

UNIT 2 Project

The following table shows an equation that was solved using a proof table.

| STATEMENTS | REASONS |
|------------------------------|----------------------------------|
| $4(x+1) - 2x = -6(x-1) + 14$ | Given |
| $4x + 4 - 2x = -6x + 6 + 14$ | Distributive property |
| $2x + 4 = -6x + 20$ | Combining like terms |
| $8x + 4 = 20$ | Addition property of equality |
| $8x = 16$ | Subtraction property of equality |
| $x = 2$ | Division property of equality |

Solve each equation below and justify your steps using a proof table. Show your work.

- $12x - 4(2x - 10) = 6 - (x + 3)$
- $3(x - 2) + 7 = -4 + 2(x + 1)$
- Why is $\frac{2}{3}x + \frac{7}{2} = 3$ the same as $4x + 21 = 18$? What property was used to rewrite the equation?
- Fishing Adventures rents small fishing boats to tourists for day-long fishing trips. Each boat can only carry 1500 pounds of people and gear for safety reasons. Assume the average weight of a person is 150 pounds. Each group will require 200 lbs of gear for the boat plus 10 lbs of gear for each person.
 - Create an inequality describing the restrictions on the number of people possible in a rented boat. Solve the inequality, write your answer in interval notation, and graph the solution set.
 - Several groups of people wish to rent a boat. Group 1 has 4 people. Group 2 has 5 people. Group 3 has 8 people. Which of the groups, if any, can safely rent a boat? What is the maximum number of people that may rent a boat?

5. The table below gives recommended weight ranges for the balls from five different sports. (Hint: Find the average of each weight.)

| Sport | Weight range of ball used |
|------------|---------------------------|
| Volleyball | 260-280 grams |
| Basketball | 600-650 grams |
| Water Polo | 400-450 grams |
| Lacrosse | 142-149 grams |
| Football | 14-15 ounces |

- Write an absolute value inequality for the weight range of each ball.
- For each ball, write an absolute value inequality describing the weights of balls that are *outside* the recommended range.