

Compound Inequalities

1. John owns a 50-acre apple orchard. Among his many concerns during the growing season is the amount of rainfall. Unfavorable conditions such as drought and flooding will affect tree production. John does not want rainfall amounts to be less than 10 inches or more than 50 inches.

- a. Represent the undesirable rainfall amounts on the number line.



- b. Define your variable. Write a compound inequality to represent the same information.

2. At John's apple orchard, the profit he will make depends on the number of bushels he grows and sells. He makes \$25 per bushel but must subtract \$300,000 for costs associated with growing the trees in order to calculate his profit.

- a. Write an expression to represent the profit John will make. Let b represent the number of bushels he will produce and sell.

- b. John must make at least \$80,000 to pay the bills, but he does not want to make more than \$250,000 because it will put him in a higher tax bracket. Write a compound inequality that represents the amount of profit John can make.

- c. Solve the compound inequality. Show your work.

- d. Graph the solution to the compound inequality. Describe the solution region in terms of the problem situation.

