

Objective for 10/31: I can write and solve systems of equations that represent the real world with 2 or 3 variables.

Practice

- 1.) Campus Rentals rents 2- and 3-bedroom apartments for \$700 and \$900 per month, respectively. Last month they had six vacant apartments and reported \$4600 in lost rent. ~~How many 2 bedroom apartments were vacant?~~

a. Define your variables

• ~~\$4600~~ in lost rent \rightarrow 6 vacant
• 2-bed = \$700 and 3-bed = \$900

b. Write your system

\$4600 6 2-bed, 3-bed

c. Look at the question. Solve for the question.

$x = 2 \text{ bed}$
 $y = 3 \text{ bed}$

$700x + 900y = 4600$ total
 \rightarrow cost 2 bed \rightarrow cost 3 bed

$6 = x + y$
 $y = 6 - x$
 2 bed

- 2.) Mr. Campos is writing a history test. It will have true/false questions worth 2 points each and multiple-choice questions worth 4-points each for a total of 100 points. He wants to have twice as many multiple-choice questions as true/false.

a. Define variables

b. Write equations

c. Look at question and solve

3.) Mark knows that he has scored a total of 70 points so far this basketball season. His coach told him that he scored 37 times, but Mark wants to know how many free throws, field goals and three pointers he has made. The sum of his field goals and three points equal twice the number of free throws minus two. How many free throws, field goals and three pointers has Mark made?

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a. Define your variables

2 bedroom \rightarrow \$700/month
3 bed \rightarrow \$900/month

b. Write your system

2 bed = a
3 bed = b
 $700a + 900b = 4600$
 $b = a + 6$

c. Look at the question. Solve for the question.

total \$ lost
2 bedroom cost

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they had six vacant apartments and reported \$4600 in lost rent. How many 2 bedroom apartments were

vacant? 6 vacant apts. $\$700/\text{month} \rightarrow 2 \text{ bed}$ $\$4600 \text{ lost}$

a. Define your variables

$-4600 = -700b + 900d$ $\$ \text{ for one month } 3\text{-bed in a month}$
 $b = \# 2 \text{ bed}$
 $d = \# 3 \text{ bed}$
 $\$165 \rightarrow \text{cost } 2\text{-bed per month}$

b. Write your system

$$\begin{aligned} b + d &= 6 \\ -d & -d \end{aligned}$$

$$\begin{aligned} 4600 &= 700b + 900d \\ 4600 &= 700(6-d) + 900d \\ b &= 6-d \\ d &= 2, b = 4 \end{aligned}$$

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Handwritten notes for problem 1a:

- 6 vacant (empty)
- \$700/month \rightarrow 2 bed
- \$900/month \rightarrow 3 bed
- lost \$4600
- $x = \text{2 bed}$ (with ~~700~~ crossed out)
- $y = \text{3 bed}$ (with ~~900~~ crossed out)
- $\$4600 = 700x + 900y$ (labeled "amount lost" and "cost of 2 bed" / "cost of 3 bedrooms")
- $x + y = 6$ (labeled "# of rooms")
- \downarrow (from x) \rightarrow # of 2 bed apt.
- \downarrow (from y) \rightarrow # of 3 bed apt.

b. Write your system

c. Look at the question. Solve for the question.

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