SYSTEM MODEL PROBLEM: MUSTANG VS. RAMBLER

Name: __KEY_____

Date: _____ Period: _____

Ms. Elaine Eous has decided to buy a car from the local Bee Plus Car Company. After shopping for several days she chose to test drive a "racy red" 1962 Rambler and a "mellow melon" 1976 Mustang. The price of the Rambler is $1250 and the cost of the Mustang is $2960. She like both cars, so she decided to ask her mechanic about problem she might face with the maintenance of the automobile she chooses. The mechanic told her that the Rambler would average $150 per month in expenses (gas included), but the Mustang would operate on $60 per month in expenses.

a) Write the equation for the total cost, R(t), of the Rambler in t months.

t = time in months

$R(t)$ = cost of rambler

$$R(t) = 150t + 1250$$

b) Write the equation for the total cost, M(t), of the Mustang in t months.

t = time in months

$M(t)$ = cost of mustang

$$M(t) = 60t + 2960$$

c) Find R(25) and M(25) and explain the meaning of your answers.

$$R(25) = 150(25) + 1250 = 5000$$

$$M(25) = 60(25) + 2960 = 4460$$

After 25 months, the Rambler costs $5000 and the Mustang costs $4460.

d) Find when R(t) = M(t) and explain what your answer represents.

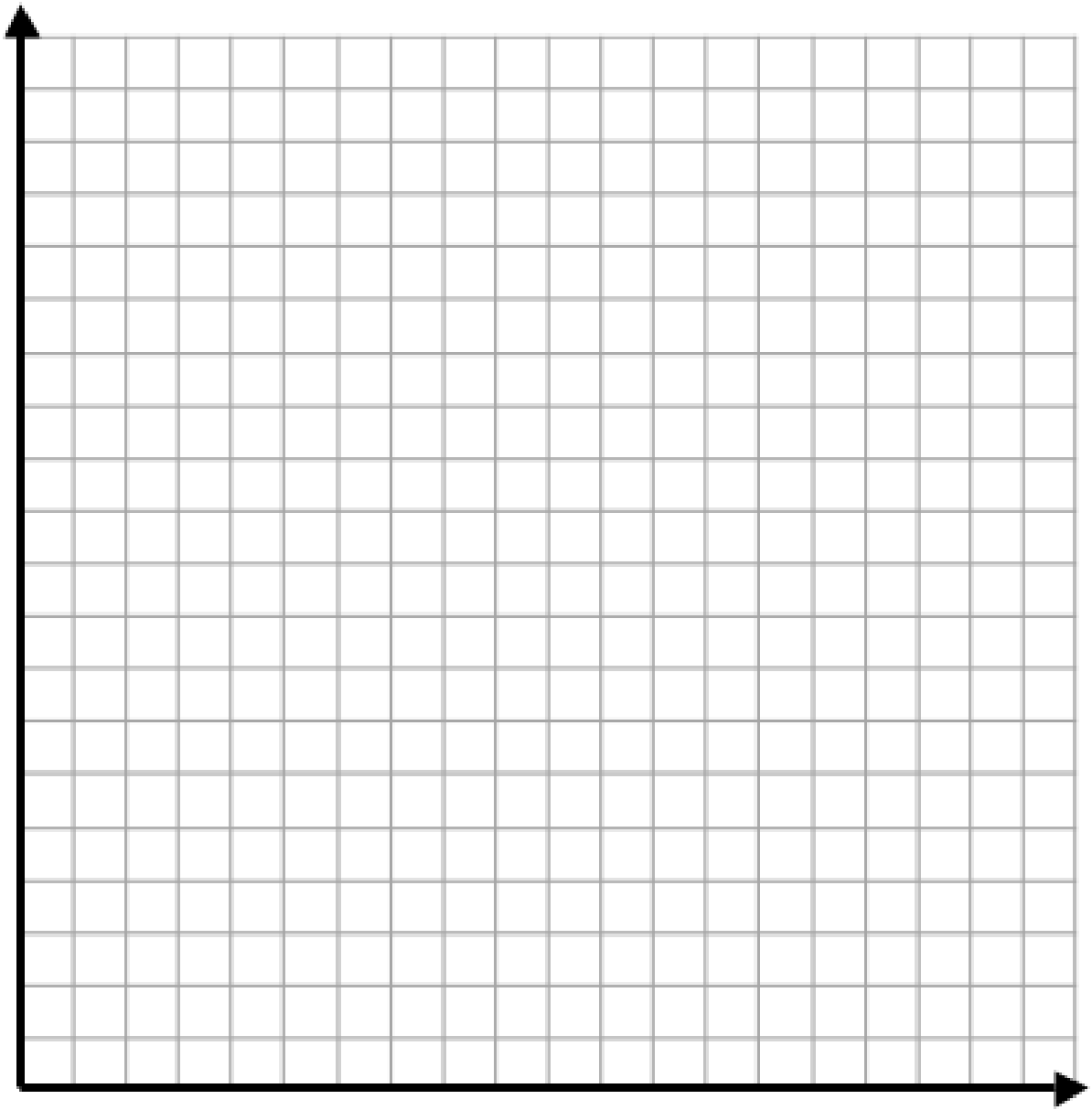$$150t + 1250 = 60t + 2960$$

$$90t = 1710$$

$$t = 19$$

$R(19) = 4100$
$M(19) = 4100$

After 19 months, she will spend the same amount on each car ($4100).

e) How should she decide which car to buy? Explain your reasoning.

She should figure out if she plans on keeping the car longer than 19 months.

f) Plot the graph of R(t) and M(t).

Graph using your specific points.
Choose a good scale! :)