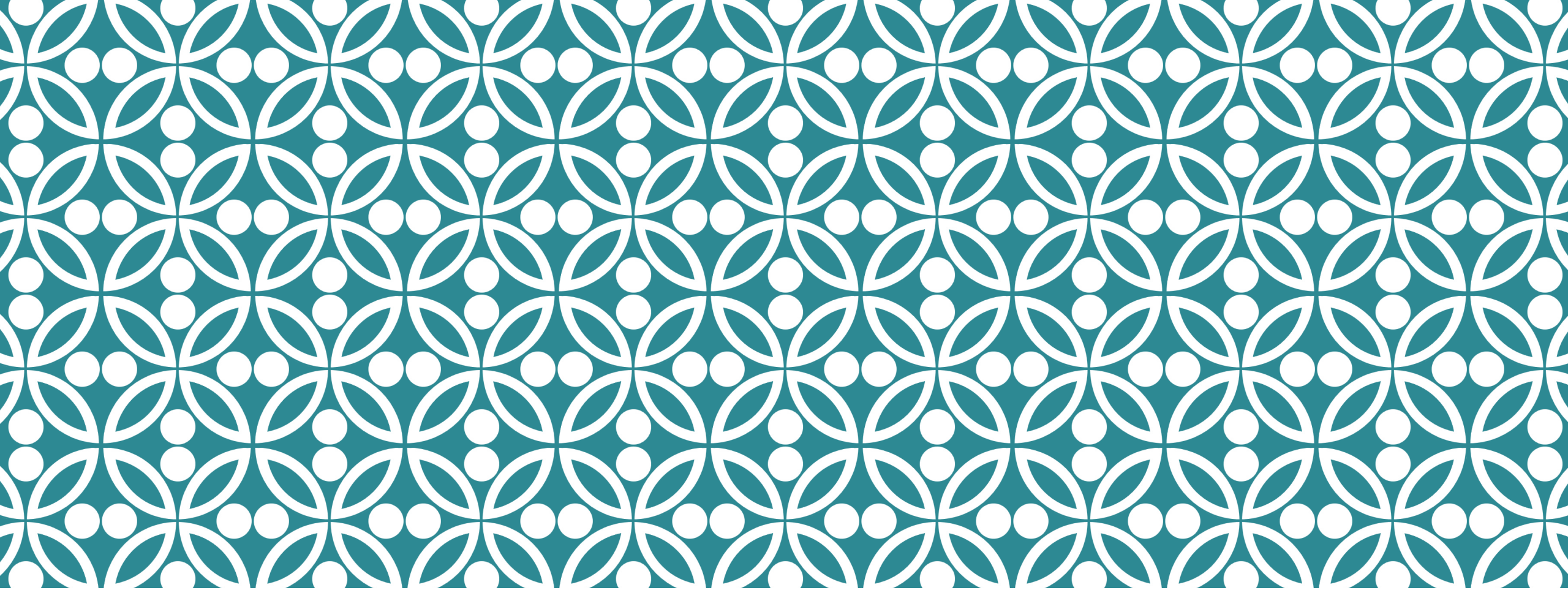


Linear Programming

A travel agent is organizing a trip for a local ski club. She can make arrangements for a maximum of 10 people, and there must be at least 4 men and 3 women in the group. Her profit is $12.25 for each woman and $15.40 for each man. How many men and how many women will give her the maximum profit? What is her maximum profit?

Total number of people = 10

Need at least 3 women

This leaves 7 spots for men

Which travelers will make the agent the most money?

Men, so we want the most male travelers possible

Maximum profit with 7 men and 3 women

7(15.40)+3(12.25)= $144.55

A carpentry shop makes dinner tables and coffee tables. Each week the shop must complete at least 9 dinner tables and 13 coffee tables to be shipped to furniture stores. The shop can produce at most 30 dinner tables and coffee tables combined each week. If the shop sells dinner tables for $120 and coffee tables for $150. How many of each item should be produced for a maximum weekly income? What is the maximum weekly income?

Total number of tables= 30

Need at least 9 dinner tables

This leaves 21 spots for coffee tables

Which tables make the most profit?

Coffee tables, so we want to maximize coffee tables

Maximum profit with 9 dinner and 21 coffee

9(120)+21(150)= $4,230

Paul sells chocolate chip cookies and peanut butter cookies. Baking a batch of chocolate chip takes 1.75 cups of flour and 2 eggs. Baking a batch of peanut butter cookies take 1.25 cups of flour and 1 egg. Paul has 10 cups of flour and 12 eggs. He makes a $4 profit per batch of chocolate chip cookies. He makes a $2 profit per batch of peanut butter cookies. How many batches of each should Paul make to maximize his profits. What is his maximum profit?

Which type of cookies make the most profit?

Chocolate chip, so we want to maximize chocolate chip

Restrictions= 10 cups of flour, 12 eggs

Chocolate chip cookies need:

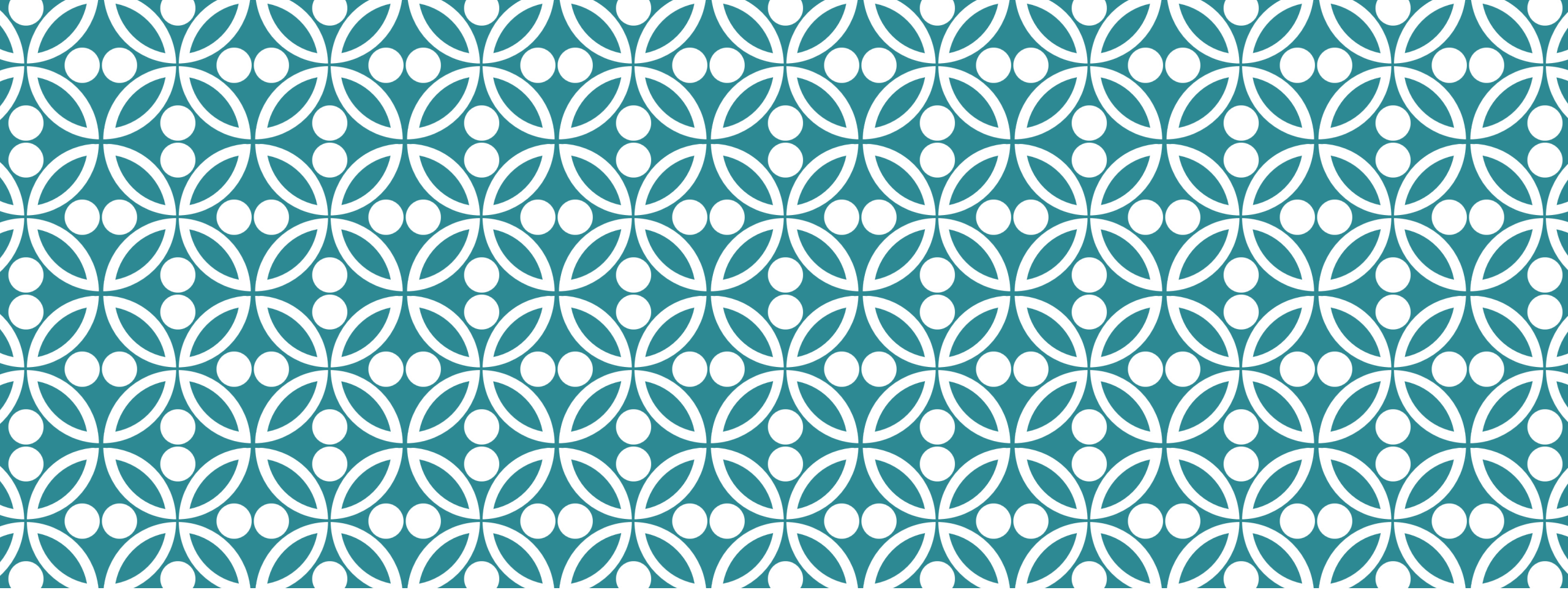
- 1.75 cups of flour $\frac{10}{1.75} =$ $5.7 \rightarrow 5$ *batches is maximum with flour*
- 2 eggs $\frac{12}{2} =$ $6 \rightarrow 5$ *batches is maximum with eggs*

Maximum profit with 5 chocolate chip cookies and 1 peanut butter cookies

5(4.00)+1(2.00)= $22.00

Making 5 batches of chocolate chip cookies leaves:

1.25 cups of flour and 2 eggs → Enough for 1 batch(es) of peanut butter cookies



Using the Calculator

The graph below displays the equations $y = x - 5$ and $y = -x^2 + 1$.

Use the graph to determine the solution(s) to the system of equations.

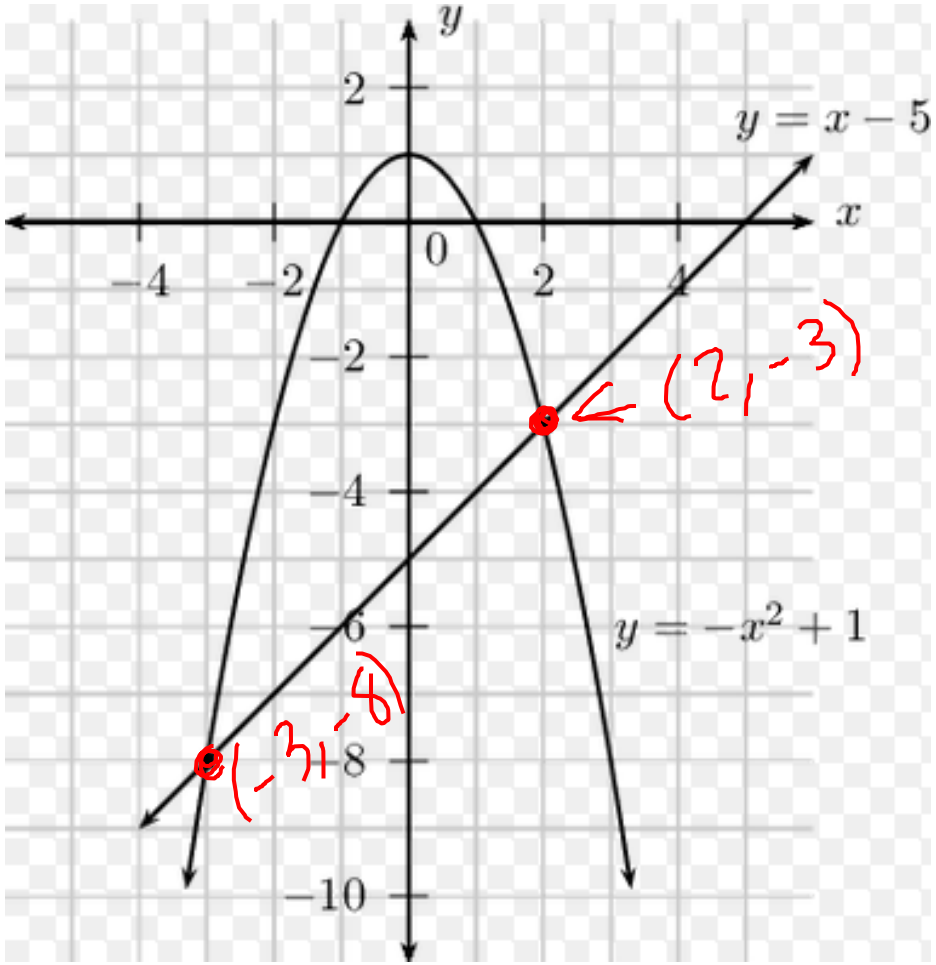
How many solutions does this system have?

2 because the graphs intersect twice

What are the solutions?

(2, -3)

(-3, -8)



If you aren't given a graph, you can use your calculator to make your own and find the intersection.

1. Type both equations into [y =]
2. [Graph] (Zoom 0 if necessary to fit)
3. [2nd] [Trace] Intersection
4. [Enter] 3 times

FIND THE SOLUTION TO THE SYSTEM OF EQUATIONS BELOW

$$y = 2^x$$
$$y = \frac{1}{2}x + 3$$

1. Type both equations into y =
2. Hit Graph
   - How many intersections? 2
3. 2nd Trace Intersection
   - Hit enter 3 times

Scroll closer to other intersection and repeat steps to find other point of intersection.