Just In Time Quick Check

Standard of Learning (SOL) 4.2a

Strand: Number and Number Sense

Standard of Learning (SOL) 4.2a

The student will compare and order fractions and mixed numbers, with and without models.

Grade Level Skills:

- Compare and order no more than four fractions having like and unlike denominators of 12 or less, using concrete and pictorial models.
- Use benchmarks (e.g., 0, $\frac{1}{2}$, or 1) to compare and order no more than four fractions having unlike denominators of 12 or less.
- Compare and order no more than four fractions with like denominators of 12 or less by comparing number of parts (numerators) (e.g., $\frac{1}{5} < \frac{3}{5}$).
- Compare and order no more than four fractions with like numerators and unlike denominators of 12 or less by comparing the size of the parts (e.g., $\frac{3}{9} < \frac{3}{5}$).
- Compare and order no more than four fractions (proper or improper), and/or mixed numbers, having denominators of 12 or less.
- Use the symbols >, <, =, and ≠ to compare fractions (proper or improper) and/or mixed numbers having denominators of 12 or less.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

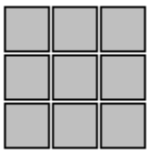
Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
  - 4.2ab - Fraction Strips: Comparing and Ordering Fractions (Word) / PDF Version
  - 4.2a - Circle Fractions: Comparing and Ordering with Benchmarks (Word) / PDF Version
  - 4.2a - Comparing Fractions: Developing Strategies (Word) / PDF Version
- VDOE Algebra Readiness Remediation Plans
  - Compare Fraction Strategies (Word) / PDF
- VDOE Word Wall Cards: Grade 4 (Word) | (PDF)
  - Fraction: Models for One-Half/One-Fourth
  - Fraction: Models for Two-Thirds
  - Fraction: Models for Five-Sixths
  - Fraction: Models for Three-Eighths
  - Numerator/Denominator
  - Proper Fraction
  - Improper Fraction
  - Mixed Number
- VDOE Instructional Videos for Teachers
  - Models for Teaching Fractions

Strand: Number and Number Sense
Supporting Resources continued: ● Desmos Activities: ○ Ordering Fractions on a Number Line ○ Ordering on the Number Line ○ Equivalent Fractions ○ Fraction Card Sort
Supporting and Prerequisite SOL: 4.1b, 4.2b, 3.2a, 3.2b, 3.2c, 2.4a, 2.4b, 2.4c

SOL 4.2a - Just in Time Quick Check

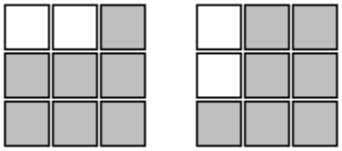
1. This model represents one-whole.



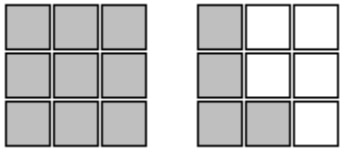
Circle two symbols that could be used to create a true statement to compare Model A and Model B.

>	<	=	≠

Model A

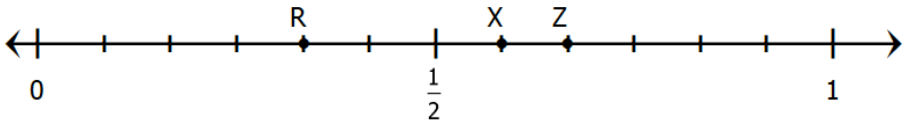


Model B



_____

2. Write each fraction on the number line at the point that best describes its location.



$\frac{2}{3}$	$\frac{2}{6}$	$\frac{7}{12}$

3. Use the symbols <, >, or = to create a true number sentence.

$\frac{6}{8}$ ____ $\frac{4}{8}$ $\frac{7}{12}$ ____ $\frac{9}{12}$ $\frac{5}{5}$ ____ $\frac{2}{5}$

4. Order these fractions from least to greatest.

$\frac{2}{7}$ $\frac{2}{3}$ $\frac{2}{6}$ $\frac{2}{2}$

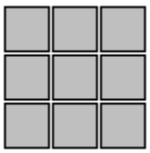
5. Order these fractions from greatest to least.

$\frac{8}{6}$ $1\frac{3}{4}$ $\frac{7}{8}$ $1\frac{6}{12}$

SOL 4.2a - Just in Time Quick Check Teacher Notes

Common Errors/Misconceptions and their Possible Indications

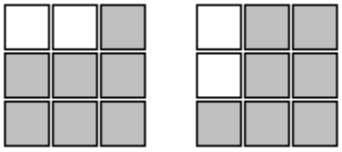
1. This model represents one-whole.



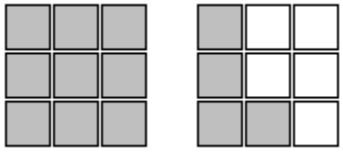
Circle two symbols that could be used to create a true statement to compare Model A and Model B.

>	<	=	≠

Model A



Model B



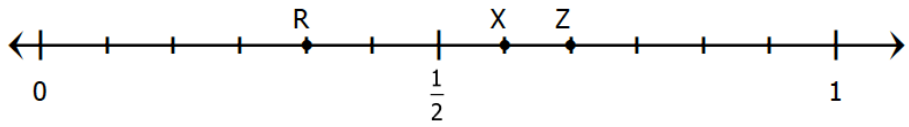
_____

A common error for some students is thinking that the model that has a whole completely shaded is greater than the model that has 2 partial wholes shaded. In this example, students making this error would state that Model B is greater than Model A because Model B has one whole completely shaded.

These students may benefit from practice opportunities using models similar to the ones shown. Students should be encouraged to model a single fraction (or mixed number) in multiple ways using the same model. This allows students to see that there are multiple ways to represent the same fraction and helps them focus on the importance of thinking of the total number of fractional parts rather than being distracted by the model that has a whole shaded.

Another possible strategy is to encourage students to count all of the fractional parts, record the fraction and then model the fractions on a number line. This may provide a visual image that allows students to easily compare the fractions.

2. Write each fraction on the number line at the point that best describes its location.



$\frac{2}{3}$ $\frac{2}{6}$ $\frac{7}{12}$

A common error for some students is using whole number reasoning when ordering fractions. Students making this error may order the denominators from least to greatest (or order the numerators from least to greatest) rather than thinking of the value of the fractions.

Provide students with practice opportunities to use fraction bars to create a visual representation of the fractions they are comparing and then have students compare the length of the half and whole from the same fraction bar set. Transfer what is learned with fraction bars to using benchmark thinking to place fractions on a number line. Modeling and student discourse should be a focus throughout the transition from the concrete bars to the representational number line.

These students may also benefit from modeling several fractions with fraction bars and then sorting them into groups based on benchmark thinking (Close to 0, Close to One-Half, Close to a Whole). After sorting with fraction bars, write the fractions for each group, then encourage students to look for patterns in each group. As students explore sorting into benchmark groups, they should begin to notice that fractions that are close to 0 tend to have numerators and denominators that are relatively far apart from each other (ex: 1 and 9 in $\frac{1}{9}$). Fractions that are close to one-half tend to have numerators that are about half of the denominator (ex: in $\frac{3}{6}$, 3 is half of 6), and fractions that are close to a whole tend to have numerators and denominators that are fairly close to each other (ex; in $\frac{11}{12}$, 11 and 12 are numbers that are very close to each other in counting order).

3. Use the symbols <, >, or = to create a true number sentence.

$\frac{6}{8}$ ____ $\frac{4}{8}$ $\frac{7}{12}$ ____ $\frac{9}{12}$ $\frac{5}{5}$ ____ $\frac{2}{5}$

A common error for some students in these types of problems is to simplify all of the fractions, rather than recognizing that the fractions to compare have like denominators. Another common error occurs when students apply the idea of "the larger the denominator, the smaller the pieces" to numerators. Students making this error will look at numerators and think fractions with larger numerators are smaller fractions.

Students making both types of errors may benefit from experiences using concrete materials such as fraction bars or fraction circles to build and compare fractions with like denominators and then writing these same fractions with a comparison symbol. As students build and then write these fractions, they should begin developing visual connections that will help them make the comparisons without models. They should also begin

to notice that they can apply whole number thinking to the numerators when comparing fractions with like denominators.

These students also may benefit from placing fractions with like denominators on a number line. After several experiences using number lines to compare these fractions, students should begin to notice that fractions with larger numerators are always farther to the right on the number line when comparing fractions with like denominators.

4. Order these fractions from least to greatest.

$\frac{2}{7}$ $\frac{2}{3}$ $\frac{2}{6}$ $\frac{2}{2}$

Students often don't notice when the fractions they are comparing have like numerators. As a result, they don't think that they can compare the size of the denominators to help them order fractions. Another common error is using whole number thinking to compare the denominators rather than remembering that fractional pieces get smaller as the denominator gets larger.

Students making these errors may benefit from using concrete materials such as fraction strips to compare and order fractions with like numerators. As they explore these fractions, they should begin realizing the role of the denominator when comparing fractions with like numerators and start focusing on the size of the fractional pieces.

Another strategy that may benefit theses students is using benchmarks to order fractions with like numerators. In this example, benchmark thinking would show that $\frac{2}{7}$ *is close to 0,* $\frac{2}{3}$ *is a little more than one-half,* $\frac{2}{6}$ *is a little less than a half, and* $\frac{2}{2}$ *is a whole.*

5. Order these fractions from greatest to least.

$\frac{8}{6}$ $1\frac{3}{4}$ $\frac{7}{8}$ $1\frac{6}{12}$

A common error for some students is focusing on the fractional part of mixed numbers, forgetting to include the whole number when ordering.

Students making this error may benefit from using concrete materials such as fraction strips to model these fractions. As they model the fractions, it may be helpful to encourage students to sort the fractions into less than a whole and more than a whole. Students can then focus on ordering the fractions that are less than a whole and then ordering the fractions that are greater than a whole.

Additionally, as students model improper fractions with concrete materials, they often begin to see the improper fractions as mixed numbers, which may help with ordering. Be intentional with the numbers you present to students. Multiple practice opportunities constructing and ordering improper fractions will help students recognize that fractions with a numerator digit that is greater than the denominator digit will have a value greater than one whole.

Another strategy that may be helpful for these students is to place the fractions on a number line model. As students work to place fractions on number lines, they can be encouraged to use benchmarks such as 0, $\frac{1}{2}$, 1, $1\frac{1}{2}$, and 2.