5-1 Word Problem Practice
Solving Inequalities by Addition and Subtraction

1. SOUND The loudest insect on Earth is the African cicada. It produces sounds as loud as 105 decibels at 20 inches away. The blue whale is the loudest mammal on Earth. The call of the blue whale can reach levels up to 83 decibels louder than the African cicada. How loud are the calls of the blue whale?

2. GARBAGE The amount of garbage that the average American adds to a landfill daily is 4.6 pounds. If at least 2.5 pounds of a person's daily garbage could be recycled, how much will still go into a landfill?

3. SHOPPING Tyler has $75 to spend at the mall. He purchases a music video for $14.99 and a pair of jeans for $18.99. He also spent $4.75 for lunch. Tyler still wants to purchase a video game. How much money can he spend on a video game?

4. SUPREME COURT The first Chief Justice of the U.S. Supreme Court, John Jay, served 2079 days as Chief Justice. He served 10,463 days fewer than John Marshall, who served as Supreme Court Chief Justice for the longest period of time. How many days must the current Supreme Court Chief Justice John Roberts serve to surpass John Marshall's record of service?

5. WEATHER Theodore Fujita of the University of Chicago developed a classification of tornadoes according to wind speed and damage. The table shows the classification system.

Level	Name	Wind Speed Range (mph)
F0	Gale	40–72
F1	Moderate	73–112
F2	Significant	113–157
F3	Severe	158–206
F4	Devastating	207–260
F5	Incredible	261–318
F6	Inconceivable	319–379

Source: National Weather Service

a. Suppose an F3 tornado has winds that are 162 miles per hour. Write and solve an inequality to determine how much the winds would have to increase before the F3 tornado becomes an F4 tornado.

b. A tornado has wind speeds that are at least 158 miles per hour. Write and solve an inequality that describes how much greater these wind speeds are than the slowest tornado.

5-2 Word Problem Practice
Solving Inequalities by Multiplication and Division

1. PIZZA Tara and friends order a pizza. Tara eats 3 of the 10 slices and pays $4.20 for her share. Assuming that Tara has paid at least her fair share, write an inequality for how much the pizza could have cost.

2. AIRLINES On average, at least 25,000 pieces of luggage are lost or misdirected each day by United States airlines. Of these, 98% are located by the airlines within 5 days. From a given day's lost luggage, at least how many pieces of luggage are still lost after 5 days?

3. SCHOOL Gil earned these scores on the first three tests in biology this term: 86, 88, and 78. What is the lowest score that Gil can earn on the fourth and final test of the term if he wants to have an average of at least 83?

4. EVENT PLANNING The Downtown Community Center does not charge a rental fee as long as a rentee orders a minimum of $5000 worth of food from the center. Antonio is planning a banquet for the Quarterback Club. If he is expecting 225 people to attend, what is the minimum he will have to spend on food per person to avoid paying a rental fee?

5. PHYSICS The density of a substance determines whether it will float or sink in a liquid. The density of water is 1 gram per milliliter. Any object with a greater density will sink and any object with a lesser density will float. Density is given by the formula $d = \frac{m}{v}$, where m is mass and v is volume. Here is a table of common chemical solutions and their densities.

Solution	Density (g/mL)
concentrated calcium chloride	1.40
70% isopropyl alcohol	0.92

Source: American Chemistry Council

Plastics vary in density when they are manufactured; therefore, their volumes are variable for a given mass. A tablet of polystyrene (a manufactured plastic) sinks in water and in alcohol solution and floats in calcium chloride solution. The tablet has a mass of 0.4 gram. Write an inequality to represent the range of values for v, the volume of the tablet.