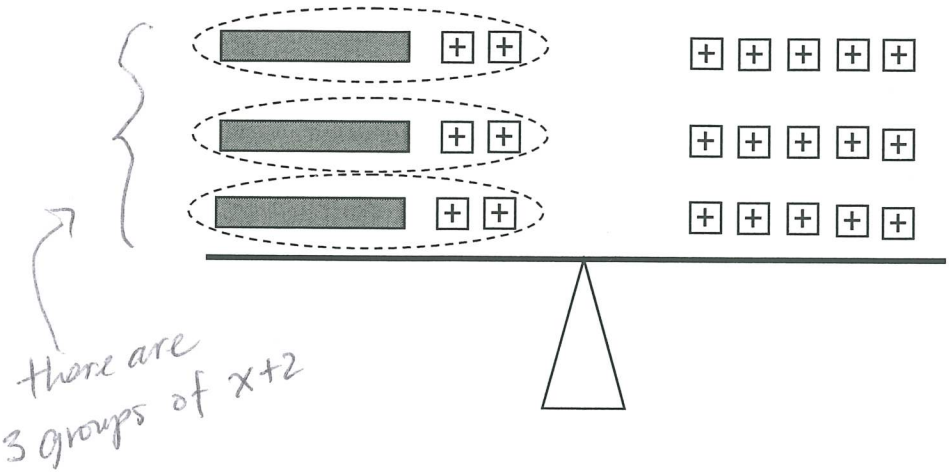
Math 8

10.4 (I) Modelling and Solving Equations of the form: $a(x+b)=c$

Ex. 1 In the following example consider the left side as being made up of three groups. The equation would be 3 groups equals 15.



What is in each group? Write an equation that describes the above model.

Solve the equation

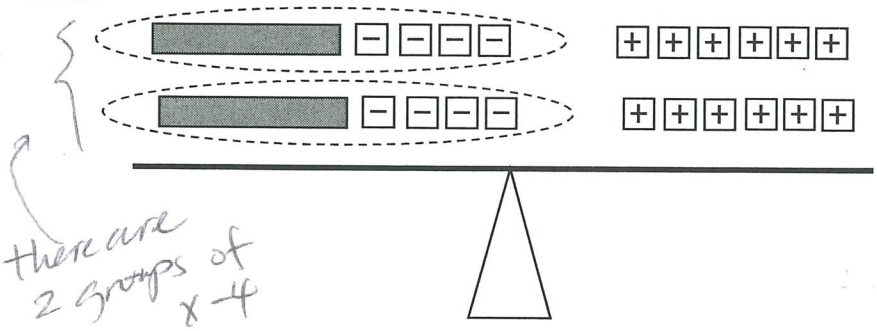
$$\frac{3(x+2)}{3} = \frac{15}{3}$$

$$x+2 = 5$$

$$-2 \quad -2$$

$$x = 3$$

Ex. 2



What is in each group? Write an equation that describes the above model.

Solve the equation

$$\frac{2(x-4)}{2} = \frac{12}{2}$$

$$x-4 = 6$$

$$+4 \quad +4$$

$$x = 10$$

Ex. 3 Solve the following equations using **opposite operation**:

1. $3(x-2)=18$

$\frac{3}{3} \quad \frac{3}{3}$

$x-2=6$

$+2 \quad +2$

$x=8$

Check:

$3(x-2)=18$

$3(8-2)$

$3(6)$

$18=18$ ✓

2. $28=4(m-5)$

$\frac{28}{4} \quad \frac{4(m-5)}{4}$

$7=m-5$

$+5 \quad +5$

$12=m$

$m=12$

3. $7(x+4)=-42$

$\frac{7(x+4)}{7} \quad \frac{-42}{7}$

$x+4=-6$

$-4 \quad -4$

$x=-10$

4. $35=-5(n-3)$

$\frac{35}{-5} \quad \frac{-5(n-3)}{-5}$

$-7=n-3$

$+3 \quad +3$

$n=-4$

check:

$35=-5(n-3)$

$-5(-4-3)$

$-5(-7)$

$35=35$ ✓

Ex. 4 Josh is carrying pens equally in 5 boxes. After he adds 3 pens to each box he has a total of 35 pens. How many pens were initially in each box? Write an equation and then solve.

$\frac{5(x+3)}{5}=\frac{35}{5}$

$x+3=7$

$-3 \quad -3$

$x=4$

x = # of pens in each box initially.

∴ There are 4 pens in each box initially.

Practice Work: Pg. 398 #4, 5, 8-10, 12, 15*