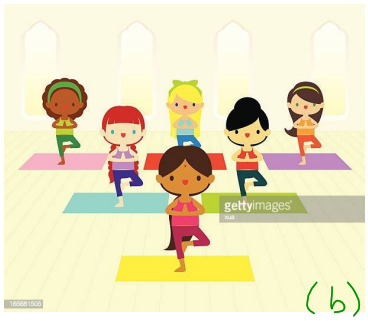
4.8 Problem Solving

Ex. 1



(b)

Ayesha has a membership at a local studio. She had to pay a monthly membership fee and then pays an additional amount per class. In October she attended 5 classes and paid $150. In November she attended 11 classes and paid $222.

a) Determine the monthly fee and the price per class.

initial value — rate of change (slope)

(5, 150) OR (150, 5) ???
I D

(11, 222)

x	y
5	150
11	222

+6 (x), +72 (y)

$m = \frac{\Delta y}{\Delta x} = \frac{72}{6}$

$m = 12$

$y = 12x + b$

Sub (5, 150)

$150 = 12(5) + b$

$150 = 60 + b$

$90 = b$

∴ Monthly fee is $90
Each class is $12

b) Write an equation to model the monthly cost of yoga classes.

$y = mx + b$

$y = 12x + 90$

c) How much would it cost if she attended 15 classes in one month?

$y = 12x + 90$

Sub $x = 15$

$y = 12(15) + 90$

$= 270$

∴ It would cost $270

d) If the monthly cost was $174 how many classes did she attend?

$174 = 12x + 90$

$174 - 90 = 12x$

$\frac{84}{12} = \frac{12x}{12}$

$7 = x$

∴ She attended 7 classes

Ex. 2

A 9-ounce cup of freshly squeezed orange juice costs $1.25. A 12-ounce cup costs $1.60. Assuming that cost vs. volume is linear, how much would a 16-ounce cup cost?

x	y	
9	1.25	
12	1.60	+0.35
15	1.95	+0.35
16	2.07	+0.12

(+3 between 9 and 12; +3 between 12 and 15)

$m = \frac{0.35}{3}$

$m = 0.12$

$y = 0.12x + b$

Sub (12, 1.60)

$1.60 = 0.12(12) + b$

$1.60 = 1.44 + b$

$0.16 = b$

$y = 0.12x + 0.16$

16 ounce cup?

$x = 16$

$y = 0.12(16) + 0.16$

$= 2.08$

∴ It would cost $2.08

Explain the meaning of the slope and y-intercept.

Slope is cost/ounce

y-int is initial cost (maybe cost of the cup?)

Ex. 3

Vishva decides to buy his mom some roses. The roses always come with a vase in this store. He is given the choice to buy 12 roses with a vase which costs $48 and to buy 18 roses with the vase which costs $64.50.

a) How much is the vase?

x	y
0	15
6	31.50
12	48
18	64.50

+6 +16.50

∴ The vase cost $15

b) How much would 2 dozen roses (24) cost?

24 81

∴ 24 roses with a vase would cost $81