First name: _____ Last name: _____ Student ID: _____

Algebra 2 Homework

Basic problems:

1. Solve the equations. Show work!

a) $9x - 7 = -7$	b) $-9x + 1 = -80$	c) $144 = -12(x + 5)$
d) $-15 = -4m + 5$	e) $10 - 6v = -104$	f) $10(k - 9) = -10$
g) $\frac{n+5}{-16} = -1$	h) $\frac{x}{3} = x + 4$	i) $m - 3 = \frac{4}{5}m - 2$
j) $\frac{x}{5} - 4 = 2 - \frac{2x}{5}$	k) $\frac{1}{2} + w = 8 - \frac{3}{2}w$	l) $\frac{3y}{4} - 6 = \frac{y}{8} + 4$
m) $p - \frac{p}{6} = \frac{p}{3} + 2$	n) $\frac{x}{9} + \frac{4}{3} = \frac{1}{2}x - 1$	o) $2x - 1 = \frac{3}{4}x + 9$

2. Express each phrase as an algebraic expression.

1. The cube of x.	2. The quotient of square root of a and 5.
3. The product of the difference of x and 7 and the sum of x and 7.	4. The difference of negative b squared and 5b.
5. 32 less a number *t* is raised to the exponent of 6.	6. 48 multiplied by a number *q* subtract the square of 2*p*.
7. The difference of the squares of x and squares of y.	8. The square of the sum of a and b.

Challenge problems

1. A store sells juice in two sizes of bottles: small and large. A large bottle costs three times as much as a small one. Jack bought 10 small bottles and 6 large bottles. With the same amount of money, Lise bought 24 bottles. How many little bottles did Lise buy?

2. A bus starts off with some passengers. At the first stop, 1/3 of the passengers get off and 8 people get on. At the second stop, 1/2 of the passengers remaining get off and 2 get on the bus. There are now half as many passengers as started the trip. How many persons started the trip?

3. All of the customers at a fruit store purchased some apples or some bananas. If 75% of the customers purchased apples and 40% of them purchased bananas, while 9 customers bought both, how many customers did the store have?

4. Roman, Bob and Roger buy red and green marbles. Red and green marbles don't have the same price. Roman pays 70 ¢ for four red marbles and two green marbles. Bob pays 95 ¢ for two red marbles and five green marbles. How much will Roger pay if he buys one red marble and one green marble?

5. Anne, Bernard and Charlotte each had some pennies. They decided to divide their pennies in the following way. Bernard gave one-half of his pennies to Charlotte and kept the rest. Anne then gave one-third of her pennies Bernard and one-sixth of them to Charlotte. At the end, each had 27 pennies. How many pennies did Charlotte have originally?

6. To enter a very private garden you need to go through four doors. At each door you must pay an entry fee. If you pay $x at a given door, then you must pay $(2x + 1) at the next door. If it costs a total of $86 to get through the four doors, how much did you pay to get through the first door?

7. A car dealer sells 3 types of car. On the first day, he sells 3 cars of model A and 2 of model B for a sum of $260 000. On the second day, he sells 3 cars of model B and 2 cars of model C for a sum of $160 000, and on the third day, he sells 3 cars of model C and 2 cars of model A for a total of $180 000. What is the price of one model C car?

8. An inheritance is split among 5 brothers. The first receives half of the inheritance plus $1. The second receives half of the remainder plus $2. The third receives half of the remainder plus $3. The fourth receives half of the remainder plus $4. The last brother receives $500. What is the total amount of the inheritance?

9. Mary buys 100 candies for $7.00. If Yips cost $0.05 each, Gups $0.06 each and Pips $0.07 each, how many more Pips than Yips did Mary buy?