Investment Problems:

1. Diane invested $2100 in high-yield investments. Part of the $2100 was invested at 7% per annum and part at 10% per annum. After 1 year the total interest earned was $166.50. How much did Diane invest at each rate?
2. Dan invested a total of $5 000 in two stocks in 2009. One stock earned 4% interest and the other earned 6% interest. At the end of one year, the interest from the amount invested at 4% was $50 more than the interest from the amount invested at 6%. How much did he invest in each stock?

Mixture Problems:

1. A 50% acid solution is required for a chemistry lab. The instructor has a 20%

stock solution and a 70% stock solution. She needs to make 20 litres of the 50% acid solution. How much of each stock solution should she use?

1. A bottle of wine has 8% alcohol, another bottle has 15% alcohol. How much of each must be mixed to have 100 litres of 12.2% alcohol wine.
2. The Karat (or carat) is the purity of gold in gold alloy. 18K gold is approximately 75% pure and 14K is approximately 58.5% pure. Using 18K and 14K stock, a goldsmith needs to produce 40 g of gold alloy that is 70% pure. How much of each stock will he need to use? (round to the nearest hundredth)

Speed Problems:

1. Jay Maholl swam 12 km downstream in Englishman River in two hours. The return trip upstream took 6 hours. Find the speed of the current in Englishman River.
2. The Lucky-charm dinghy travels 25 km upstream in five hours. The return trip takes only half an hour. Find the speed of the boat and the speed of the current.
3. A plane flew a distance of 650 km in 3.25 hours when travelling in a tailwind. The return trip took 6.5 hours against the same wind. Assume both speeds are constant. Find the speed of the plane and the wind speed.
4. A bumble bee travels 4.5 km into a headwind in 45 minutes. The return trip with the wind only takes 15 minutes. Assuming speeds are constant, find the speed of the bumble bee in still air.
5. Maddie competed in a running–swimming race of total length 16.5 km. If Maddie ran at a speed of 12 km/h and swam at a speed of 3 km/h, how far did she run if she completed the race in 105 min?
6. While driving from Flin Flon to Dauphin, MB, Kevin and his family had a flat tire. Before the flat tire, Kevin’s parents drove at an average speed of 90 km/h. Once the flat tire was replaced with the spare tire, they travelled at an average speed of 75 km/h for the remainder of the trip. The total distance between the two cities is 538 km. The total driving time was 6 hours. How far did they travel before the flat tire occurred?

Bonus:

1. Stacy rides her bike from home to school in 15 min. If she increases her speed by 5

km/h, she reduces her travel time by 5 min. How far from the school does Stacy live?

**Answers:**

1. $650 at 10% and $1450 at 7%
2. $3500 at 4% and $1500 at 6%
3. 8L of 20%, 12L of 70%
4. 40L of 8%, 60L of 15%
5. 27.88 g of 18k gold and 12.12 g of 14k gold
6. 2 km/h
7. boat 27.5 km/h, current 22.5 km/h
8. plane speed 150 km/h, wind speed 50 km/h

9) 12 km/h

10) 15 km

11) 528 km

Bonus: 2.5 km