Introduction

The resources found here help students practice prior skills that will promote understanding of what they are learning now, connect ideas to other areas, or get a different perspective on ideas they are currently learning. It does not replace attending class regularly, working hard, or a quality teacher. It can provide extra help when a student is stuck on a homework problem or struggling with a math concept. The skills covered in this guide are like the foundation skills of an athlete. A basketball player must know how to dribble, pass, and shoot but these skills are not everything that a player needs to win a game. A math student must know the basic skills but must also learn to think and communicate mathematically, to solve problems, and apply what has been learned to new concepts.

How To Use This Guide

6th Grade

- Which grade level the resources are for.

<table>
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<tr>
<th>Domain</th>
<th>Competencies or Big Ideas</th>
<th>Videos &amp; Resource Links</th>
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<tbody>
<tr>
<td>Number System</td>
<td>BIG IDEA # 1: Any rational number can be represented in infinitely many equivalent symbolic forms.</td>
<td>Fraction Introduction&lt;br&gt;Identifying Parts of a Fraction&lt;br&gt;Recognizing Fractions&lt;br&gt;Fraction Numerator and Denominator&lt;br&gt;Plotting Fractions on the Number Line&lt;br&gt;Fraction Word Problem 1</td>
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- The broad category of the math.
- Use this category to narrow down where to look for a resource.
- A list of the most important concepts and skills in the Domain.
- Use this category to find the exact skill or concept that is being learned.
- These are links to internet resources that focus on the important skills and concepts.
- Control-Left Click on any link to open in your web browser.
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<tr>
<th>Domain</th>
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| Rational Numbers    | BIG IDEA # 1: Any rational number can be represented in infinitely many equivalent symbolic forms. | Fraction Introduction  
Recognizing Fractions  
Fraction Numerator and Denominator  
Plotting Fractions on the Number Line  
Fraction Word Problem 1  
Decimal Place Value  
Comparing Decimals  
Decimals on a Number Line  
Points on a Number Line  
Percents  
Percents 2  
Finding Percents  
Representing a Fraction as a Decimal, Percent, and Fraction  
Converting Decimals to Percents 1  
Converting Decimals to Percents 2 |
|                     | BIG IDEA# 2: Computation with rational numbers is an extension of computation with whole numbers but introduces some new ideas and processes. | Adding Fractions with Like Denominators  
Subtracting Fractions  
Adding and Subtracting Fractions  
Adding and Subtracting Fractions with Unlike Denominators  
Subtracting Fractions with Unlike Denominators  
Adding Decimals  
Adding Decimals 2  
Adding Decimals 3  
Subtracting Decimals  
Adding and Subtracting Decimal Word Problems  
Subtracting Decimal Word Problems  
Growing by a Percent  
Solving Percent Problems  
Solving Percent Problems 2  
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Adding Integers With Different Signs  
Adding Positive and Negative Fractions  
Multiplying Positive and Negative Fractions  
Dividing Positive and Negative Fractions  
Adding and Subtracting Positive and Negative Decimals  
Multiplying and Dividing Negative Decimals |
### Ratios Rates and Proportions

| BIG IDEA # 1: Forming a ratio as a measure of a real-world attribute involves isolating that attribute from other attributes and understanding the effect of changing each quantity on the attribute of interest. | Introduction to Ratios  
Describing Ratios  
Ratio Word Problem 1  
Word Problem 2 |
| --- | --- |
| BIG IDEA # 2: A number of mathematical connections link ratios and fractions. | Ratios as Fractions in Simplest Terms  
Simplifying Rates ad Ratios |
| BIG IDEA # 3: Ratios can be meaningfully reinterpreted as quotients. | Proportion Validity |
| BIG IDEA # 4: A proportion is a relationship of equality between two ratios. In a proportion, the ratio of two quantities remains constant as the corresponding values of the quantities change. | Solving Ratio Problems with Table Exercises  
Solving Ratio Problems with Table Exercises 2  
Solving Ratio Problems with Table Exercises 3 |
| BIG IDEA # 5: Several ways of reasoning, all grounded in sense making, can be generalized into algorithms for solving proportion problems. | Usain Bolt's Average Speed  
Rates and Equations 1  
Rates and Equations 2  
Rates and Equations 3 |

### Expressions and Equations

| BIG IDEA # 1: In working with functions, several important types of patterns or relationships might be observed among quantities that vary in relationship to each other; recursive patterns, co-variational relationships, and correspondence rules. | What is a function  
Difference Between Equations and Functions  
Function Example  
Functional Relationships 1 |
| --- | --- |
| BIG IDEA # 2: Functions can be represented in a variety of forms, including words, symbols, tables, and graphs. | Graphical Representation of Functions  
Constructing a Function  
Function Notation 1  
Function Notation 2  
Function Notation 3  
Function and Table 2 |
<p>| BIG IDEA # 3: Different types of functions behave in fundamentally different ways, and analyzing change, or variation, in function behavior is one way to capture this difference. | Functions as Graphs |</p>
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<th>Geometry and Measurement</th>
<th>BIG IDEA # 1: Some attributes of objects are measurable and can be quantified using unit amounts.</th>
<th>Perimeter and Area Basics Area and Perimeter Perimeter and Area of Triangles Triangle Area Proof Area of Equilateral Triangle Radius, Diameter and Circumference Area of Circle Quadrilaterals Area of Parallelogram Perimeter of Polygon Perimeter and Area of a Non-Standard Polygon Solid Geometry Volume Cylinder Volume and Surface Area Volume of a Sphere Solid Geometry</th>
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<tr>
<td>Statistics and Probability</td>
<td>BIG IDEA # 1: Data can be represented visually using tables, charts, and graphs. The type of data determines the best choice of visual representation.</td>
<td>Box and Whisker Plot Reading Bar Graphs Histograms Line Graphs Pie Graph</td>
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<td>BIG IDEA # 2: There are special numerical measures that describe the center and spread of numerical data sets.</td>
<td>Mean, Median, and Mode Finding Mean, Median, and Mode Exploring Mean, Median, and Mode Average Word Problem</td>
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<td>BIG IDEA # 3: The chance of an event occurring can be described numerically by a number between 0 and 1 inclusive and used to make predictions about other events.</td>
<td>Basic Probability Probability Described as Between 0 and 1</td>
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