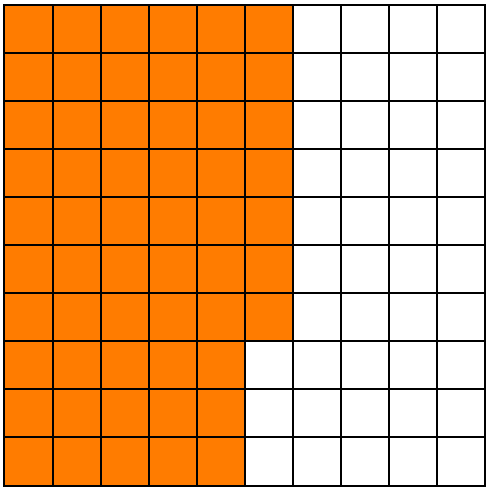
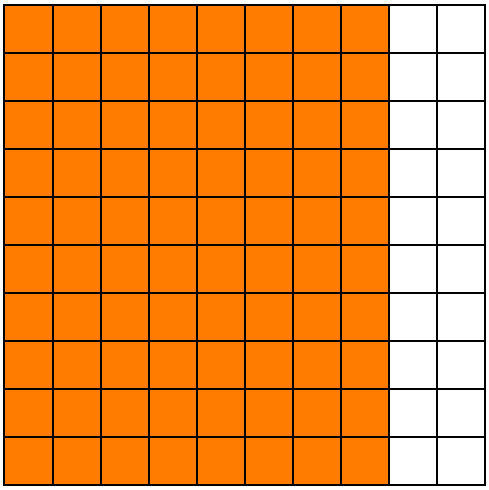
Comparing Decimals
Use What You've Learned
Answers and Explanations

1. Rob is the owner of a comic shop called Limited Edition Comic. Each week, Rob ships comics to customers. One week a customer ordered 12.57 pounds of special Avenger comics. Another customer ordered 12.8 pounds of special Spiderman comics. Which order would cost Rob more to ship? Represent the decimal part of each number by shading the following grids. Use this area model to explain which number is greater.

0.57



0.8



You could represent 12.57 with 12 fully shaded grids and the first grid shown above. You could represent 12.8 with 12 fully shaded grids and the second grid shown above. Both numbers have 12 fully shaded grids, but the partially shaded grid for 0.8 is greater than the partially shaded grid for 0.57, so 12.8 is greater than 12.57.

Show which number is greater using another strategy.

Compare the weights using fractions.

12.57 (twelve and fifty-seven hundredths) = $12\frac{57}{100}$

12.8 (twelve and eight tenths) = $12\frac{8}{10}$

Change to a common denominator. $12\frac{8}{10} = 12\frac{80}{100}$

$12\frac{80}{100}$ is greater than $12\frac{57}{100}$.

Compare the weights using place value.

12.57 is equivalent to 1 ten, 2 ones, 5 tenths, 7 hundredths.
12.8 is equivalent to 1 ten, 2 ones, 8 tenths.
8 tenths is more than 5 tenths, so 12.8 is greater than 12.57.

It will cost more to ship the order that weighs 12.8 pounds.

2. As Rob was leaving work on Tuesday, he noticed the rain gauge registered 0.9 inch of rain for the day. On Monday, his gauge showed 0.79 inch. On which day did it rain more? Show your reasoning by expressing the decimals as fractions.

$0.9 = \frac{9}{10}$ $0.79 = \frac{79}{100}$

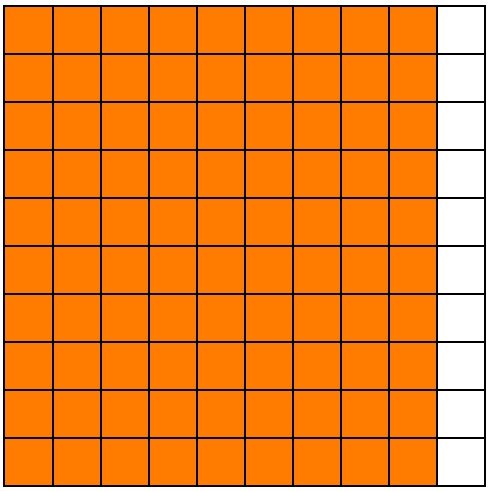
Change to a common denominator. $\frac{9}{10} = \frac{90}{100}$

$\frac{90}{100}$ is greater than $\frac{79}{100}$.

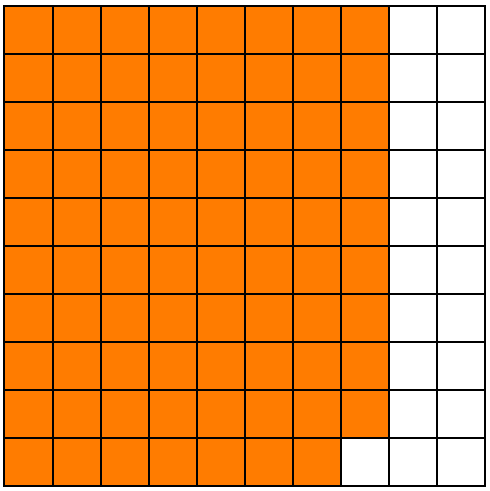
Show which number is greater using another strategy.

Compare the decimals using an area model.

0.9 (Tuesday)



0.79 (Monday)



The grids show 0.9 is greater than 0.79 because more of the grid is shaded.

Compare the decimals using place value.

0.9 is equivalent to 9 tenths.
0.79 is equivalent to 7 tenths, 9 hundredths.
9 tenths is greater than 7 tenths, so 0.9 is greater than 0.79.

It rained more on Tuesday than on Monday.

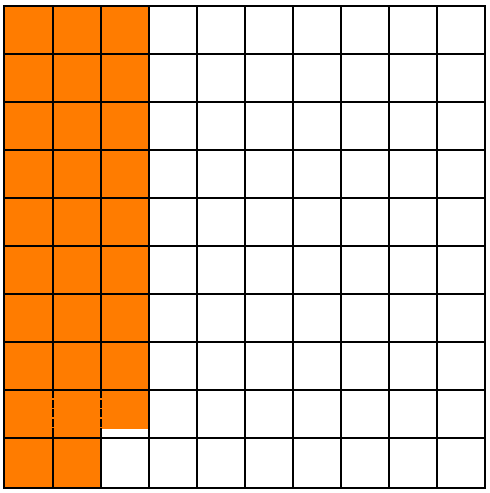
3. While working with small samples of ore, Gabe determined that the first sample weighed 0.288 grams. The second sample weighed 0.305 grams. Which sample weighed more? Show your reasoning by using place value.

0.288 is equivalent to 2 tenths, 8 hundredths, 8 thousands.
0.305 is equivalent to 3 tenths, 0 hundredths, 5 thousandths.
0.305 has more tenths, therefore, 0.305 is greater than 0.288.

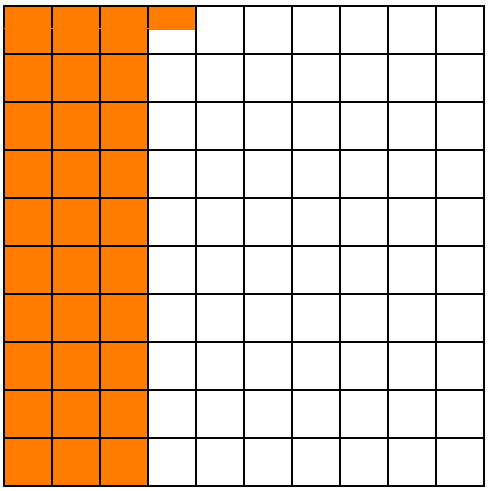
Show which number is greater using another strategy.

Compare the decimals using an area model.

0.288 (first sample)



0.305 (second sample)



The grids show 0.305 is greater than 0.288 because more of the grid is shaded.

Compare the decimals using fractions.

$0.288 = \frac{288}{1000}$.

$0.305 = \frac{305}{1000}$.

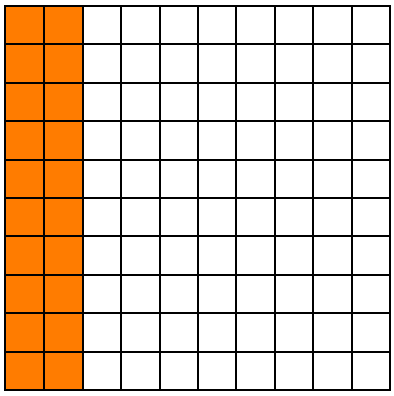
$\frac{305}{1000}$ is greater than $\frac{288}{1000}$.

The sample that weighed 0.305 grams is greater than the sample that weighed 0.288 grams.

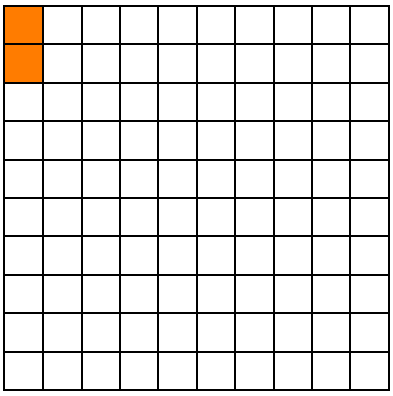
4. In the Beijing Olympics, the following times were recorded for Jamaican athletes in the 100-meter track and field competition: 10.2 seconds, 10.02 seconds, 10.16 seconds. If these three runners had competed in the same race, which would have been the winning time? Show your reasoning using whatever method you like. Why did you pick that particular method? (Note: The winning time will be the decimal with the smallest value.)

Using an area model to compare the decimal parts of each number.

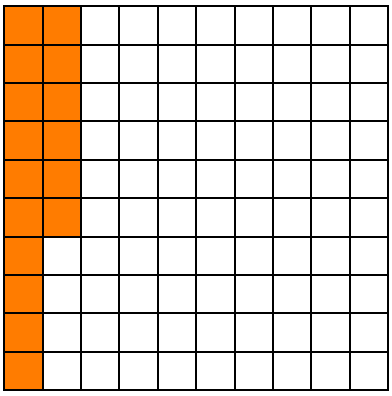
0.2



0.02



0.16



You could represent 10.2 with 10 fully shaded girds and the first grid shown above. You could represent 10.02 with 10 fully shaded girds and the second grid shown above. You could represent 10.16 with 10 fully shaded grids and the third grid shown above. All three numbers have 10 fully shaded grids, but the partially shaded grid for 0.02 is less than the partially shaded grids for 0.2 and 0.16, so 10.02 is the smallest number and the winning time.

Compare the times using fractions.

10.2 (ten and two tenths) = $10\frac{2}{10}$.

10.02 (ten and two hundredths) = $10\frac{2}{100}$.

10.16 (ten and sixteen hundredths) = $10\frac{16}{100}$.

Change to a common denominator. $10\frac{2}{10} = 10\frac{20}{100}$

$10\frac{2}{100}$ is less than $10\frac{16}{100}$ or $10\frac{20}{100}$.

Compare the times using place value.

10.2 is equivalent to 1 ten, 0 ones, 2 tenths.
10.02 is equivalent to 1 ten, 0 ones, 0 tenths, two hundredths.
10.16 is equivalent to 1 ten, 0 ones, 1 tenth, 6 hundredths.
0 tenths is less than 2 tenths or 1 tenth, so 10.02 is less than 10.2 or 10.16.

10.02 is the smallest number and the winning time.