

Whatzup Toyz

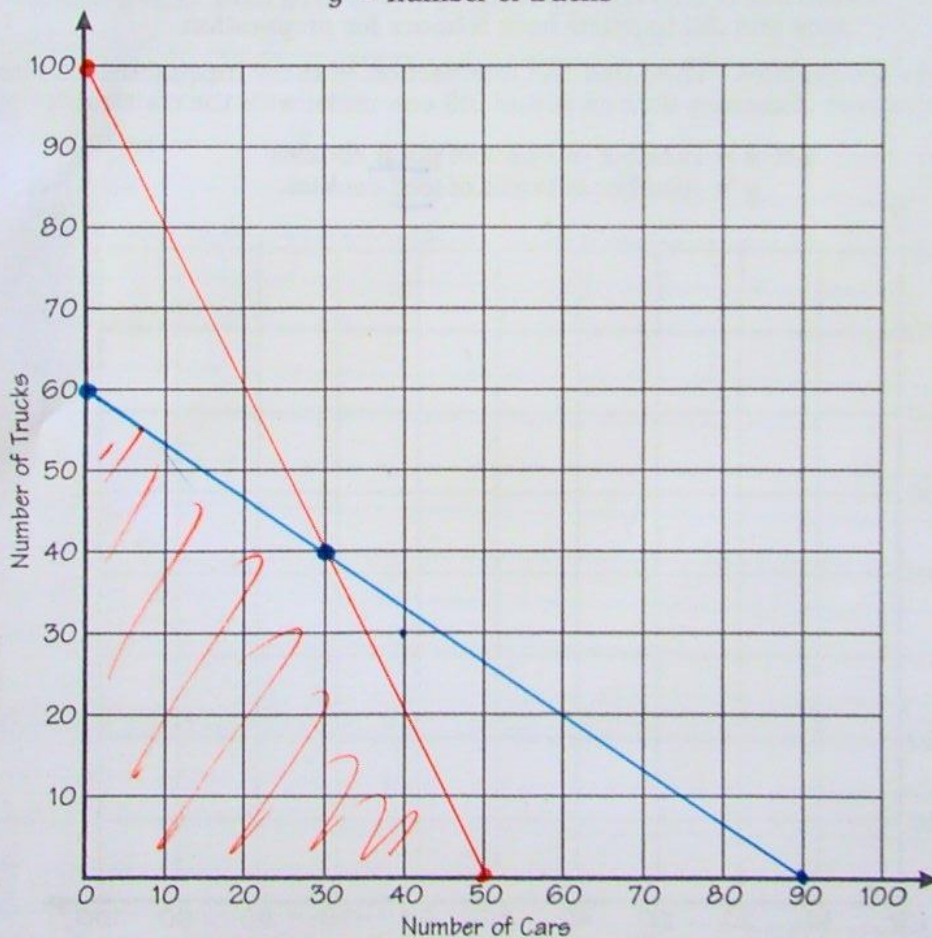
Whatzup Toyz is a small toy company that specializes in toy cars and toy trucks. The people at Whatzup Toyz are confident they can sell all the toy cars and trucks they make. But there are *two constraints* that limit their production today:

WHEELS: Each car needs 4 wheels. Each truck needs 6 wheels. Whatzup Toyz has 360 wheels in stock. $4x + 6y \leq 360$

SEATS: Each car needs 2 seats. Each truck needs 1 seat. Whatzup Toys has 100 seats in stock. $2x + 1y \leq 100$

Write two inequalities. Then find the intersection of these inequalities to show all combinations of cars and trucks that Whatzup Toyz can make with the two constraints given.

Let x = number of cars
 y = number of trucks



EXTRA

Suppose the profit on each toy car or truck sold is \$1.00. How many cars and how many trucks should Whatzup Toyz make in order to maximize profit?

30 cars and 40 trucks

The Box Bakery

Jack and Jill Box own a small bakery that makes fresh cookies daily. They bake two kinds of cookies--plain cookies and cookies with icing. The cookies are sold by the box, and Jack and Jill are confident they can sell all the cookies they make. But there are *three constraints* that limit their production today:

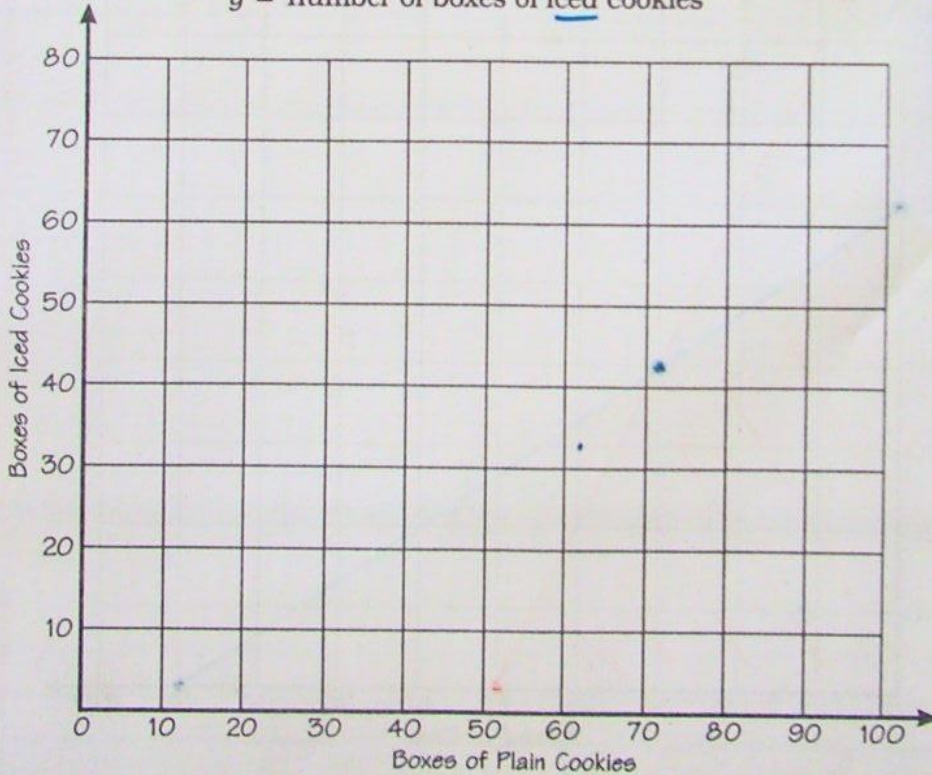
DOUGH: One box of plain cookies requires 1.2 pounds of cookie dough.
 One box of iced cookies requires 0.9 pound of cookie dough.
 Jack and Jill have 72 pounds of cookie dough.

ICING: Plain cookies require no icing.
 One box of iced cookies requires 0.4 pound of icing. $0.4y \leq 20$
 Jack and Jill have 20 pounds of icing. $y \leq 50$

TIME: One box of plain cookies requires about 0.10 hour to prepare.
 One box of iced cookies requires about 0.15 hour to prepare.
 Jack and Jill together have 9 hours for preparation.

Write three inequalities. Then find the intersection of these inequalities to show all combinations of cookies that Jack and Jill can make with the constraints given.

Let x = number of boxes of plain cookies
 y = number of boxes of iced cookies



EXTRA

Suppose the profit on each box of plain cookies is \$2.00, and the profit on each box of iced cookies is \$3.00. How many boxes of each kind of cookie should Jack and Jill make to maximize profit?

equalities:

1. Your teacher is giving you a test worth 100 points containing 40 questions. There are 2-point and 4-point questions on the test. How many of each type of question are on the test?
2. Suppose you are starting an office-cleaning service. You have spent \$315 on equipment. To clean the office you use \$4 worth of supplies. You charge \$25. How many offices must you clean to break even?
3. The math club and the science club had fundraisers to buy supplies for a hospice. The math club spent \$135 buying six cases of juice and one case of bottled water. The science club spent \$110 buying four cases of juice and two cases of bottled water. How much did a case of juice cost? How much did a case of bottled water cost?
4. A sporting-goods manufacturer has spent \$1000.00 researching a new product. It will cost them \$4.50 to manufacture ^{each of} the items that they will sell for \$12.00. How many items must they sell to break even?
5. Kay spends 250 min/wk exercising. Her ratio of aerobics to weight training is 3 to 2. How many min/wk does she spend on aerobics? How many min/wk does she spend on weight training?
6. Suppose you invest \$1500 in equipment to put pictures on T-shirts. You buy each T-shirt for \$3. After you have placed the picture on the shirt you sell it for \$20. How many T-shirts must you sell to break even?
7. Christy has a coin collection consisting of nickels and dimes. She has 28 coins worth \$2.25. How many of each coin does Christy have?
8. Suppose you are starting a daycare center. You have spent \$1500 on equipment and materials for the children. You spend \$10/da on food. Your total income is \$50/da. How many days will it take you to break even?
9. Suppose you bought supplies for a party. Three rolls of streamers and 15 party hats cost \$30. Later you bought 2 rolls of streamers and 4 party hats for \$11. How much did each roll of streamers cost? How much did each party hat cost?
10. The new parking lot has spaces for 450 cars. The ratio of spaces for full-sized cars to compact cars is 11 to 4. How many spaces are for full-sized cars? How many spaces are for compact cars?