

Two-variable inequality

[Science](#), [Mathematics](#)



Module: Introduction Symbols less than or greater than are used to represent the inequality equation. It entails forming an equation derived from a given task and thereby using it to solve for mathematical problems. Inequality can be represented on the graph and used obtain solutions of the inequality. The required region must first be identified and shaded. The shaded part satisfies the equation of the inequality.

Problem solution

1. Problem 46

Maple rockers. Ozark Furniture Company can obtain at most 3000 board feet of maple lumber for making its classic and modern maple rocking chairs. A classic maple rocker requires 15 board feet of maple, and a modern rocker requires 12 board feet of maple. Write an inequality that limits the possible number of maple rockers of each type that can be made, and graph the inequality in the first quadrant.

Assigning a variable to each type of rocker Ozark Furniture makes.

Let x = the board feet needed to make classic rockers

Let y = the board feet needed to make modern rockers

A linear inequality to represent the given information of total board feet and the board feet required for each type of rocker.

A graph of the inequality.

Shaded region

From the graph x is the independent variable (on the horizontal axis) and y the dependent variable (on the vertical axis) then we can graph the equation using the intercepts.

The; when therefore,

, alternatively for y ;

The line is $(0, 200)$ the line slants from the left dropping to right. The line represented is solid. The pertinent segment in the graph is the 1st quadrant.

The shaded region is from the line and ends at the origin of the graph.

Evaluation of the graph.

Consider the coordinates of the points in the graph inside the shaded region.

$= 2325$;

The company will still order for extra of rockers and board feet of lumber because the maximum orders have not been realized or achieved.

Also, points $(100, 125)$ outside the shaded region.

Maximum orders of both board feet lumber and rockers have been exceeded.

Points $(125, 100)$. Exact point on the line.

0 the company accomplished this order precisely without any feet maple remaining. No blunders or errors were found with the order.

Applying the linear inequality to solve the following problem:

A chain furniture store faxes an order for 175 modern rocking chairs and 125 classic rocking chairs. Will Ozark Furniture be able to fill this order with the current lumber on hand? If yes, how much lumber will they have left? If no, how much more lumber would they need to fill the order? Explain your answers.

The company did not make up adequate of both types of rockers and board feet of lumber of this order. The order cannot be filled.

$4125 - 3000 = 1125$ the company will need (1125) lumber to fill the order. The company will have shortage to make all the required order.

Conclusion

A graph was obtained by drawing x axis horizontally and y axis vertically. An inequality equation was formed based on the questioned above and thereafter used to draw the graph. The shaded region was identified which then was used to obtain the solutions of the problem.

Reference

Dugopolski, M. (2012). Elementary and intermediate algebra (4th ed.). New York, NY: McGraw-Hill Publishing.

Curtis and Reiner, (1999), Representations of Groups and Associative Algebras, Wiley Inc. pg. 146.