Name: Solution Period: _____

2-6 Piecewise Word Problems Practice

breaking point

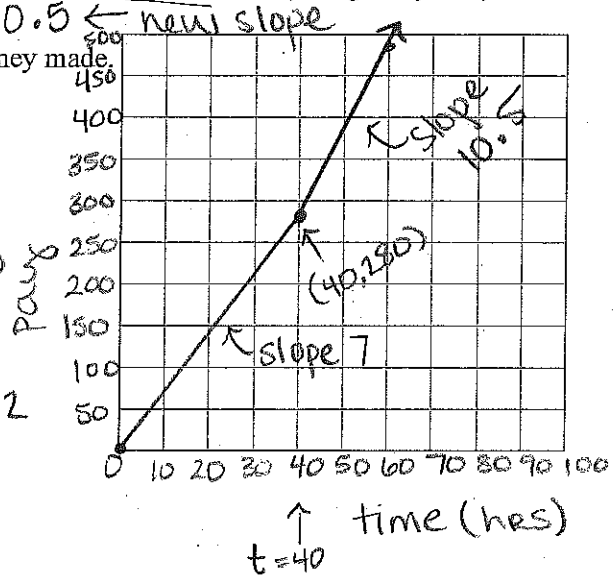
1. You have a summer job that pays time and a half for overtime (If you work more than 40 hours). In other words, after 40 hours of work you earn 1.5 times your hourly rate of $7.00/hr. *Graphing May Help!*

@ 40 hours → $280 ; 1.5(7) = 10.5 ← new slope

a) Write a piecewise function to represent the amount of money made.

$$P(t) = \begin{cases} 7t, & 0 \le t \le 40 \\ 10.5(t-40)+280, & x > 40 \end{cases}$$

Work 60 hours → 40 hours @ 7 → 280
20 hours @ 10.5 → 210 + = 490



b) How much money do you make if you work 45 hours?

Use equation 2

10.5(45-40) + 280

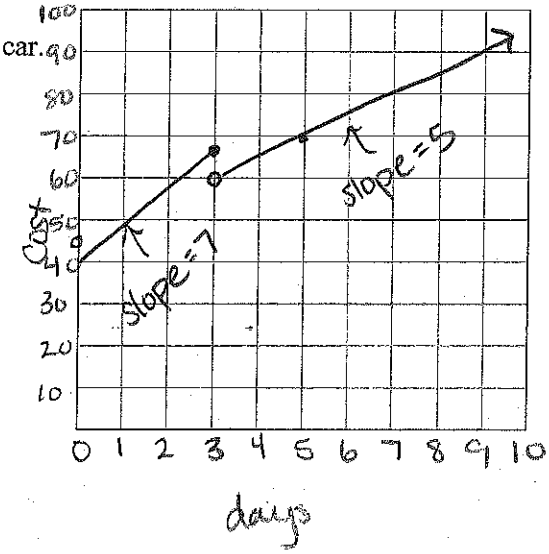
52.5 + 280

$ 332.5

2. A car rental company charges a flat fee of $45 to rent a car. In addition to that you must pay a fee per day you rent it. If you keep the car for 3 days or less, it costs $7 per day. If you keep the car longer than 3 days it only costs $5 per day.

a) Write a piecewise function to represent the cost of renting a car.

$$C(t) = \begin{cases} 45+7t, & 0 < t \le 3 \\ 45+5t, & t > 3 \end{cases}$$



b) How much does it cost to rent for 3 days? 4 days?

f(3) = 45 + 7(3) = 45 + 21 = 66

f(4) = 45 + 5(4) = 45 + 20 = 65

$66 for 3 days $65 for 4 days

3 days → 45 + 7(3) = 45 + 21 = 66
(3, 66)

3 days → 45 + 5(3) = 45 + 15 = 60
(3, 60)

c) What is weird about this?

It's cheaper to rent a car for 4 days than it is to rent one for 3 days.

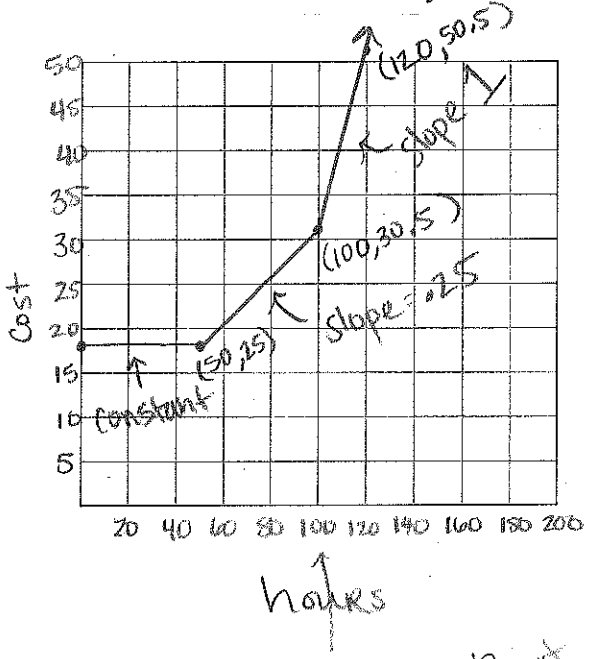
3. One ISP (Internet Service Provider) has the following rate schedule for high speed internet service.

Monthly Service Charge - $18.00 — constant

First 50 Hours of Usage – Free
Next 50 hours of Usage - $0.25/hour ← slope after 50
Over 100 hours of Usage - $1.00/hour ← slope after 100

a) Write a piecewise function to represent the amount charged for internet service. Be Careful. Remember if you use 51hours, you will only be charged for one hour because the first 50 are "free". Check your work!

$$C(t) = \begin{cases} 18, & 0 \le t \le 50 \\ .25(t-50)+25, & 50 < t \le 100 \\ 1(t-100)+30.5, & t > 100 \end{cases}$$



b) What will you be charged for 62 hours? 111 hours?

$C(62) = 18 + (.25)(62-50)$
$= 18 + (.25)(12)$
$= 18 + 3$
$= 21$

use the next break to find next point

$C(100) = 18 + (.25)(100-50)$
$= 18 + (.25)(50)$
$= 18 + 12.5$
$= 30.5$

* use any x value larger than 100 to get another point.

$C(120) = 18 + (.25)(50) + (1)(120-100)$
$= 18 + 12.5 + 20$
$= 30.5 + 20$
$= 50.5$