
UNIT 2 • REASONING WITH LINEAR EQUATIONS AND INEQUALITIES

Lesson 1: Creating Linear Equations and Inequalities in One Variable

Instruction

Problem-Based Task 2.1.1: Rafting and Hiking Trip

Coaching Sample Responses

- a. If the rafting trip covers a distance of 60 miles and you are expected to raft 8 hours each day, how many miles must you raft each hour?

What is the ratio of miles to days?

$$\frac{60 \text{ miles}}{2 \text{ days}}$$

What is the ratio you are looking for?

$$\frac{\text{miles}}{\text{hour}}$$

What is the ratio of days to hours spent rafting?

$$\frac{1 \text{ day}}{8 \text{ hours}}$$

How do you convert the original ratio of miles to days into miles per hour?

Multiply the two numeric ratios together.

$$\frac{60 \text{ miles}}{2 \text{ days}} \cdot \frac{1 \text{ day}}{8 \text{ hours}} = \frac{60 \text{ miles}}{16 \text{ hours}} = 3.75 \text{ miles/hour}$$

- b. How many miles will your group be hiking?

What is the equation of the cost of hiring 1 assistant?

$$22x + 50 = 512, \text{ where } x = \text{miles}$$

What is the solution to this equation?

$$x = 21 \text{ miles}$$

- c. Is it worth hiring 2 assistants to help you and your friends carry the equipment?

How much weight will each of you carry without assistants?

Each person will carry 35 pounds. There are 5 people in your group.

$$35 \cdot 5 = 175 \text{ pounds}$$

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How much weight will each of you carry with 2 assistants?

First, determine how much less there would be to carry among the 5 members of your group if you hire 2 assistants who each carry 50 pounds.

$$175 - 2(50) = 175 - 100 = 75 \text{ pounds}$$

Now, divide 75 pounds by 5 people.

$$\frac{75}{5} = 15 \text{ pounds}$$

$$35 - 15 = 20$$

If you hire 2 assistants, you and each of your friends will carry 15 pounds, which is 20 pounds less than the original amount.

What is the difference in the cost per day?

First, determine the cost for 2 assistants if each will be paid \$512.

$$2(512) = 1024$$

The cost is \$1,024 for 2 assistants.

Next, determine the cost per person.

$$\frac{\$1024}{5 \text{ people}} = \$204.80 / \text{person}$$

The difference is \$204.80 per person or almost \$205 per person.

Are you willing to pay more money to have someone carry your equipment?

Answers will vary, but should reflect and be justified by students' calculations. Sample answer: I am willing to pay about an extra \$205 to be free of 20 pounds of equipment during my 21-mile hike, so that I can enjoy my experience without being weighed down.

Recommended Closure Activity

Select one or more of the essential questions for a class discussion or as a journal entry prompt.