

Comparing Decimals

Some students make the **mistake** of thinking of the digits to the right of the decimal point as a separate “number.” For example, a student might think that $0.04 < 0.016$ because 4 is less than 16, or that $3.11 = 3.011$. Not so. To compare two decimal numbers, we need to compare the same place value to the same place value (tenths to tenths, hundredths to hundredths, *etc.*), starting from the *biggest* units. A place value chart can help:

To compare 0.04 and 0.016, we start with the ONES:

Both 0.04 and 0.016 have zero ones.

Next, the TENTHS: They both have zero tenths.

Finally, the HUNDREDTHS:

0.04 has *four* hundredths and 0.016 has *one* hundredth.

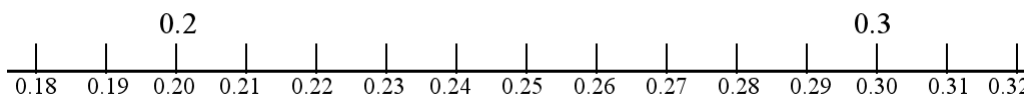
	0	.	0	4	
	0	.	0	1	6
T	O		te	hu	th

This place-by-place comparison shows that 0.04 is *more* than 0.016 ($0.04 > 0.016$) because, even though 0.016 has 6 thousandths, they don’t “count” because even 1 hundredth is more than 6 thousandths.

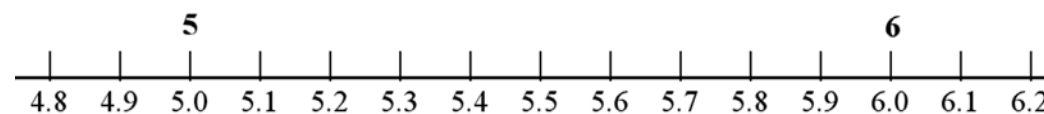
Trick! You can tag zeros to the end of the decimals to make them the “same length,” so they have the same amount of decimal digits. Then simply look at the decimal parts and compare them “apples to apples” (provided of course that the whole number parts are equal).

For example: Which is more, 6.007 or 6.02? To make both numbers have the same number of digits after the decimal point, tag a zero onto 6.02 to make it 6.020. Now we can see clearly, comparing 7 thousandths to 20 thousandths, that $6.007 < 6.020$.

1. a. Which is greater, 0.3 or 0.21?



- b. Mark 5.2 and 5.02 on the number line.



- c. Write these numbers in order. You can use the number line above to help.

5.01 5.3 5.03 4.8
5.24 4.9 4.92 5.1
5.15 5.5 5.19

2. Compare the numbers and write $<$, $=$, or $>$. You can use the place value charts to help.

a. $0.6 \square 0.006$

		.			
		.			
T	O		te	hu	th

b. $0.03 \square 0.3$

		.			
		.			
T	O		te	hu	th

c. $0.8 \square 0.008$

		.			
		.			
T	O		te	hu	th

d. $0.80 \square 0.800$

		.			
		.			
T	O		te	hu	th