WARM UP:

Translate the following into algebraic equations or inequalities:

a. Celia is selling muffins and brownies.
   Muffins cost $1
   Brownies cost $2
   Suppose Celia makes exactly $40.

$2b+1m=40$

b: # brownies
m: # muffins

b. The temperature in the refrigerator must be over 32°F but should not exceed 40°F.

$x>32$

or

$x\leq 40$

$32<x\leq 40$

x: temperature

> Learning Target: I can model real-world situations with linear equations and inequalities.

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1.3A Modelling Real-World Situations with Equations and inequalities

Section
1.3A

Linear programming is the process of taking various linear inequalities relating to some situation, and finding the "best" value obtainable under those conditions. A typical example would be taking the limitations of materials and labor, and then determining the "best" production levels for maximal profits under those conditions.

a) Identify key terms (the important information). SKIP!

x: # jeans
y: # t-shirts
$15x + $5y
use $'s

b) Define the variables (the items that will vary in amount).

x: # of t-shirts
y: # of jeans

c) Write the objective equation to show the maximum or minimum amount you could spend.

$\$5x + \$15y = S$ S = amount spent

d) Write a system of inequalities to represent the constraints (restrictions) of the situation.

at least 2 pairs of jeans: $y \geq 2$
at least 1 t-shirt: $x \geq 1$
at most 7 items: $x + y \leq 7$

a) Identify key terms (the important information). SKIP!

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b) Define the variables (the items that will vary).

c: # chairs
t: # tables

c) Write the objective equation to show the maximum or minimum amount you could make in profit.

$\$15c + \$8t = P$ P: profit

d) Write a system of inequalities to represent the constraints (restrictions) of the situation.

chairs, at least 30, no more than 80
$30 \leq c \leq 80$
$c \geq 30$ and $c \leq 80$
tables, at least 10, no more than 30
$10 \leq t \leq 30$
add total of chairs and tables should not exceed 80
$c + t \leq 80$