**Comparing fractions**

Fractions are a way of representing parts of wholes. Comparing the size of fractions is not as straightforward as comparing numbers as there are several components like the numerator and denominator that come into play. Let’s find out various methods of comparing fractions and use them to solve problems.

**The numerator and denominator**

A fraction consists of a numerator and denominator. The denominator tells us how many parts the whole is split into, and the numerator tells us how many of those parts are in the quantity being represented. For example, if you scored 7/13 on a test, that means the test was broken down into a total of 13 points, of which you earned 7.

Now, what if you scored 8/15 on another test? Did you do better, equally well, or worse than the last test? If you simply look at the number of points scored, it might seem like you did better on the second test. However, you might argue that the second test had a larger number of points. This is why both the numerator and denominator of fractions play a role when comparing their sizes. Let’s look at different ways of comparing fractions and then come back to answer this question.

**Visual Inspection**

Representing fractions using bar models or fraction circles can be helpful. For example, the following fraction circles represent ¾ and ⅔ respectively, it is apparent that ¾ is a bigger portion of the whole.

You can also incorporate fraction walls like the one below to compare various fractions easily.



Notice how ⅔ on the bar model is slightly shorter than ¾ on the bar model.

While visual inspection is convenient, it doesn't always work. Think about the original question where we tried to compare the scores on two tests. It would be extremely difficult to draw fraction circles to represent 8/15 and 7/13 by hand. Thus, we need an alternative approach that is more versatile.

**Numerical approach**

If you think of fractions with identical denominators like 3/4 and 1/4, or 10/90 and 29/90 these pairs of fractions are easy to compare. We know for certain that 3 quarters are bigger than 1 quarter because we are evaluating similar-sized parts.

We can build upon this concept to help us compare fractions with different denominators. Let’s take 2/3 and 7/15, we can convert 2/3 into an equivalent fraction with a denominator of 15, by multiplying the numerator and denominator by 5. Hence 2/3 is equivalent to 10/15. This process is like taking the slices of thirds, and breaking it further down so that we have equally sized parts as the fraction being compared with.



Now we can conclude that 10 parts out of 15, is larger than 7 parts out of 15.

So now let’s try to answer the question posed at the beginning of this article. Is 17/25 a better score than 8/15.

We need to pick a common denominator for both fractions. The best choice is the LCM of 25 and 15, which is 75. So let’s convert each fraction to equivalent forms with a denominator of 75

17/25 = 51/75

8/15 = 48/75



Now we can inspect the numerators and conclude that 17/25 is larger than 8/15, hence scoring 17 out of 25 is a better achievement.