

# MATH

## I. Fractions

A *fraction* is a number that represents a whole number that has been divided into equal parts.

A *common, vulgar, or simple* fraction consists of an integer numerator displayed above a line (or before a slash), and a non-zero integer denominator, displayed below (or after) that line. The numerator represents a number of equal parts; and the denominator, which cannot be zero, indicates how many of those parts make up a unit or a whole.

Fractions can also be used to represent ratios and division.

### A. Students may have Difficulty in the Following Areas

- Believing that fractions' numerators and denominators can be treated as separate whole numbers.
- Failing to find a common denominator when adding or subtracting fractions with unlike denominators.
- Believing that only whole numbers need to be manipulated in computations with fractions greater than one.
- Leaving the denominator unchanged in fraction addition and multiplication problems.
- Failing to understand the invert-and-multiply procedure for solving fraction division problems.
- Failing to understand reciprocal vs. invert-and-multiply procedures for solving fraction problems.

*What Works Clearinghouse Institute of Education Sciences*

### B. Assessment Tools

1. Use **Formative Assessment Strategies** that focuses on accuracy, efficiency, flexibility, and appropriate strategy selection:
  - **Interviews** – Students explain what they know about a topic (e.g. How did you figure this out?)
  - **Observations** – Tracking the strategies the students use (e.g. Students tell their peers both the answer to a math fact and how they solved it.)
  - **Journaling** – The students explain what they know about a topic through writing prompts (e.g. If your friend did not know the answer to  $4 + 5$ , how could he figure it out?)

	<ul style="list-style-type: none"> <li>• <b>Quizzes</b> – Questions are used to see if students know foundational facts. (e.g. Solve these problems and tell how you solved them.)</li> <li>2. <b>Error Analysis:</b> Determine whether errors in a student’s computation are based on systematic misunderstanding of processes or procedures</li> <li>3. <b>Computation Fluency</b> using Curriculum Based Measurement tools from Intervention Central: <a href="http://www.jimwrightonline.com/mixed.../5_CBA_Math_Computation_Directions.pdf">www.jimwrightonline.com/mixed.../5_CBA_Math_Computation_Directions.pdf</a></li> </ul>
<b>C.</b>	<b>Progress Monitoring Tools</b>
	<ul style="list-style-type: none"> <li>• Mastery Connect</li> <li>• Jordan School District grade level Benchmark Assessments</li> <li>• How To: Assess Mastery of Math Facts With CBM: Computation Fluency <a href="http://www.jimwrightonline.com/mixed.../5_CBA_Math_Computation_Directions.pdf">www.jimwrightonline.com/mixed.../5_CBA_Math_Computation_Directions.pdf</a></li> </ul>
<b>D.</b>	<b>Research-Based Interventions</b>
	<ol style="list-style-type: none"> <li>1. Manipulatives</li> <li>2. Number Lines</li> <li>3. Lap Fractions – Adding and Subtracting Fractions</li> <li>4. Cue Cards – Solving Fraction Problems</li> </ol>
<b>E.</b>	<b>Research Based Teaching Strategies</b>
	<ol style="list-style-type: none"> <li>1. Developing Effective Fractions Instruction for Kindergarten Through 8<sup>th</sup> Grade, U.S. Department of Education <a href="https://ies.ed.gov/ncee/wwc/practiceguide/15">https://ies.ed.gov/ncee/wwc/practiceguide/15</a></li> <li>2. Assist Students Struggling with Mathematics, U.S. Department of Education, <a href="https://ies.ed.gov/ncee/wwc/PracticeGuide/2">https://ies.ed.gov/ncee/wwc/PracticeGuide/2</a></li> <li>3. What Works in Math, U.S. Department of Education, <a href="https://ies.ed.gov/ncee/wwc/Math/">https://ies.ed.gov/ncee/wwc/Math/</a></li> <li>4. Linking CRA: Concrete, Representational, Abstract</li> </ol>

<b>F.</b>	<b>Additional Intervention Materials</b>
	<p>1. Intervention Central: <a href="http://www.interventioncentral.org/">http://www.interventioncentral.org/</a></p>
<b>G.</b>	<b>Readings and Reference Materials</b>
	<ul style="list-style-type: none"> <li>• Required Fluencies in K-6</li> <li>• Jordan School District Elementary Math website: <a href="http://elemmath.jordandistrict.org/">http://elemmath.jordandistrict.org/</a></li> <li>• Jordan School District Secondary Math website: <a href="http://secondarymath.jordandistrict.org/">http://secondarymath.jordandistrict.org/</a></li> </ul>
<b>H.</b>	<b>EL Resources</b>
	<p><b>PD Bites - A Buffet of Learning (WIDA, SIOP, Engagement, Culturally Responsive Teaching)</b></p> <p>"On Demand" Professional Development Modules designed to help you help all of your students, including your culturally and linguistically diverse students, find academic success in your classroom.</p> <p>These modules are located in Canvas and can be accessed by following the links below.</p> <p>Modules can be completed at your own pace and on your own time.</p> <p>Topics include: WIDA, SIOP, Academic Language, Culturally Responsive Teaching, Engagement, etc.</p> <p><i>To get started click on the appropriate link below:</i></p> <ul style="list-style-type: none"> <li>• <i>Already have a JordanPD Canvas account? Click here to enroll: <a href="#">PD Bites on Canvas</a></i></li> <li>• <i>Need to create a JordanPD Canvas account? <a href="#">Request an invitation</a> - Put "PD Bites" in the subject line. (Once you receive the invitation, you will need to create an account.)</i></li> </ul>