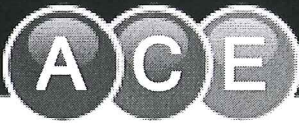




## ACE Questions for Inv. #2 SIWS

1. The student council is organizing a T-shirt sale to raise money for a local charity. They make the following estimates of expenses and income:
- Expense of \$250 for advertising • Income of \$12 for each T-shirt
  - Expense of \$4.25 for each T-shirt • Income of \$150 from a sponsor
- a. Write an equation for the income  $I$  for selling  $n$  T-shirts.
- b. Write an equation for the expenses  $E$  for selling  $n$  T-shirts.
- c. Suppose the student council sells 100 T-shirts. What is their profit?
- d. Write an equation for the profit  $P$  made for selling  $n$  T-shirts.





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a. Write an equation for the income  $I$  for selling  $n$  T-shirts.

$$I = 12n + 150$$

Income is in terms of the # of t-shirts you sell.

b. Write an equation for the expenses  $E$  for selling  $n$  T-shirts.

Expenses of the # of t-shirts are a function  $E = 4.25n + 250$

c. Suppose the student council sells 100 T-shirts. What is their profit?

$$\begin{aligned} \text{Profit: } 12(100) &= 1200 - 4.25(100) \\ &= 1200 - 425 \\ &= 775 - 250 \end{aligned}$$

t-shirts made.

d. Write an equation for the profit  $P$  made for selling  $n$  T-shirts.

$$= \$525$$

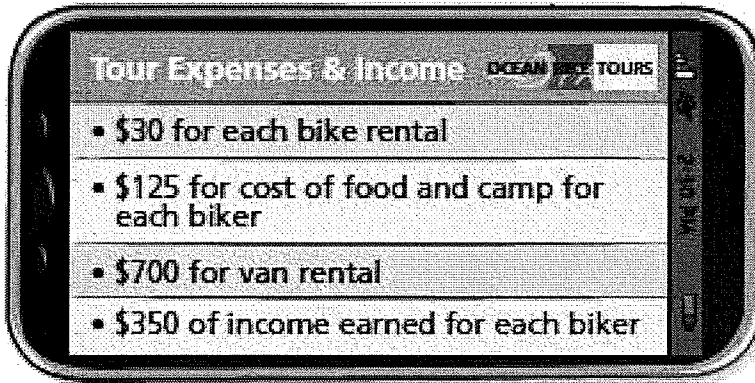
$$\begin{aligned} P &= 12n + 150 - 4.25n - 250 \\ P &= 7.75n - 100 \end{aligned}$$

Profit as a function of the # of t-shirts sold



## Homework

For Exercises 2–5, use the following information: In *Variables and Patterns*, several students were planning a bike tour. They estimated the following expenses and incomes.



Expenses

$$I = 350n$$

2. a. Write an equation for the total expenses  $E$  for  $n$  bikers.
  
- b. Write an equation for the total income  $I$  for  $n$  bikers.
  
- c. Write an equation for the profit  $P$  for  $n$  bikers.
  
- d. Find the profit for 25 bikers.
  
- e. Suppose the profit is \$1,055. How many bikers went on the trip?
  
- f. Does the profit equation represent a linear, quadratic, or exponential function, or none of these? Explain.

