Order and compare decimals and fractions Monday 18th May 2020

As we know, tenths are a whole divided into ten (10) equal parts, hundredths are a whole divided into one hundred (100) equal parts and thousandths are a whole divided into one thousand (1000) equal parts; each ten times small than the last.

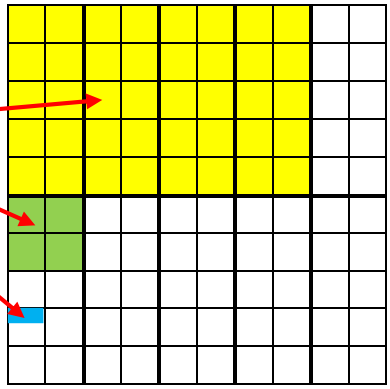
ones	decimal point	tenths	hundredths	thousandths
0	•	4		
0	•	0	4	
0	•	0	0	4

As an example;

four tenths ($\frac{4}{10}$) = 0.4

four hundredths ($\frac{4}{100}$) = 0.04

four thousandths ($\frac{4}{1000}$) = 0.004

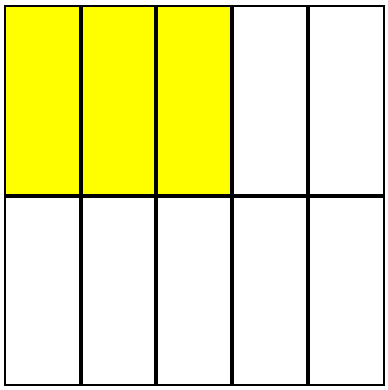


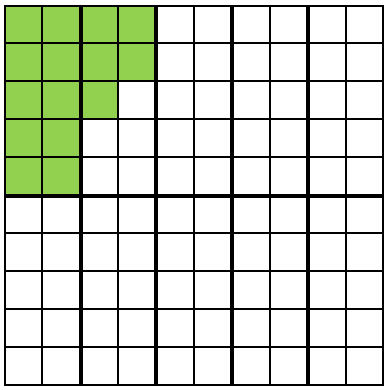
In the example above, the numerator (4) is the same in each fraction, so, in this case, the largest fraction is four tenths and the smallest is four thousandths. However, life gets a little less straightforward when the numerators are different. Let's have a look at some examples;

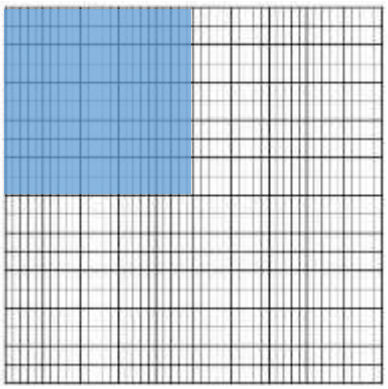
three tenths ($\frac{3}{10}$) = 0.3

fifteen hundredths ($\frac{15}{100}$) = 0.15

two hundred and fifty thousandths ($\frac{250}{1000}$) = 0.250 = 0.25







Although the numerator (3) in the tenths appears to be the 'smallest number', we can see from the shaded squares that, in fact, three tenths is the largest of the three fractions.

When written as decimals, we can see that fifteen hundredths contains only 1 tenth, and that two hundred and fifty thousandths contains only two tenths.

Over the page, there are some more examples and explanation to help you on your way…

Here are three fractions;

$\frac{6}{10}$ $\frac{45}{100}$ $\frac{75}{1000}$

The strategy I am going to use to compare these fractions is to turn them all in to decimals (I'll use a place value grid);

ones	decimal point	tenths	hundredths	thousandths
0	•	6		
0	•	4	5	
0	•	0	7	5

We can see that $\frac{6}{10}$ is the largest fraction because it has a 6 in the tenths column, whereas the others have a 4 or a zero. $\frac{75}{1000}$ is the smallest fraction because it has a zero in the tenths column, whereas the others have 6 or a 4.

It is important to remember what we said last week about the number of decimal places required for each denominator. Tenths – 1dp, hundredths – 2dp and thousandths – 3dp. In the case of $\frac{75}{1000}$, you will see that this has become 0.075 as a decimal, and <u>not 0.75</u> . 0.075 is no tenths, 7 hundredths and 5 thousandths (0.75 is 7 tenths and 5 hundredths).

An alternative strategy is to make them all thousandths. So, I can leave $\frac{75}{1000}$ as it is. To convert the hundredths into thousandths, I need to multiply both the numerator and denominator by 10, so $\frac{45}{100}$ becomes $\frac{450}{1000}$. Straight away we can see that $\frac{45}{100}$ ($\frac{450}{1000}$) is bigger than $\frac{75}{1000}$. What about $\frac{6}{10}$? To convert tenths into thousandths, I need to multiply by 100 (because 10 x 100 = 1000), so $\frac{6}{10}$ becomes $\frac{600}{1000}$, bigger than both $\frac{75}{1000}$ and $\frac{45}{100}$.

Leaving the fractions in the order they are above, I can use < or > to show their relative sizes;

$\frac{6}{10}$ > $\frac{45}{100}$ > $\frac{75}{1000}$. In order, smallest to largest; $\frac{75}{1000}$, $\frac{45}{100}$, $\frac{6}{10}$.

Your tasks are to place numbers in size order (smallest to largest, or vice versa – read the question carefully!) or to use the <, > or = symbols. The numbers will be presented either using digits, or in words, or a mixture of both.

If you're unsure how to proceed, your best strategy will be to write the numbers on to a place value grid.