

Measuring Up

Level A

A small group of six soldiers came into a small town.

They were very hungry, but none of the townspeople offered them food.

One of the soldiers announced that they would make stone soup.

“How do you make stone soup?” a townspeople asked. “Well,” the soldier replied, “you need a big pot, water, and a large stone.” The townspeople, very curious to see how stone soup was made, gathered together the materials. The soldiers started to cook the soup over a fire they made.

Once the soup began to boil, a soldier said, “Sure, this will be a tasty stone soup, but a delicious stone soup would have additional ingredients.”

The townspeople, now even more curious, asked what extra ingredients might be added. “Well, for each person, you would need 2 baby carrots, 3 green onions, and 5 chunks of meat.”

What ingredients are needed to make a delicious stone soup for the 6 soldiers?

What ingredients are needed to make a delicious stone soup for 10 people?

What ingredients are needed to make a delicious stone soup for 25 people?

Explain how you determined your answers.

Measuring Up

Level B

A small group of six soldiers came into a small town.

They were very hungry, but none of the townspeople offered them food.

One of the soldiers announced that they would make stone soup.

“How do you make stone soup?” a townspeople asked.

“Well,” the soldier replied, “you need a big pot, water, and a large stone.”

The townspeople, very curious to see how stone soup was made, gathered together the materials.

The soldiers started to cook the soup over a fire they made. Once the soup began to boil, a soldier said, “Sure, this will be a tasty stone soup, but a delicious stone soup would have additional ingredients.” The townspeople, now even more curious, asked what extra ingredients might be added. “Well, for each person, you would need 2 baby carrots, 3 green onions, and 5 chunks of meat.”

The townspeople brought more and more ingredients and put them in the soup. They began to lose track of how many people they could serve. One young girl, who was careful to count the green onions, announced that there were 69 green onions in the soup.

How many chunks of meat would need to be in the soup to make the recipe taste right?

How many people can be served soup with all these ingredients? Show how you figured it out.

One man said, “If we have 69 green onions, then I know we need 45 carrots.” Is the man right? Explain your answer.

Measuring Up

Level C

You have designed a picture that is shaped like a square.

The dimensions of your picture are 6 inches by 6 inches. You want to make it into a poster with dimensions of 13 inches by 13 inches.

The duplication machine has three settings: one setting that reduces the linear measure by a factor of 75%; one that enlarges the linear measure by a factor of 140%; and one that just makes identical copies or applies the factor of 100%.

How many multiple enlargements or reductions will you need to make in order to create a poster that has sides 13 inches long (accurate within five-hundredths)?

Explain what setting was used and how that changed the measurements of the copy for each step in the process.

Measuring Up

Level D

Two measuring sticks are exactly the same length.

The scale units on the two sticks are different. Each stick is marked with equally spaced units.

The first stick starts at 0 and has 462 marks.

The second stick starts at 0 and has 385 marks.

When the sticks are lined up so the two zero marks are matched, the 462 mark and the 385 mark also match exactly.

As you scan the measuring sticks, starting at zero, what is the very next set of marks on the two sticks that match exactly?

What other marks match? Explain how you know.

Measuring Up

Level E

Arturo, Brennan, and Cameron each had broken measuring sticks. Each stick was marked with equally spaced units, but the units were not necessarily the same size from one stick to another.

The first number appearing on Arturo's stick was 13.

Brennan's stick started with 32.

The first number on Cameron's stick was 27.

They all held their sticks up next to the same chair and looked at the top number on the stick that correlated with the top of the chair. Arturo's stick read 93, Brennan's stick read 92, and Cameron's stick read 147.

Brennan measured the height of Cameron's stick using his stick in the same manner as he had the chair. It read 155. What reading did Arturo's measuring stick give for the height of Cameron's stick?

Determine a method for converting between the three different measuring sticks. If you measured something using Cameron's stick, what reading would you have on Arturo's and Brennan's sticks, and vice versa? Explain your solutions.

