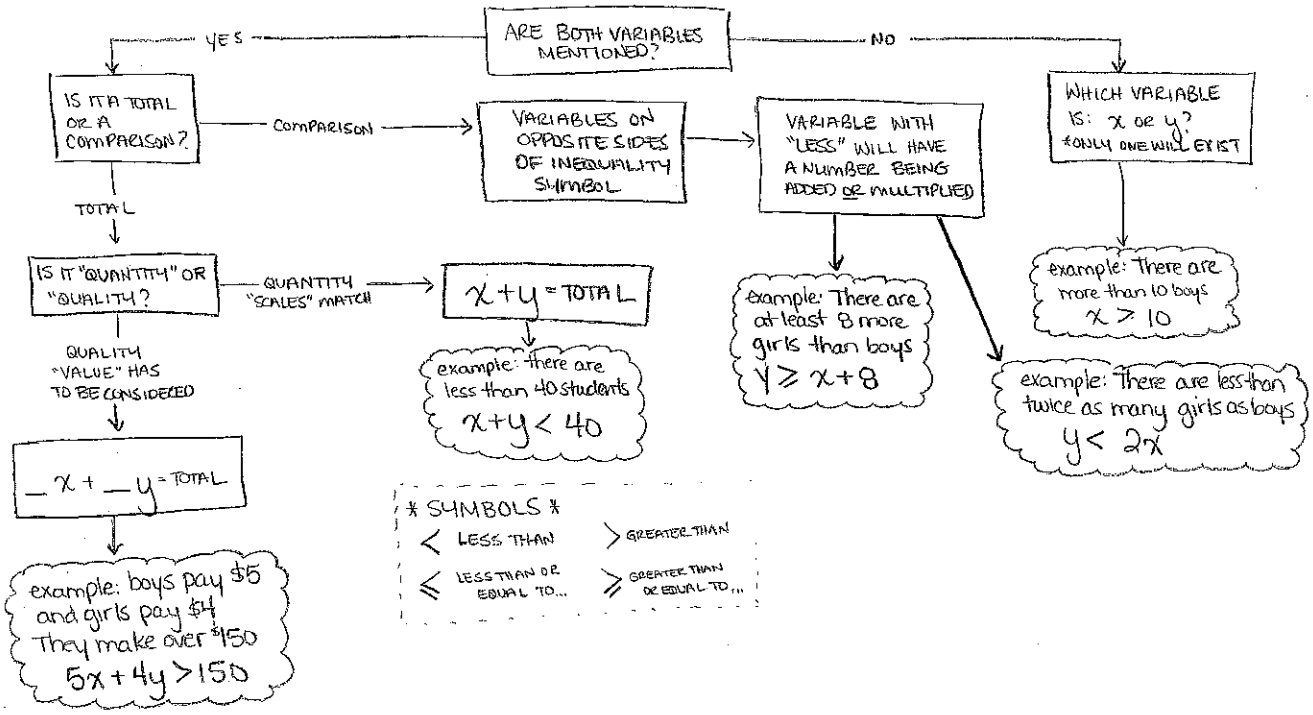
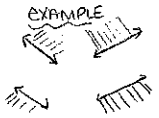
Optimization

Step 1: Words to Rules



Step 2: Graphing

1. Rewrite rules in function form $y = ax + b$
2. Identify initial value (b) and plot on y-axis
3. Identify slope (a) and use as $\frac{\text{RISE}}{\text{RUN}}$ to find a second point
4. Connect the dots with
   - —— if ≥ or ≤
   - - - - if > or <
5. Label the line
6. Shade
   - OVER if > or ≥
   - UNDER if < or ≤



Step 3: Vertices (Systems of Equations)

Label the corners of your polygon of constraints

1. Write 2 rules of lines that cross at vertex (as equality) in function form
2. Let $y_1 = y_2$
3. Solve for x
4. Sub x found into one of original rules to find y.
5. Summarize vertex (x, y)

Step 4: Optimizing Function

Create rule to calculate value of "target objective"

↳ costs, profit, revenue...

"target objective" = what is to be maximized or minimized

$$Z = \_\_x + \_\_y$$

Step 5: CHART

VERTICES	OPTIMIZING FUNCTION

Step 6: CHOOSING OPTIMAL SOLUTION

- Remember to check:
  - → are points feasible (possible)?
    - ↳ in shading
    - ↳ NOT on dotted line
  - → can solutions be decimals?
    - ↳ can you have 12.5 dogs?

SCANNING LINE

A way to test and find possible solutions that give a specific value for the optimizing function.

1) Z = Value
2) REARRANGE TO FUNCTION FORM
3) GRAPH.

Optimization Example.