Math 115 quiz #2 No calculators. Show all work. 9/14/09

① Write an algebraic expression for the verbal description: "the sale price of an item that has been marked up 20% from its list price L."

$L + (.2)L$

② A car dealer has 600,000 of inventory in minivans and SUVs. The profit on a minivan is 24% and the profit on an SUV is 28%. The profit on the whole stock is 25%. How much was invested in each vehicle?

Let x = amt in minivans. Then $600000 - x$ = amt in SUVs.

Then profit in minivans + profit in SUVs = total profit.

$$(.24)x + (.28)(600000 - x) = (.25)600000$$

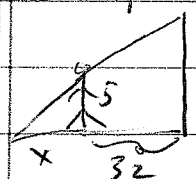
$$.24x + (.28)(600000) - .28x = 150000$$

$$-.04x = 150000 - 168000$$

$$x = \frac{18000}{.04} = 450000$$

450 000 in minivans
150 000 in SUVs

③ A person 5 feet tall walks away from a 50 ft silo toward the tip of the silo's shadow. At a distance of 32 ft from the silo, the person's shadow begins to emerge beyond the silo's shadow. How much further must the person walk to be completely out of the silo's shadow? Let x = that distance.



$$\frac{x}{5} = \frac{x+32}{50} \Rightarrow \text{(cross-multiply)}$$

$$10x = x + 32$$

$$9x = 32 \Rightarrow x = \frac{32}{9}$$

$\frac{32}{9}$ more feet

Math 115 Quiz #2 No calculators. Show all work 9/14/09

① Write an algebraic expression for the verbal description:
"the sale price of an item that is discounted 30% off its list price L"

$L-(.3)L$

② A nursery has $20,000 in dogwoods and red maples. The profit on a dogwood is 25% and the profit on a red maple is 17%. The profit on the whole stock is 20%. How much is invested in each tree?

Let x = amt in dogwoods. Then $20000-x$ = amt in maples.

Then profit in maples + profit in dogwoods = total profit

$.17(20000-x)+.25(x)=.20(20000)$

(Finish as done on hw/in class)

$(.17)(20000)-.17x+.25x=(.2)(20000)$

$\Rightarrow (.17)(100)(200)-.17x+.25x=(.2)(10)(2000)$

$(17)(200)+.08x=(2)(2000)$

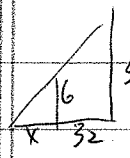
$3400+.08x=4000$

$.08x=600$

$x=\frac{600}{.08}=\frac{600.00}{.08}=\frac{60000}{8}=7500$

DOGW: 7500
Maples: 12,500

③ A person 6 ft tall walks away from a 50 ft silo toward the tip of the silo's shadow. At a distance 32 ft from the silo, the person's shadow begins to emerge beyond the silo's shadow. How much further must the person walk to be completely out of the silo's shadow?



$\frac{x}{6}=\frac{x+32}{50} \Rightarrow 50x=6x+192$

$44x=192$

$x=\frac{192}{44}$

$\frac{192}{44}$ feet or $\frac{48}{11}$ feet