Piecewise Word Problems **Name:** _____

1) The post office uses the weight of a package to determine the charge for delivery. The charge is $4 for the first pound and $3 for each additional pound up to 5 pounds.
   a. Write a step function modeling shipping cost.
   b. Graph the step function.
   c. How much does it cost to ship a package that costs 4 pounds?

2) You go to Target to buy some candy. You decide to buy snickers because they have a special deal on snickers. A bag of snickers costs $3.50, but if you buy 4 or more bags, they only cost $3.00 per bag.
   a. Write a piecewise function that models the situation.
   b. Graph the piece wise function.
   c. How much does it cost to buy 5 bags of candy?

3) 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 that models the situation.
   b. Graph the piece wise function.
   c. How much does it cost to rent a car for 3 days?

4) You plan to sell Morton t-shirts as a fundraiser. The wholesale t-shirt company charges you $10 a shirt for the first 75 shirts. After the first 75 shirts you purchase up to 150 shirts, the company will lower its price to $7.50 per shirt. After you purchase 150 shirts, the price will decrease to $5 per shirt.

a. Write a step function modeling shipping cost.
b. Graph the step function.
c. How much does it cost to order 50 shirts?

Solutions to QTR piece of paper Word Problems – Piecewise

Horizontal lines

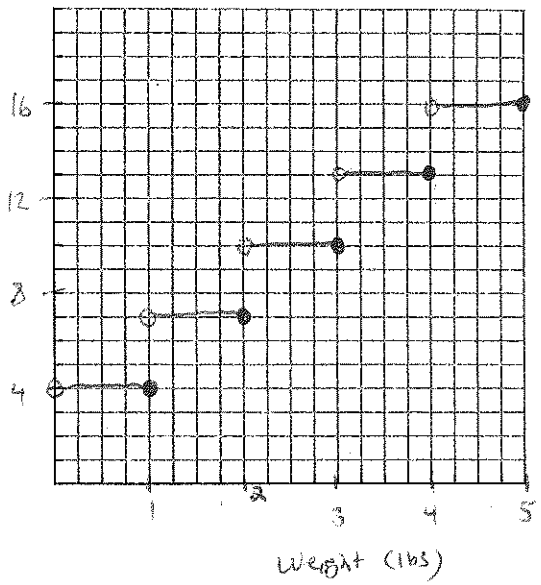
x are integers

#1

(a)
$$c(x)=\begin{cases}4, & 0<x\le 1\\ 7, & 1<x\le 2\\ 10, & 2<x\le 3\\ 13, & 3<x\le 4\\ 16, & 4<x\le 5\end{cases}$$

(c) $13

(b)



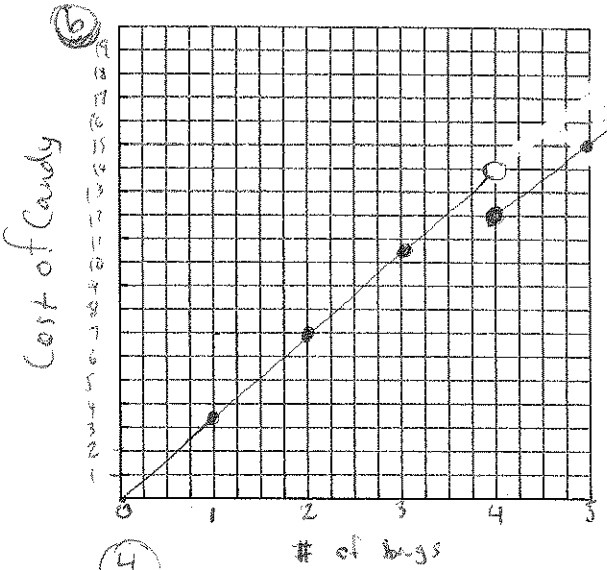
#2

(a)
$$f(x)=\begin{cases}3.50x, & 0\le x<4\\ 3.00x, & x\ge 4\end{cases}$$

Slope 3.5 ↑ 1 →, y-int: 0

Slope 3 ↑ 1 →, y-int: 0

(b)



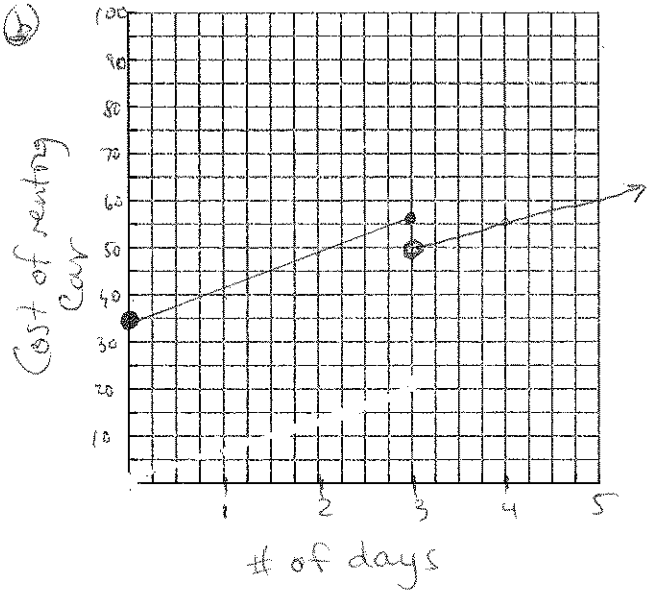
(c) 5 bags of candy will cost $3 \times 5 =$ $15

#3

(a)
$$c(x)=\begin{cases}7x+35, & 0\le x\le 3\\ 5x+35, & x>3\end{cases}$$

35 ↓ fixed

(b)

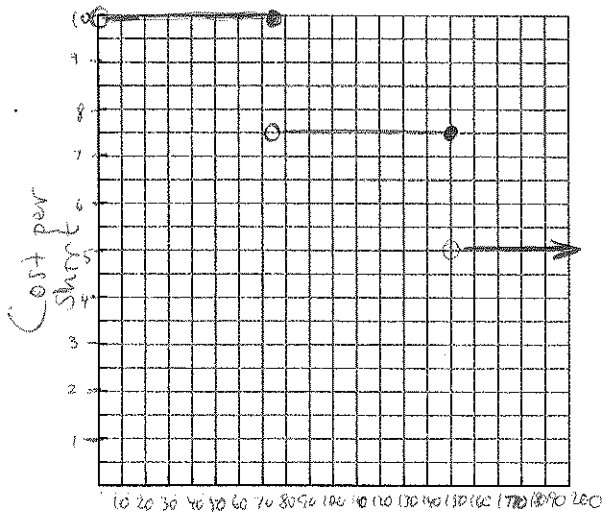


(c) For 3 days, it costs

$7(3)+35 = 21+35 = \$56$

#4

$$c(x)=\begin{cases}\$10, & 0<x\le 75\\ \$7.50, & 75<x\le 150\\ \$5, & x>150\end{cases}$$



(c) $50 \cdot 10 = \$500$ to order 50 shirts