounts Susan can invest in each account and still earn at least $1300 per year.

5. A chemist wants to mix a new solution with at least 18% pure salt. The chemist has two

solutions with 9% pure salt and 24% pure salt. He wants to make at most 250 mL of the new

solution. Write and graph a system of inequalities that can be used to find the amounts of each

salt solution needed.