

Unit 1 Day 5 HW(1)

1. You are a buyer for a grocery store and you are asked to purchase potatoes for the grocery store. The distributor of potatoes tells you that if you buy up to 50 bushels of potatoes, you will pay \$40 per bushel; and for each bushel you purchase above 50 bushels, you will pay \$30 per bushel.
 - a. How much will your grocery store pay in total if you decide to purchase
40 bushels?
60 bushels?
100 bushels?
 - b. Write a function which has as its input values (x-values) the number of bushels of potatoes purchased and outputs the total amount of money that your grocery store will pay for the potatoes.

2. A certain country taxes the first \$20,000 of an individual's income at a rate of 15%, and all income over \$20,000 is taxed at 20%.
 - a. Al makes \$16,000. Betty makes \$36,000. How much is each taxed?
 - b. Write a piecewise function T that specifies the total tax on an income of x dollars.

 - c. Catina is taxed \$5000. What is her income?

3. A museum charges \$40 for a group of 10 or fewer people. A group of more than 10 people must, in addition to the \$40, pay \$2 per person for the number of people above 10. For example, a group of 12 pays \$44 and a group of 15 pays \$50. The maximum group size is 50.
 - a. Find a function, $C = f(x)$, that represents the cost as a function of the number of people going to the museum.

 - b. How much would the museum charge for a group of 8? Group with 35 people?

Unit 1 Day 5 HW(2)- More Applications of Piecewise

1. An air conditioning salesperson receives a base salary of \$2850 per month plus a commission. The commission is 2% of the sales up to and including \$25,000 for the month and 5% of the sales over \$25,000 for the month.
- Write a piecewise function that relates the salesperson total monthly income based off of his/her sales for the month.

b. Determine the salesperson's monthly income if his/her sales were \$43,000 for the month.

2. *Texting Plans*: Texting from T-mobile costs \$.15 per text with no plan. In addition, they offer three other texting plans, shown to the right, that include a certain number of texts with additional texts over costing \$.15 per text. Decide which plans are linear piecewise functions and which are not piecewise (circle your answer).

- No plan – Piecewise? Yes or No
- 400 text plan– Piecewise? Yes or No
- 1000 text plan– Piecewise? Yes or No
- Unlimited text plan– Piecewise? Yes or No

Domestic Text, Instant, Picture & Video Messaging

Any 400 Domestic Messages
\$4.99 per month

Any 1000 Domestic Messages
\$9.99 per month

Unlimited Domestic Messages
\$14.99 per month

3. Continuing Problem 2 - Write the function rules for each where x is the number of texts and $f(x)$ is the total monthly cost.

a. No plan

b. 400 text plan

c. 1000 text plan

d. Unlimited text plan

4. A parking garage in Manhattan charges in this way: For each hour or part of an hour, the garage charges \$10 per hour, with a daily maximum of \$50 per day.

- a. How much will a customer pay if he/she parks for
2 hours?
3.5 hours?
4 hours?
6 hours?
- b. Write a piecewise function that has as its input the number of hours parked and outputs the total price paid by the customer.

5. The charge for a taxi ride is \$1.50 for the first $\frac{1}{8}$ of a mile, and \$0.25 for each additional $\frac{1}{8}$ of a mile (rounded to the nearest $\frac{1}{8}$ mile).

- a) Make a table showing the cost of a trip as a function of its length. Your table should start at 0 and go up to one mile in $\frac{1}{8}$ mile intervals.
- b) Find a function, $C = f(x)$, that represents the cost of the trip as a function of its length.
- c) What is the cost for a $\frac{5}{8}$ mile ride?
- d) How far can you go for \$3.00?