Name: _____

Modeling Situations Using Linear Equations

SLY'S GYM & FITNESS CENTER

1.) Sly's Gym charges $37.85 per month membership fee plus an initial $125.00 activation fee for new members.

a.) Write a linear function that models the cost of a monthly membership plan for a new member as a function of the number of months as a member.

b.) Use your model to determine the total cost of a gym membership for a new customer who plans on being a member for two full years.

2.) Sly's Gym also offers an annual family plan that charges $29.85 per family member in addition to a $240.00 activation fee.

a.) Write a linear function that models the cost of an annual family membership plan as a function of the number of family members on the plan.

b.) Use your model to determine the annual cost of a family plan that has 9 total members.

3.) Tanya delivers cases of protein powder to Sly's gym every week. She gets paid $0.08 per mile driven in addition to a $118.25 daily salary.

a.) Write a linear function that models the total amount of money Tonya earns per day as a function of the number of miles driven.

b.) If Tonya earns $126.41 for a roundtrip delivery from the warehouse to Sly's Gym and back, use your model to determine the one-way distance between the two locations.

ANSWER KEY

1.)

a.) $\boldsymbol{y = 37.85x + 125}$ or $\boldsymbol{f(x) = 37.85x + 125}$

b.) $f(24) = 37.85(24) + 125$ = **$1,033.40**

2.)

a.) $\boldsymbol{y = 29.85x + 240}$ or $\boldsymbol{f(x) = 29.85x + 240}$

b.) $f(9) = 29.85(9) + 240$ = **$508.65**

3.)

a.) $\boldsymbol{y = 0.08x + 118.25}$ or $\boldsymbol{f(x) = 0.08x + 118.25}$

b.) $y = 0.08x + 118.25$

$126.41 = 0.08x + 118.25$

$x = 102$ (roundtrip miles)

$102/2$ = **51 mile distance between the two locations**