Name _____ Date _____

UNIT 6B **LESSON 11**

DO NOW: Suppose you start a cleaning business. You decide to charge each client based on how many hours you work for that client.

a. How much does your service cost for less than one hour?

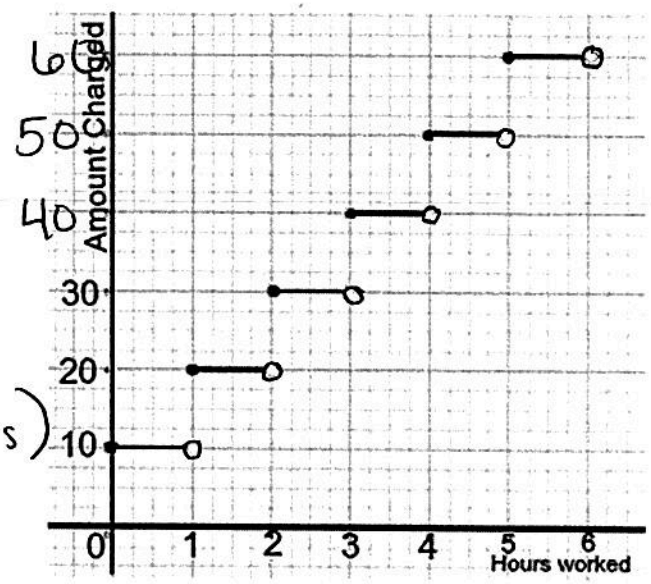
$10

b. How much does your service cost for one hour up to two hours?

$20

c. How much does your service cost for six hours up to seven hours?

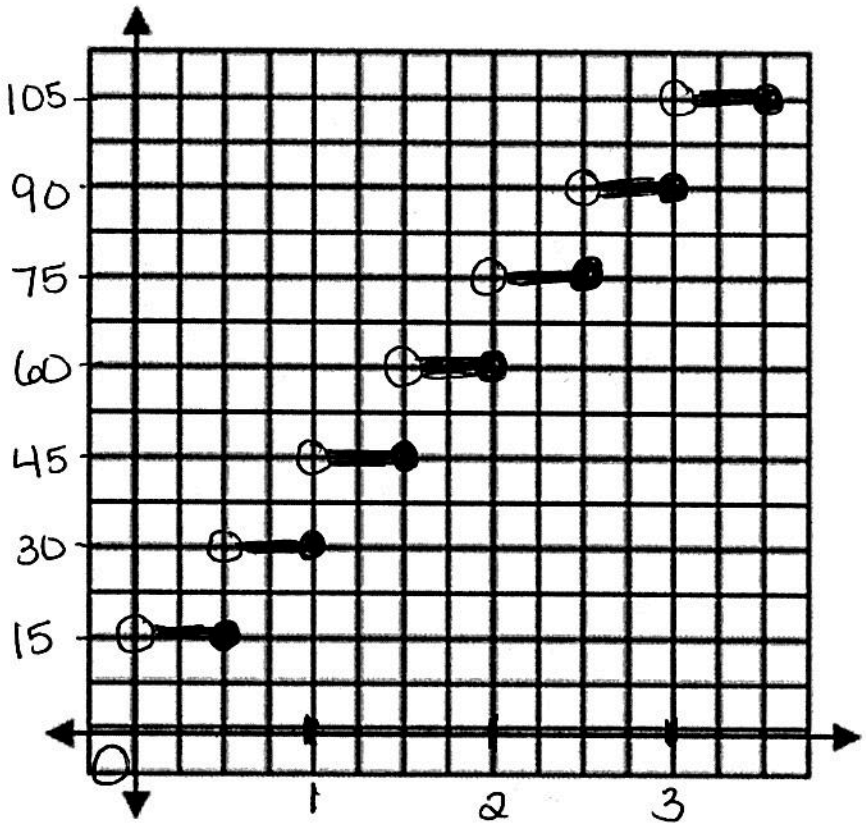
$70 (graph continues)



AIM: Graphing Step Functions

1. A painter charges $15 per half hour, or any fraction of a half hour. Complete the following table.

x	f(x)
$0 < x \leq 0.5$	15
$0.5 < x \leq 1$	30
$1 < x \leq 1.5$	45
$1.5 < x \leq 2$	60
$2 < x \leq 2.5$	75
$2.5 < x \leq 3$	90
$3 < x \leq 3.5$	105



a) domain: $\{x \mid x > 0\}$

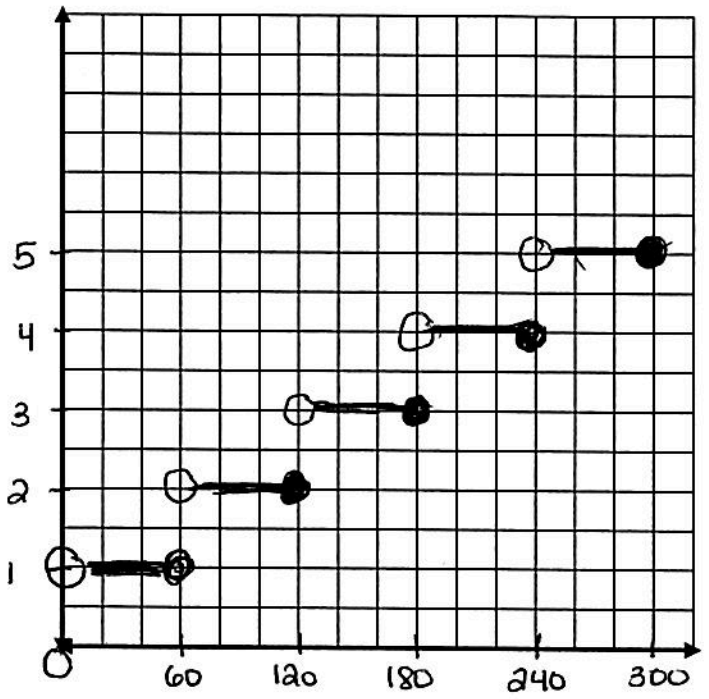
b) range: multiples of 15

A Step function is a special type of function whose graph is a series of line segments.

The graph of a step function looks like a series of steps.

2. A school will charter buses so that the student body can attend a football game. Each bus holds a maximum of 60 students. Make a graph that models the relationship between the number of students, x, that attend the game and the number of buses, f(x), that are needed.

x	f(x)
$0 < x \leq 60$	1
$60 < x \leq 120$	2
$120 < x \leq 180$	3
$180 < x \leq 240$	4
$240 < x \leq 300$	5

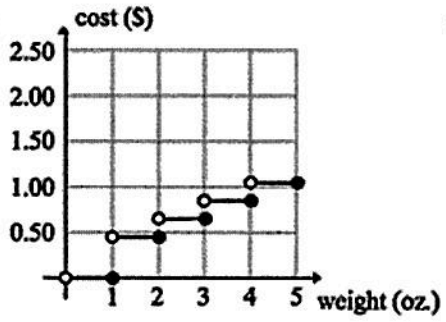


a) What is the domain? $\{x \mid x > 0\}$

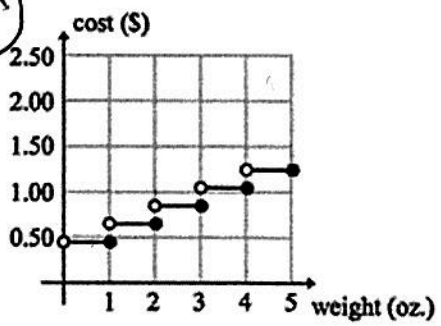
b) What is the range? all whole #'s (natural)

3. **The postage for a letter is $0.45 for letter weights up to and including one ounce. For each additional ounce, or portion of an ounce, another $0.20 is charged. Which graph represents the postage of a letter weighing *x* ounces?**

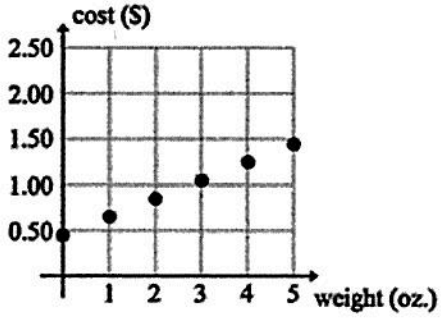
(A)



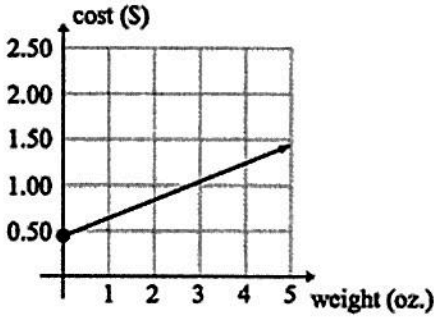
(B)



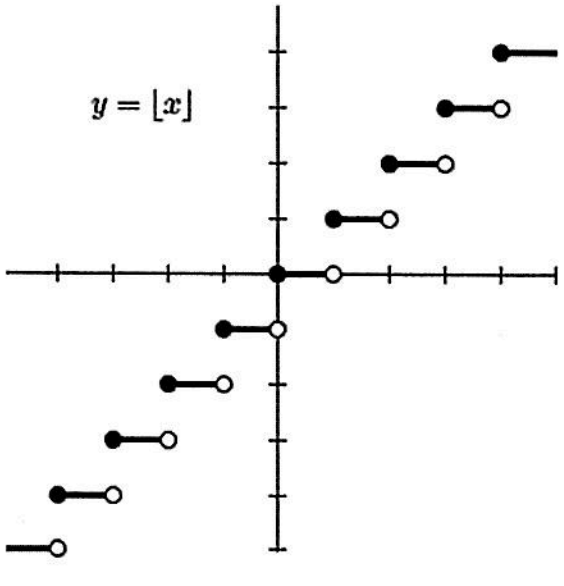
(C)



(D)



4. Looking at the function, $f(x)$, graphed below, answer the following questions:



a. What is the value of $f(1.5)$? 1

b. What is the value of $f(4)$? { }

c. What is the value of $f(-3)$? -3

d. What is the important thing to keep in mind with this step function when evaluating?

open circles → no solution

5. Given the admission price for the given ages:

- Children 5 years and under: FREE
- Children between 5 years and 12 years, inclusive: \$10.00
- Children between 12 years and 18 years, inclusive: \$25.00
- Adults: \$35.00

a) Write a piecewise function that gives the admission price for the given ages.

b) Graph the function.

$$f(x) = \begin{cases} 0, & x \leq 5 \\ 10, & 5 < x \leq 12 \\ 25, & 12 < x \leq 18 \\ 35, & x > 18 \end{cases}$$