

Writing a Function Rule

4.5.1

Example 1

- You can estimate the temperature by counting the number of chirps of the snowy tree cricket. The outdoor temperature is about 40 degrees F more than one fourth the number of chirps the cricket makes in one minute. What is the function rule that represents this situation?

- Relate **Temperature is 40 deg f more than 1/4 of the number of chirps in 1 min.**
- Define **Let T= Temperature and Let n=number of chirps in 1 min.**
- Write
$$T = 40 + 1/4n$$

Example 2

- A landfill has 50,000 tons of waste in it. Each month it accumulates an average of 420 more tons of waste. What is a function rule that represents the total amount of waste after m months?

- **Relate** The total amount of waste is 420 tons a month plus 50,000.

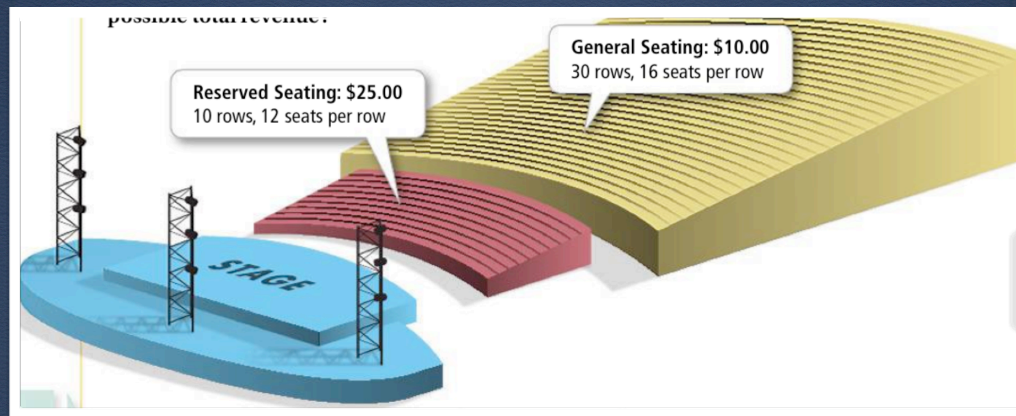
- **Define** Let W = Total amount of waste. Let m = the number of months.

- **Write**

$$W = 420m + 50000$$

Example 3

- A concert Seating plan is shown below. Reserved seating is sold out. Total revenue from ticket sales will depend on the number of general-seating tickets sold. Write a function rule to represent this situation. What is the maximum possible total revenue?
- Relate Total revenue is Price per ticket times number of tickets sold plus reserved
- Define Let r = total revenue. Let n = number of general seating tickets sold.
- Write
$$R = 10n + (25 \cdot 10 \cdot 12)$$
$$R = 10n + 3000$$



Solve: How many general-seating tickets
are there?

$$30 * 16 = 480 \text{ tickets}$$

Maximum Revenue
 $R = 10(480) + 3000 = 7800$

Example 4

- A kennel charges \$15 per day to board dogs. Upon arrival, each dog must have a flea bath that costs \$12. Write a function rule for the total cost for n days of boarding plus a bath. How much does a 10-day stay cost?

- Relate The Total cost is \$15 dollars per day plus \$12 for the bath.

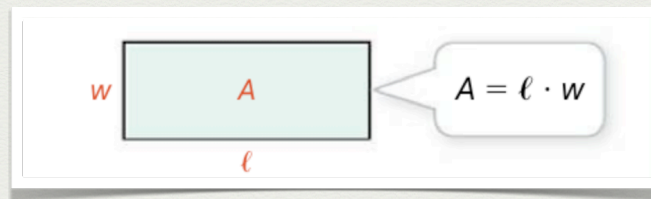
- Define Let C= Total Cost. Let n = the number of days.

- Write
$$C=15n+12$$

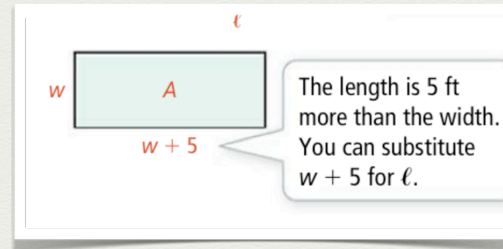
- Solve
$$C=15(10)+12=150+12=162 \text{ dollars}$$

Example 5

- Write a function rule for the area of a rectangle whose length is 5ft more than its width. What is the area of the rectangle when its width is 9ft?
- Represent the general relationship first.



- Revise the model to show that the length is 5ft more than the width.



- Use the diagram to write the function rule.

$$A = w(w + 5)$$
$$A = w^2 + 5w$$

- Solve for the area when the width is 9ft.

$$A = (9)^2 + 5(9)$$
$$= 81 + 45$$