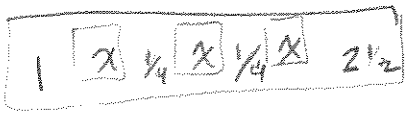
3. A page of a school yearbook is 8 ½ inches wide. The left and right margins are 1 inch and 2 ½ inches, respectively. The space between two pictures is ¼ inch. How wide should each picture be to fit 3 across the page? (Draw a picture.)



8½ inches.

x – # of inches for the picture width.

(# of pictures)(picture width) + (space between) + (margins) = (total)

$3x + \frac{1}{2} + 3\frac{1}{2} = 8\frac{1}{2}$

$3x + 4 = 8\frac{1}{2}$

$-4 \quad -4$

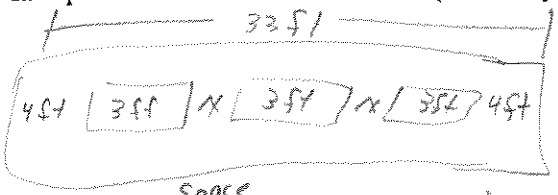
$\frac{3x}{3} = \frac{4\frac{1}{2}}{3}$

$x = \frac{9}{2} \cdot \frac{1}{3}$,

$x = 1\frac{1}{2}$ inches

The pictures should be 1½ inches wide.

4. You are designing the sidewall of a house with 3 windows, each 3 feet wide. There are 4 feet between each end window and an edge of the house. The width of the wall is 33 feet. You want the distance between the windows to be the same. How far apart should the windows be? (Draw a picture.)



x – space in between windows (ft.)

(width of wall) = (space Window + Edge) + (windows width)(# of windows) + (spacing between)(# of spacing between)

$33 = 8 + 3(3) + 2x$

$33 = 8 + 9 + 2x$

$33 = 17 + 2x$

$-17 \quad -17$

$\frac{16}{2} = \frac{2x}{2}$

$8 = x$ (ft)

The spacing in between windows should be 8 feet.

Linear Equations and Problem Solving
Worksheet #2

Name Key

Date _____ Pd ____

1. Two people are running on the same running path. One person starts and runs at a rate of 18 feet per second. Twenty seconds later, the other person starts and runs at a rate of 20 feet per second. In how many seconds will they be running side-by-side?

- 1st person - 18ft/sec
- 2nd person - 20ft/sec
- 20 seconds head start 1st person
- t = # of sec run by Runner 2

Dist 1 = Dist 2

(1st Rate)(Time) + Head start = (2nd Rate)(time)

$18t + 18(20) = 20t$

$18t = 360 = 20t$

$-18t \quad -18t$

$\frac{360}{2} = \frac{2t}{2}$

$180 = t$

It will take 180 seconds for both runners to be side by side. 180 seconds

2. From 1988 to 1989, the population of Colorado Springs increased by 5500 and that of Wichita increased by 4700. In 1989, the populations of Colorado springs and Wichita were 284,482 and 297,391, respectively. If the populations continue to increase at the same rates, when will the populations of the two cities be the same?

Colorado Springs Population
284,482
Increases 5500 per year

Wichita KS Population
297,391
Increases 4700 per year

y - # of years.
1988 - 1989

(C.S. Pop) + (Inc. at C.S.)(# years) = (W.K Pop) + (Inc W.K)(# years)

$284,482 + 5500y = 297,391 + 4700y$

$-4700y \quad -4700y$

$284,482 + 800y = 297,391$

$-284,482 \quad -284,482$

$800y = 12909$

$y = 16.13625$

≈ 16 yrs

1989
+ 16
2005

The two places will have the same population in the 16th year, the 16th year will be 2006.