

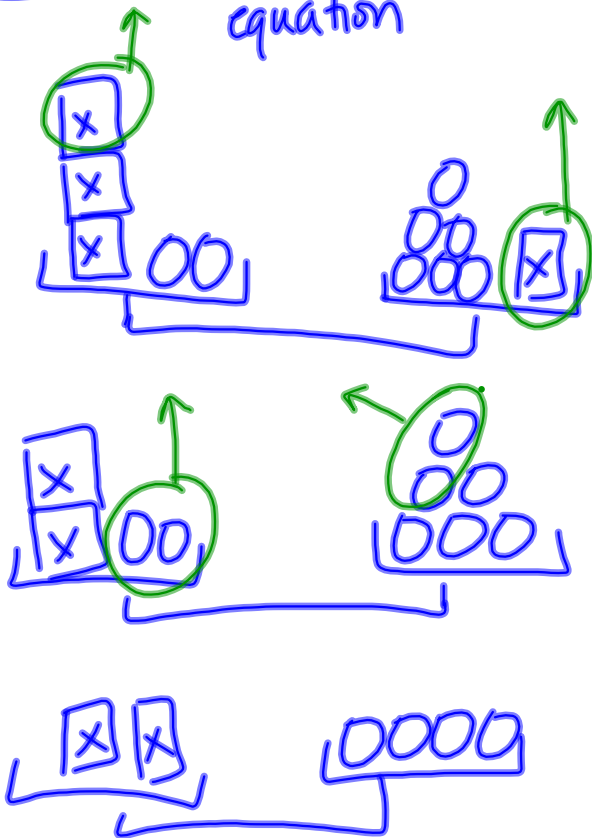
Section 6.2 - Solving Equations Using Balance Strategies

Ⓐ modelling equations with variables on both sides

example: a) $3x + 2 = 6 + x$

b) verify solution.

Solution: * need to isolate the x to solve the equation



$$3x + 2 = 6 + x$$

$$3x - x + 2 = 6 + x - x$$

$$2x + 2 = 6$$

$$2x + 2 - 2 = 6 - 2$$

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

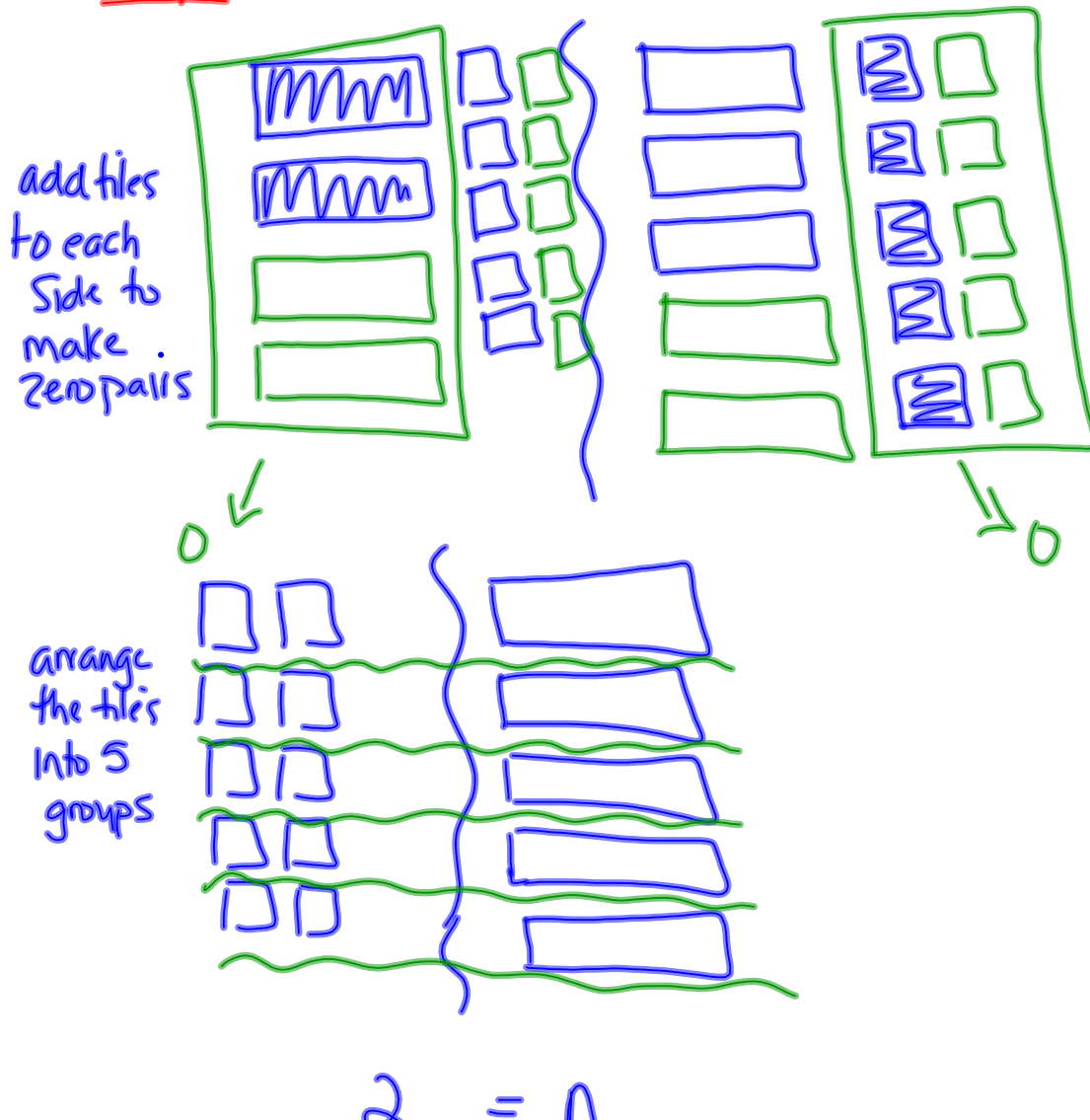
$$x = 2$$

* If we have an equation with negative terms, it is easier to use algebra tiles to model and solve the equation.

* we add the same tiles to each side or subtract the same tiles from each side to keep the equation balance.

B using algebra tiles to solve an equation

example: $-2n + 5 = 3n - 5$



C Solving equations with rational coefficients

Examples: ① $\frac{2a}{3} = 6$ $2a = 6$
 $\frac{a}{3} = 6$
 ~~$\frac{2a}{3} = 6(3)$~~ Check: $\frac{2(9)}{3} \stackrel{?}{=} 6$
 $\frac{2a}{2} = \frac{18}{2}$ $\frac{18}{3} \stackrel{?}{=} 6$
 $a = 9$ $\frac{6}{3} = 6 \checkmark$

example ②: $\frac{12a}{r} = 3, r \neq 0$ $\frac{r}{12a}$
 $\frac{r(12a)}{r} = 3r$
 $\frac{12a}{3} = \frac{3r}{3}$
 $40.\bar{6} = r$

example ③: $\frac{2a}{3} = \frac{4a}{5} + 7$ * I need to multiply by the common denominator
 $\frac{15(\frac{2}{3})a}{1} = \frac{15(\frac{4}{5})a}{1} + \frac{15(7)}{1}$ CD = 15
 $\frac{30a}{3} = \frac{60a}{5} + 105$
 $10a = 12a + 105$
 $10a - 12a = 105$
 $\begin{array}{r} +12a = 105 \\ \hline +2 \quad -2 \end{array}$
 $a = -52.5$

Ⓓ Using an equation to model and solve a problem

Example: pg 279

Step 1: create the equations:

$$\text{Plan A: } C = (t - 120)(0.75)$$

$$\text{Plan B: } C = (t - 30)(0.25)$$

Step 2: make the equations equal each other!

$$(t - 120)(0.75) = (t - 30)(0.25)$$

$$0.75t - 90 = 0.25t - 7.5$$

$$0.75t - 0.25t = -7.5 + 90$$

$$\frac{0.50t}{0.50} = \frac{82.5}{0.50}$$

$$t = 165$$

the cost is the same at 165 mins for both plans.

Complete: pg 280-282

#'s: 4, 5, 6, 9-12, 14, 15, 17,
19a, 21a, b