5th Grade Math Resource Library

By: Christine Sherwood

My goal of this online resource library is to provide a variety of resources to my students and colleagues in the 5th grade. Students have not utilized technology in my math class as much as they do in other content areas. I am trying to increase their use of technology to help enhance their learning. My focus is on Number and Operations and Geometry. Both of these strands are a significant part of our curriculum. I believe these online resources will help provide my students with a visual as well as practice in a fun way.

Fraction Model	
Which standard? • **Understand Numbers** • Understand Operations • Compute Fluently	*Rationale*: This Illuminations Fraction Model allows students to explore fractions, mixed numbers, decimals, and percents. Students can gain an understanding that each of these representations are related to one another. In addition, it allowed students to view multiple visual representations, which include length, area, region, and set models.
What mathematical content is being learned (or intended to be learned)? • **Whole numbers** • **Place value** • **Fractions** • Addition • Subtraction • Multiplication • Division	*Rationale*: This technology is clearly focused on fractions. It allows students to explore different values of fractions while including a visual representation. It also provides the equivalent mixed number, decimal, and percent which allows students to learn more about place value and whole numbers.
Is the focus on instrumental or relational understanding? • instrumental understanding (carrying out procedures) • **relational understanding** (understanding the meaning of mathematical words and symbols; connections among ideas)	*Rationale*: The primary focus of this technology is relational understanding. Students are able to make connections between fractions and a visual representation of them. They are also able see the relationship between different visual models. This allows students to gain a deeper understanding of fractions.
What role does technology play?	*Response*: This technology gives students a visual

	representation of fractions. In addition, it allows students to make connections between fractions, mixed numbers, decimals, and percents.
What instructional function(s) does the resource serve? • practice (i.e., practicing skills or knowledge already learned) • direct instruction/explanation (i.e., explaining or presenting content to students) • **learning through exploration** (i.e., provides context in which students can see new relationships; come to new understandings)	*Rationale*: It provides students with the opportunity to explore and manipulate numbers so students can come to a new understanding of fractions and the relationships among mixed numbers, decimals, and percents. This technology does not go through direct instruction or give a step by step explanation. It is also not practicing a set skill already learned.
What kinds of representations of the mathematics are used? • **symbolic** (i.e., numerals, symbols) • graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • **visual/spatial** (e.g., circles or squares with lines to show fractions) • **concrete or real-world objects** (e.g., images of base-10 blocks, puppies, or jars) • dynamic (mathematical ideas represented through motion or sound)	*Rationale*: There are symbolic representations since it shows how fractions, mixed numbers, decimals, and percents are equivalent. It also shows a variety of visual/spatial representations- length, area, region, and set models. With the set model students are given the choice to choose different objects that are concrete or real-world objects.

Math Baseball	
Which standard? • Understand Numbers • Understand Operations • **Compute Fluently**	*Rationale*: This game allows students to practice this computational skill which helps them compute fluently.
What mathematical content is being learned (or intended to be learned)?	*Rationale*: This game allows you to choose they type of skill you want to practice. It gives you the options to

• **Whole numbers** • Place value • Fractions • **Addition** • **Subtraction** • **Multiplication** • **Division**	choose addition, subtraction, multiplication, division, or all of the above. These computations are working with whole numbers.
Is the focus on instrumental or relational understanding? • **instrumental understanding** (carrying out procedures) • relational understanding (understanding the meaning of mathematical words and symbols; connections among ideas)	*Rationale*: This game's focus is on instrumental understanding. For each of the questions, students are carrying out basic procedures. There is no exploration for a deeper understanding of the concepts.
What role does technology play?	*Response*: The role of this technology is to give students additional practice to gain computational fluency in addition, subtraction, multiplication, division, or all of the above.
What instructional function(s) does the resource serve? • **practice** (i.e., practicing skills or knowledge already learned) • direct instruction/explanation (i.e., explaining or presenting content to students) • learning through exploration (i.e., provides context in which students can see new relationships; come to new understandings)	*Rationale*: This resource serves as practice to skills already learned.
What kinds of representations of the mathematics are used?	*Rationale*: There is only symbolic representation in this game.

• **symbolic** (i.e., numerals, symbols) • graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • visual/spatial (e.g., circles or squares with lines to show fractions) • concrete or real-world objects (e.g., images of base-10 blocks, puppies, or jars) • dynamic (mathematical ideas represented through motion or sound)	A numeric problem appears and the students are to answer.

Dividing Fractions by Fractions (text with practice)	
Which standard? • **Understand Numbers** • **Understand Operations** • **Compute Fluently**	*Rationale*: Students are working on understanding numbers and operations and on computing fluently. Students are learning the steps of how to divide fractions which is being able to understand operations. Students are also gaining an understanding of numbers by learning how to simplify the fraction. Lastly, there is a practice section that helps students compute fluently.
What mathematical content is being learned (or intended to be learned)? • Whole numbers • Place value • **Fractions** • Addition • Subtraction • **Multiplication** • **Division**	*Rationale*: This site is teaching students how to divide fractions. Multiplication plays a significant role in dividing fractions. In addition, division is necessary when one needs to simplify a fraction. Students will divide the numerator and denominator by the same number to get a simplified fraction.
Is the focus on instrumental or relational understanding? • **instrumental understanding** (carrying out procedures)	*Rationale*: This site focuses on instrumental understanding. It teaches students the procedures, but does not give students the opportunity to explore what they are

• relational understanding (understanding the meaning of mathematical words and symbols; connections among ideas)	doing on a deeper level. It does not explain why these procedures work.
What role does technology play?	*Response*: The role of this technology is to teach students the procedures for dividing fractions. In addition, it gives them additional practice for students to increase their computational fluency.
What instructional function(s) does the resource serve? • **practice** (i.e., practicing skills or knowledge already learned) • **direct instruction/explanation** (i.e., explaining or presenting content to students) • learning through exploration (i.e., provides context in which students can see new relationships; come to new understandings)	*Rationale*: This site begins with direct instruction. It gives students step by step procedures for how to divide fractions. Then it allows students additional practice. It records the number correct and incorrect as well as the percent correct.
What kinds of representations of the mathematics are used? • **symbolic** (i.e., numerals, symbols) • graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • visual/spatial (e.g., circles or squares with lines to show fractions) • concrete or real-world objects (e.g., images of base-10 blocks, puppies, or jars) • dynamic (mathematical ideas represented through motion or sound)	*Rationale*: This site only uses symbolic numbers to represent how to divide fractions.

Match the Fraction

Which standard? • **Understand Numbers** • Understand Operations • Compute Fluently	*Rationale*: This technology is allowing students to gain an understanding of numbers. Students are learning how a number line and fractions are related. In addition, they learn the relationship between the number of slices and the denominator.
What mathematical content is being learned (or intended to be learned)? • Whole numbers • **Place value** • **Fractions** • Addition • Subtraction • Multiplication • Division	*Rationale*: Students are learning about fractions. They are learning that the whole is divided equally by the number in the denominator. Students are also learning about place value. Students can visually see how big or small the fraction is on the number line.
Is the focus on instrumental or relational understanding? • instrumental understanding (carrying out procedures) • **relational understanding** (understanding the meaning of mathematical words and symbols; connections among ideas)	*Rationale*: This technology focuses on relational understanding since it gives students a deeper understanding of fractions. Students can visually see the fraction on the number line. In addition, they making connections between the denominator and the number of slice the whole/number line is divided into.
What role does technology play?	*Response*: This technology helps students gain a deeper understanding of fractions. It allows students to see a visual of fractions. The number lines give students an idea of the size of different fractions.
What instructional function(s) does the resource serve? • practice (i.e., practicing skills or knowledge already learned) • direct instruction/explanation (i.e.,	*Rationale*: Students are coming to understand the size of fractions by being able to explore fractions with a number line. This visual representation gives them a deeper understanding.

explaining or presenting content to students) • **learning through exploration** (i.e., provides context in which students can see new relationships; come to new understandings)	
What kinds of representations of the mathematics are used? • **symbolic** (i.e., numerals, symbols) • graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • **visual/spatial** (e.g., circles or squares with lines to show fractions) • concrete or real-world objects (e.g., images of base-10 blocks, puppies, or jars) • **dynamic** (mathematical ideas represented through motion or sound)	*Rationale*: This site allows students to change the number line depending on the denominator. It then has the student's click where on the number line that fraction would be represented. This gives students a visual and dynamic representation.

Free Ride	
Which standard? • **Understand Numbers** • **Understand Operations** • **Compute Fluently**	*Rationale*: This site allows students to manipulate fractions, ratios, and see how it applies to the motion of a bike.
What mathematical content is being learned (or intended to be learned)? • **Whole numbers** • Place value • **Fractions**	*Rationale*: Students are learning to work with fractions and ratios. They are also seeing the distance they move and how much further they must move to complete the route.

• **Addition** • **Subtraction** • Multiplication • Division	
Is the focus on instrumental or relational understanding? • instrumental understanding (carrying out procedures) • **relational understanding** (understanding the meaning of mathematical words and symbols; connections among ideas)	*Rationale*: Students are gaining a relational understanding of ratios and fractions. This technology allows them to manipulate and get a visual of how the ratios affect the distance the bike travels.
What role does technology play?	*Response*: This technology allows students to manipulate and gain a visual representation of ratios and fractions. In addition, it gives students a real-world application of these skills.
What instructional function(s) does the resource serve? • **practice** (i.e., practicing skills or knowledge already learned) • direct instruction/explanation (i.e., explaining or presenting content to students) • **learning through exploration** (i.e., provides context in which students can see new relationships; come to new understandings)	*Rationale*: This technology allows students to learn through exploration. The program does not give a step by step explanation of how to complete this task. It allows students to explore these concepts and see what happens. Students get to manipulate the size of the gears and see how that affects the distance they travel.
What kinds of representations of the mathematics are used? • **symbolic** (i.e., numerals, symbols) • graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • **visual/spatial** (e.g., circles or squares with lines to show fractions) • **concrete or real-world objects** (e.g.,	*Rationale:* This site allows students to work with a variety of numbers (ratios, fractions, and mixed numbers). It gives students a visual by having a number line in which the bike is traveling. It also shows real-world objects and applies these concepts to a real life situation. Lastly, the movement of the gears and bike gives a dynamic representation.

images of base-10 blocks, puppies, or jars) • **dynamic** (mathematical ideas represented through motion or sound)	

Area Tool

http://illuminations.nctm.org/ActivityDetail.aspx?ID=108

Which standard in Geometry? • **Analyze Characteristics** • Specify Locations • Apply Transformations • **Use Visualization**	*Rationale*: This Illuminations Area Tool allows students to explore the area of trapezoids, parallelograms, and triangles. Students can gain an understanding that the base and height are involved in determining the area of a figure. It allows student to manipulate the base and height of the figures in order to see how the numbers change the area. Students may choose to make their base and height whole numbers or decimals. This allows students to increase the difficulty of the areas they are exploring. Users can save to the table to the left to compare different areas that they make. This technology allows students to explore and draw conclusions.
What mathematical content is being learned (or intended to be learned)? • **Shapes** • **Geometric Relationships** • Transformational Geometry • Coordinate Geometry • **Constructions** • Locus • **Informal Proofs** • Formal Proofs	*Rationale*: Students are learning about trapezoids, parallelograms, and triangles. It allows students to explore these different polygons while including a visual representation and allowing them to change their size. Therefore, students are learning about shapes and construction. This technology is clearly focused on area. By using this model, students can change the lengths of the sides of the figures. This allows students to explore a variety of examples and choose numbers they feel comfortable multiplying. Students can draw conclusions about how to find the area of the figure by looking for patterns in the table. In addition, this applet encourages students to think about how the length of the midline is involved in the area of a trapezoid formula. It also asks users to think about the ways the formula of a parallelogram and triangle is related to the formula for finding the area of a rectangle. Students are analyzing geometric relationships as well have informally proving their ideas about these relationships by using this tool including the data table.
Is the focus on instrumental or relational	*Rationale*: The primary focus of this technology is

understanding? • instrumental understanding (carrying out procedures) **relational understanding** (understanding the meaning of mathematical words and symbols; connections among ideas)	relational understanding through exploration. Students are able to determine the relationship between the base and height of trapezoids, parallelograms, and triangles in order to find the area. It allows the students to manipulate the lengths of the sides and visualize its shape. When a user changes the length of a side the area also changes, which helps the user build an understanding of area.
What role does technology play?	*Response*: This applet would be a great extension activity in the geometry unit that covers area. The students should have some understanding of area. They should at least be able to determine the area of a rectangle. This technology allows students to manipulate, explore, and change the dimensions of the shapes. Students can choose the numbers they want to explore. Students could also use this tool as a way to check their work. Therefore, one of the affordances of this tool is representation.
What instructional function(s) does the resource serve? • **practice** (i.e., practicing skills or knowledge already learned) • direct instruction/explanation (i.e., explaining or presenting content to students) **learning through exploration** (i.e., provides context in which students can see new relationships; come to new understandings)	*Rationale*: This applet allows students to learn through exploration. Students can manipulate the size of the shape. Through exploration the students will derive the formula of the area of a triangle, parallelogram, and trapezoid. Students will also try to understand how the area of a parallelogram and triangle is each related to finding the area of a rectangle. Also through exploring the concept of area, students will gain additional practice with multiplication and finding the area.
What kinds of representations of the mathematics are used? • **symbolic** (i.e., numerals, symbols) • graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • **visual/spatial** (e.g., circles or squares with lines to show fractions) • concrete or real-world objects (e.g., images of base-10 blocks, puppies, or jars) **dynamic**(mathematical ideas represented through motion or sound)	*Rationale*: This applet uses symbolic representation since it states the measurement of the base and height of the figure as well as the area. It also uses visual/spatial by showing a picture of the shape in relation to the given dimensions. Lastly, this technology is dynamic since the user can move and manipulate the vertices to change the dimensions of the shape. When you move the vertex, a beep sounds.

Angle Sums http://illuminations.nctm.org/activitydetail.aspx?id=9	
Which standard in Geometry? • **Analyze Characteristics** • Specify Locations • Apply Transformations • **Use Visualization**	This Illuminations Angle Sums, allows students to examine the sum of interior angles of triangles, quadrilaterals, pentagons, hexagons, heptagons and octagons. It provides students with visual of the shape and a chart that records the measurement of each angle. The angles are numbered as well as color coded.
What mathematical content is being learned (or intended to be learned)? • **Shapes** • **Geometric Relationships** • Transformational Geometry • Coordinate Geometry • Constructions • Locus • Informal Proofs • Formal Proofs	Students are learning about the following polygons: triangles, quadrilaterals, pentagons, hexagons, heptagons and octagons. They are exploring the relationship between the number of sides of a polygon and the sum of its interior angles.
Is the focus on instrumental or relational understanding? • instrumental understanding (carrying out procedures) • **relational understanding** (understanding the meaning of mathematical words and symbols; connections among ideas)	This applet is focused on relational understanding. It provides visuals of the polygons as well as a chart. Students are able to manipulate the polygons and make conclusions, in order to come to a deeper understanding of the concepts of interior angles
What role does technology play?	This applet allows students to manipulate and explore the concept of the sum of interior angles. This is an important concept in our 5th grade curriculum. I would have my students use this technology early on when learning about the sum of interior angles. They can then use what they have learned and apply their knowledge to new

	situations and more complex problems.
What instructional function(s) does the resource serve? • practice (i.e., practicing skills or knowledge already learned) • direct instruction/explanation (i.e., explaining or presenting content to students) • **learning through exploration** (i.e., provides context in which students can see new relationships; come to new understandings)	Angle Sums allows students to learn through exploration. It does not directly state that all triangles' sums are 180 degrees, quadrilaterals' sums are 360, pentagons' are 540 degrees, and so on. Students will discover this concept by exploring this technology and creating several different types of each polygon and realizing that the sums of the interior angles do not change.
What kinds of representations of the mathematics are used? • **symbolic** (i.e., numerals, symbols) • graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • **visual/spatial** (e.g., circles or squares with lines to show fractions) • concrete or real-world objects (e.g., images of base-10 blocks, puppies, or jars) • **dynamic**(mathematical ideas represented through motion or sound)	This is symbolic in that it includes a table of the angle, its measure, and the sum of the interior angles. It is also visual since it provides a visual representation of the polygon with the angles numbered and color coded. Each of these polygons can be manipulated. The user may drag any vertex to change the shape of the polygon. As the user drags the vertex, a sound is made. Therefore, this tool is dynamic as well.

Diagonals to Quadrilaterals http://illuminations.nctm.org/ActivityDetail.aspx?ID=148	
Which standard in Geometry? • **Analyze Characteristics** • Specify Locations • Apply Transformations • **Use Visualization**	This applet allowing students to analyze characteristics of diagonals in quadrilaterals. It provides students with a visual that can be manipulated.
What mathematical content is being learned (or intended to be learned)? • **Shapes**	Students get to discover the relationships between different characteristics of diagonals and the shape that can be formed with those particular

• **Geometric Relationships** • Transformational Geometry • Coordinate Geometry • Constructions • Locus • **Informal Proofs** • Formal Proofs	characteristics. Student can also save the shapes by clicking on the camera button. Up to four images can be saved at a time to help students prove what type of shapes can be formed with the selected diagonal characteristics.
Is the focus on instrumental or relational understanding? • instrumental understanding (carrying out procedures) • **relational understanding** (understanding the meaning of mathematical words and symbols; connections among ideas)	This technology is focused on relational understanding. Students are making their own discoveries and making connections between them. They are determining the types of shapes that can be created by setting different types of criteria. Students can select a variety of combinations of perpendicular diagonals, congruent diagonals, 1 bisected diagonal, or 2 bisected diagonals. Not all combinations are possible. Students can try to understand why those combinations are not possible.
What role does technology play?	This is reinforcing the names of different quadrilaterals as well as helping them learn the relationships between diagonals and shapes. Student are also being able review the terms perpendicular, congruent, and bisect.
What instructional function(s) does the resource serve? • practice (i.e., practicing skills or knowledge already learned) • direct instruction/explanation (i.e., explaining or presenting content to students) • **learning through exploration** (i.e., provides context in which students can see new relationships; come to new understandings)	Students are learning through exploration. Once students select their diagonal criteria a shape is formed. Students can then manipulate that shape to try to form new shapes that fit their criteria. Users can click on the camera to capture the same they had made. This way students can draw conclusion of all the types of quadrilaterals that can be formed with the given diagonals.
What kinds of representations of the mathematics are used? • symbolic (i.e., numerals, symbols)	This applet is visual as well as dynamic. Students select the diagonal criteria and a shape that fits it appears. Students can then manipulate the shape

• graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • **visual/spatial** (e.g., circles or squares with lines to show fractions) • concrete or real-world objects (e.g., images of base-10 blocks, puppies, or jars) • **dynamic**(mathematical ideas represented through motion or sound)	by moving certain vertices to create new shapes.

What's My Angle? - Make and Measure http://www.amblesideprimary.com/ambleweb/mentalmaths/protractor.html	
Which standard in Geometry? • Analyze Characteristics • Specify Locations • Apply Transformations • **Use Visualization**	This technology is focusing on visualizations. Students are measuring different angles by using a protractor.
What mathematical content is being learned (or intended to be learned)? • **Shapes** • Geometric Relationships • Transformational Geometry • Coordinate Geometry • **Constructions** • Locus • Informal Proofs • Formal Proofs	Students are learning about the different types of angles (acute, obtuse, and reflex). They are also able to create different size angles and measure them with a protractor.
Is the focus on instrumental or relational understanding? • **instrumental understanding** (carrying out procedures) • relational understanding (understanding	The focus of Make and Measure is instrumental understanding. Students are practicing the procedure of measuring angles with a protractor.

the meaning of mathematical words and symbols; connections among ideas)	
What role does technology play?	This applet will help my students practice measuring angles with a protractor. Many of my students struggle with lining up the protractor correctly. I believe this technology will help my students practice measuring angles and will be better able to measure an angle with an actual protractor after using this applet.
What instructional function(s) does the resource serve? • **practice** (i.e., practicing skills or knowledge already learned) • **direct instruction/explanation** (i.e., explaining or presenting content to students) • learning through exploration (i.e., provides context in which students can see new relationships; come to new understandings)	During the introduction of this technology, it explains how to use and line up the protractor on an angle. It also states the definition of an acute, obtuse, and reflex angle. This is a good review of these concepts. Then students are able to create their own angles and practice measuring them with a protractor.
What kinds of representations of the mathematics are used? • **symbolic** (i.e., numerals, symbols) • graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • **visual/spatial** (e.g., circles or squares with lines to show fractions) • concrete or real-world objects (e.g., images of base-10 blocks, puppies, or jars) • **dynamic**(mathematical ideas represented through motion or sound)	This technology is dynamic in that students are able to create different size angles by clicking the positive or negative arrows. Then students drag the protractor on top of the angle to measure it. Students look at the numbers on the protractor to determine the measure of the angle represented.

Geometric Shape Flashcards http://www.aplusmath.com/cgi-bin/flashcards/geoflash	
Which standard in Geometry?	Students are using visualizations of shapes to determine its name. One is to select the correct

• Analyze Characteristics • Specify Locations • Apply Transformations • **Use Visualization**	term from a list of names.
What mathematical content is being learned (or intended to be learned)? • **Shapes** • Geometric Relationships • Transformational Geometry • Coordinate Geometry • Constructions • Locus • Informal Proofs • Formal Proofs	Students are determining the name of the same after looking a visual representation of it.
Is the focus on instrumental or relational understanding? • **instrumental understanding** (carrying out procedures) • relational understanding (understanding the meaning of mathematical words and symbols; connections among ideas)	The focus of this site is on instrumental understanding. All students are doing is recalling the type of shape that is seen and choosing the correct term. This is strictly carrying out procedures rather than understanding why the shapers are categorized a particular way.
What role does technology play?	I would use this tool early on in the school year to ensure all students know the geometric shapes. If students don't know the names of the shapes then the rest of the problems throughout the year will be difficult to complete.
What instructional function(s) does the resource serve? • **practice** (i.e., practicing skills or knowledge already learned) • direct instruction/explanation (i.e., explaining or presenting content to students) • learning through exploration (i.e., provides	This tool serves as practice to help students know the names of the different geometric shapes. There is no direct instruction or learning through exploration. One must already know the characteristics of these different shapes.

context in which students can see new relationships; come to new understandings)	
What kinds of representations of the mathematics are used? • symbolic (i.e., numerals, symbols) • graphical (i.e., standard graphical notation such as Cartesian (X-Y) coordinate system, bar graph, pie chart) • **visual/spatial** (e.g., circles or squares with lines to show fractions) • concrete or real-world objects (e.g., images of base-10 blocks, puppies, or jars) • dynamic(mathematical ideas represented through motion or sound)	This technology only had visual representation. It shows you a picture of a geometric shape and you have to choose the term that best describes that shape.

Additional Resources

Numbers and Operations:

Equivalent Fraction Pointer

http://shodor.org/interactivate/activities/EquivFractionPointer/

Students are given on fraction and they are to come up with two more equivalent fractions. There is a number line for students to visualize where the fraction is located. In addition, one can choose to use squares or circles to create an equivalent fraction. Users are to increase or decrease the number of rows and columns or number of sections to help create fractions that are equivalent. One clicks on the boxes or sections to select the numerator. This technology will help students visualize equivalent fractions.

Number Patterns

http://nlvm.usu.edu/en/nav/frames_asid_185_g_2_t_1.html?from=grade_g_2.html

This applet provides students with a list of numbers and students need to fill in the next two numbers in the series. This allows students to practice looking for patterns among numbers.

Place Values and Number Sense: Rounding

http://www.ixl.com/math/grade-5/rounding

This tool allows students to practice rounding a variety of numbers. It includes whole numbers as well as decimals. This technology lets students know if they are right or wrong. If one is incorrect it gives an explanation of how to round.

Order Fractions from Least to Greatest

http://www.ixl.com/math/grade-5/order-fractions-from-least-to-greatest

This tool allows students to practice ordering fractions from least to greatest. Again if the student is incorrect they can click on the explanation. It shows a visual of each fraction. This will help students understand why the fractions should be in that particular order. It also teaches them that they should draw out the fractions if they are unsure of the order.

Factor Tree

http://nlvm.usu.edu/en/nav/frames_asid_202_g_2_t_1.html?from=grade_g_2.html

This applets allows users to create factor trees until one reaches the prime factorization. One can complete one or two trees at a time. If one complete two trees, it then asks you to drag the factors into a Venn diagram separating the common factors and those unique to that particular number. It also asks for the greatest common factor and least common factor. This tool includes many different concepts important for students to know.

Baseball Math- Rounding Decimal Game

http://www.math-play.com/baseball-math-rounding-decimals/rounding-decimals.html

This fun game allows students to practice their skills of rounding decimals. It includes a variety of place values in which students need to round to. It is in the format of multiple choice. However, I do not like that is does not tell the student the correct answer.

Geometry:

Geoboard- Coordinate

http://nlvm.usu.edu/en/nav/frames_asid_166_g_2_t_3.html?open=activities&from=category_g_2_t_3.htm

Pairs of students can play Battleship together. Each student opens the Coordinate Geoboard on two different computers. Each person creates a shape on their geoboard with the bands. Each students call out different coordinates trying to get a hit. This will help student s practice calling out ordered pairs and understanding that x relates to the horizontal axis and y relates to the vertical axis. If students place the mouse over one of the points it tells you the order pair, which will help struggling students.

Transformations – Reflection

http://nlvm.usu.edu/en/nav/frames_asid_297_g_2_t_3.html?open=activities&from=category_g_2_t_3.html

This applet allows students to visually understand reflections. It helps that the shapes have different colors to allow students to visualize what happens to a shape when it is reflected. One can move the shape with the black boarder and it other shape moves as well to the appropriate place. This teaches students that the shape needs to be the same distance from the line of reflection. On can move the line of reflection and the shape. After students make several observations, they can begin drawing conclusions about reflections.

Transformations – Translations

http://nlvm.usu.edu/en/nav/frames_asid_301_g_2_t_3.html?open=activities&from=category_g_2_t_3.html

This applet allows students to visually understand translations. Students can drag the shape, rotate the shape, and move the line of translation. After spending time manipulating these features students will begin to discover properties of translations. If they work with both this applet and the refection applet students will have a better understanding of the difference between reflections and translations.

Shape Surveyor

http://www.funbrain.com/poly/index.html

This technology focuses on practicing calculating the area and perimeter of rectangles. One can select the difficulty level as well as choosing perimeter and/or area of rectangles. I would have students use this game if they needed additional practice with this concept.

Angles

http://shodor.org/interactivate/activities/Angles/

This technology has one set of parallel lines and one line transversal line that intersect them. Each angle is labeled. This applet asks students to classify the different angles in the figure as acute, obtuse, and right. Users are to also classify what the two angles are. For example, they can be classified at vertical angles, adjacent angles, and so on. My students know what they two are, but I would have to explain what the other classifications are before they use this technology or for some I would just have them classify the angles.

Lesson Plan: Sum of Interior Angles of Polygons

Objective: 3.02 Make and test conjectures about polygons involving: a. Sum of the measures of interior angles.

Materials:

- Paper triangles and quadrilaterals
- Scissors
- Slue
- Computers - http://illuminations.nctm.org/activitydetail.aspx?id=9
- Chart

Procedures:

- Introduce the lesson: Today we will be determining the sum of the interior angles of polygons. We will begin with triangles and quadrilaterals.
- Pass out paper triangles and quadrilaterals.
- Have students first cut off the angles of several triangles and put them together to see what they would form. The students will discover that the angles of a triangle formed a straight angle which is 180 degrees.

- Then have the students cut off the angles of several quadrilaterals and put them together to see what they would form. The students discovered that the angles of a quadrilateral form a circle which is 360 degrees.
- Then have the students explore the "Angle Sums" website: http://illuminations.nctm.org/activitydetail.aspx?id=9
- Through exploration, students should come to the conclusion that all triangles' sums are 180 degrees, quadrilaterals' sums are 360, pentagons' are 540 degrees, and so on. Students will discover this concept by exploring this technology and creating several different types of each polygon and realizing that the sums of the interior angles do not change.
- Show students how to triangulate polygons.
- Students should then fill in the following chart:

Name of Polygon	Number of Sides	Number of Triangles	Sum of Interior Angles

- As an extension, I would challenge students to come up with a formula to figure out the sum of interior angles for a polygon with nth number of sides. (n-2)x180= S (S=sum of interior angles)