Algebra II

3-5

Function Word Problems

$f(x) = mx + b$

x - input, cause

f - output, effect (think y)

m - rate of change

b - starting point or Flat rate

1) A photocopying machine purchased new for $4500 loses $900 in value each year. Pg 150

a. Find the book value of the machine after 18 months. → 1.5 years

b. When will the book value be $1200?

$f(x) = mx + b$

input (x): age of copier (cause)

output (y or f): lost value (effect)

rate of change (m): −900 $/year

start value (b): 4500

$F(x) = -900x + 4500$

a) $F(1.5) = -900(1.5) + 4500 = 3150$

b) $1200 = -900x + 4500$

$-3300 = -900x$

$x = \frac{11}{3} = 3\frac{2}{3}$ = 3 years 8 months

5) Allied Airlines charges $90 for a ticket to fly between two cities 260 mi apart and $150 for a ticket to fly between two cities 500 mi apart. At this rate, what would it cost for a trip between two cities 1000 mi apart?

$f(x) = mx + b$

input (x): distance (260, 90) (500, 150)

output (y or f): cost

rate of change (m): ? (m = ¼)

start value (b): ? (b = 25)

$m = \frac{150-90}{500-260} = \frac{60}{240} = \frac{1}{4}$

$F(x) = \frac{1}{4}x + 25$

$F(1000) = \frac{1}{4}(1000) + 25$

$= 250 + 25$

$= 275$

$275

$F(x) = \frac{1}{4}x + b$

$90 = \frac{1}{4}(260) + b$

$90 = 65 + b$

$25 = b$

Pg 150

1-10 all