Curriculum Sample Template

Max. 8 Pages

Grade Level	5	**Content Area**	**Mathematics**
Course Title (grades 9-12 Only)			
Expected Prior Knowledge *The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.*	4.NF.3: Understand a fraction a/b with a > 1 as a sum of fractions 1/b. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. 4.NF.4: Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? 4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.		
Alignment to Program of Instruction *Briefly outline methods of instruction found in this sequence of lessons that align to the Program of Instruction described in A.3.*	• Direct Instruction: Direct Instruction includes features which support the other instructional elements, such as the ability grouping through the multi-age multi-grade classroom. Students are grouped and re-grouped based on their rate of progress through the program. Frequent assessment is imbedded in direct instruction where curriculum-based assessments help place students in ability groups and identify students who require additional intervention. • Hands-On Project-Based Methods: Hands-On Project-Based Methods with tangible hands-on materials will be applied to relate the curriculum and standards to real life and make them functional. • Cooperative Learning Groups: Students of different abilities will work together in small groups of 2-5 children. They will be taught to learn from one another and share ideas and responsibilities. *Students who are on IEPs may receive modifications or accommodations as stated or may need a slower pace of instruction with more repetition. Students may be given supplementary curriculum and various modalities to assist in grasping the concepts such as visuals, manipulatives, or a task-analysis that will break down the steps needed to assist in comprehension and application of the concept. This also may include those students who may have a difficult time grasping the concepts who are not on IEPs.		
Standard Number and Description *List the Number* and the full description for the Required Standard or Science Performance Objective listed in section A.6.*	Grade: 5.MD.2 Domain: Measurement & Data (MD) Cluster: Represent and interpret data Standard: #2 - Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers was redistributed equally.*		

Materials/Resources Needed	White Boards Worksheets with data and unlabeled number line plot Fraction bars/strips for students who need concrete materials Ruler with fractions

* ***Standard Number****: For English Language Arts (Reading and Writing), use Grade, Strand, Standard (e.g., 3.RI.2). For K-8 Math, use Grade, Domain, Standard (e.g., 6.EE.7). For HS Math, use Conceptual Category-Domain, Standard (e.g., A-REI.6). For Science, use Grade, Strand, Concept, PO (e.g., 4.1.3.1).*

Lesson (add as needed)	**Instructional Strategies**	**Student Activities**
1	Whole Class Activity: Direct instruction - Review how to use a line plot graph. Access prior knowledge by asking students to describe a line plot graph. Then, for review, show the following lesson describing how to make a line plot graph on internet: http://www.glencoe.com/sites/common_assets/mathematics/mc2/cim/interactive_labs/M2_02/M2_02_dev_100.html The website also offers some practice problems. Whole Class: Direct instruction - Review how to write fractions (1/4, 1/2, 1/8) on a number line using a ruler or fraction strips to show measurements. Draw number line on the board and explain this number line can be used as a line plot graph measuring various fractional amounts. Make marks above fraction showing that this data point means there is one fractional amount. Show several examples.	Allow students to do the practice problems on computer in front of class. Should students need additional practice problems go to: http://www.ixl.com/math/grade-5/interpret-line-plots Guided Practice: Ask students to bring out their white board and draw a number line with 1/8, 1/4, 1/2. Then, write 8 fractional amounts, on board, between o and 1. Pointing at each fraction, ask students where the data point should be placed. Work the problem together. Small Groups: Next group students into pairs. Give each student a piece of paper with a set of fractions. One student will call out the amounts on his paper, while the other student records the fractional amounts on a white board. Both students check work. Change positions and repeat the activity. Walk around class ensuring understanding.
2	Whole group: Remind students that we reviewed line plot graphs with fractions yesterday. Explain that we will work on solving word problems as a group using the line plot graph. Write an addition of fractions word problem plotting the information. Read problem together and underline words that indicate what the problem is asking ask for. Then, circle numbers that need to be plotted on line plot graph. Finally, demonstrate where the data points are to be plotted. After fractions are plotted, return to word problem to determine the next step. Follow the word problem to	

	solve the problem. Whole group: Teacher will use direct instruction by giving students a subtraction, multiplication, and division of fraction word problem using the line plot graph. First, demonstrate each problem, then give students a problem to be solved by the group for each operation. After completing the four operations on fractions, provide problems for homework.	Guided practice: Give another addition of fractions word problem using the line plot graph. Using white boards, students will draw the number line plot placing fractions in appropriate place. As you work the problem on the board, ask for student input to assess their understanding. Students will work problem on white board, while following the teacher. Students solve problems at home.
3	Whole group: Tell students to get out their homework and exchange with peer to correct. Ask for volunteers to show the problem on the board and explain. Walk around class checking for comprehension. Whole Group: Teacher will use direct instruction by explaining the cupcake assessment project that will be given (see below). Explain that occasionally recipes need to be altered when making more or less than the original amount. Write a practice recipe on the board and tell students that they will help to double the recipe. Tell students to write the recipe on a piece of paper, first folding the paper in half lengthwise. Explain that the original amount will be written on the right, while the increased amounts will be written on the left. Ask for student input while doubling the recipe. After successful completion, tell students to triple the recipe independently, writing the results on the back of the same paper using the same format (original amounts on right; altered amounts on left). Walk around class ensuring for understanding. At end of lesson, pass out the Cupcake and Frosting recipes. Read directions together with the class. Ask for questions.	Students show work on board and explain. Peers correct homework. Students will take out paper, fold lengthwise and write the amounts on a right side of paper.

Summative Assessment Items: *Attach here.* For each summative assessment item, include an answer key or scoring rubric describing how points are to be awarded.

Summative Assessment 1:

The assessment will be a word problem dealing with increasing ingredients for a recipe. Students will have to calculate some fractional amounts of ingredients needed when increasing a recipe. The problem with recipe is listed below.

Scoring will be based upon how many of the fractional amounts are correct. There are 7 fractional amounts in the cupcake recipe.

A = 6-7 correct - Mastery
B = 5 correct
C = 4 correct
D = 3 correct
F = 0 – 2 correct

Summative Assessment 1:

Making Birthday Cupcakes

You need to make 36 cupcakes to celebrate your birthday with classmates. Below is a recipe for 12 cupcakes and frosting for 6 cupcakes. You will need to increase both recipes so that you can make enough cupcakes. First, calculate the amounts of ingredients you will need for both recipes; then show your amounts on a line plot graph. Using the information from the line plot graph, calculate the increased amounts needed to make 36 cupcakes. Write the new measurements on the line to the left of the original amounts. This will be your shopping list.

Cupcakes
Recipe makes 12 cupcakes
_____2 cup(s) all-purpose flour
_____1/3 cup(s) unsweetened cocoa powder
_____1 1/2 teaspoon(s) baking soda
_____1/4 teaspoon(s) salt
_____3/4 cup(s) sugar
_____1/4 cup(s) brown sugar
_____1/2 cup(s) mayonnaise
_____1/2 cup(s) vegetable oil
_____1 teaspoon(s) vanilla extract
_____1 cup(s) cold water

Summative Assessment 2:

Scoring will be based upon how many of the fractional amounts are correct. There are 3 fractional amounts in the frosting recipe.

A = 2.5 correct – Mastery (80%)
B = correct
C = correct
D = 2 correct
F = 0 – 2 correct

Frosting Recipe
Frosts 6 cupcakes
_____2 ounce(s) unsweetened chocolate, chopped
_____2 ounce(s) bittersweet chocolate, chopped
_____6 tablespoon(s) unsalted butter
_____1 1/2 cup(s) confectioners' sugar
_____3 tablespoon(s) unsweetened cocoa powder
_____1 pinch(s) salt
_____1/2 teaspoon(s) vanilla extract
_____1/4 cup(s) milk

Summative Assessment 3:

Scoring Rubric-

A = 8-9 correct – Mastery (80%)
B = 7 correct
C = 6 correct
D = 5 correct
F = 0 – 4 correct

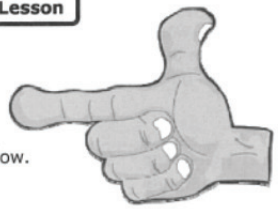
Summative Assessment 3:

Name _____ Date _____

Measurements in Fractions of Unit - Guided Lesson

Complete the following problems:

1) People measured their index finger to the nearest ¼ inch. People were given numbers to make the data easier to plot. The data can be found below. Display the data on the line plot below. Then answer the questions below the line plot.



1. Christopher $3\frac{3}{4}$	4. Daniel 4	7. Hannah $2\frac{2}{4}$
2. Brandon $2\frac{3}{4}$	5. Daniel $2\frac{1}{4}$	8. Ashley $2\frac{1}{4}$
3. Andrew $2\frac{1}{4}$	6. Tyler $3\frac{3}{4}$	9. Alexis $4\frac{2}{4}$

Questions:

a. What is the size difference between the longest and shortest finger?

b. What is the most common finger size?

c. How many measurements are less than $2\frac{2}{4}$ inches?

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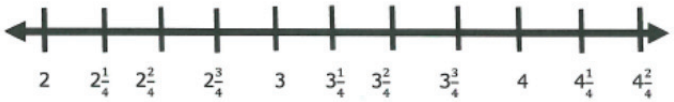
2) Teachers measured the height of their students in morning daycare. Each child was measured to the nearest ¼ foot. Children were given numbers to make the data easier to plot. The data can be found below. Display the data on the line plot below. Then answer the questions below the line plot.

1. Jennifer $3\frac{1}{4}$	4. Victoria $2\frac{3}{4}$	7. Anthony $4\frac{1}{4}$
2. Amanda 4	5. Abigail $3\frac{1}{4}$	8. Brandon $3\frac{2}{4}$
3. Alyssa $2\frac{3}{4}$	6. William $4\frac{1}{4}$	9. Alexis $4\frac{1}{4}$



Questions:

a. What is the size difference between the tallest and shortest person?

b. What is the most common height?

c. How many measurements are less than $3\frac{2}{4}$ feet?

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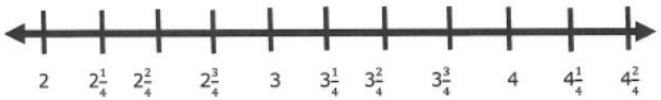
3) Mrs. Jones's class was having a contest to see who could run the furthest distance. 9 students ran as many times as they could around a ¼ mile track. The data from their run can be found below. Display the data on the line plot below. Then answer the questions below the line plot.

1. Abigail 2 ¼	4. Lauren 4 ¼	7. Nathan 3 2/4
2. Elizabeth 3 2/4	5. Grace 2 ¼	8. Anna 4 ¼
3. Sarah 3 ¼	6. Olivia 4 ¼	9. Matthew 3 ¾



Questions:

a. What is the difference between the longest and shortest distance?

b. What is the most common distance ran?

c. How many measurements are less than 4 ¼ miles?

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Measurements in Fractions of Unit - Guided Lesson Explanation:

Explanation to #1

a) As we can see on number line the longest finger is 4 and the shortest finger is $2\frac{1}{2}$.

Now to find the difference between the longest and shortest finger.

Subtract the shortest finger i.e. $2\frac{1}{2}$ from the longest finger i.e. 4

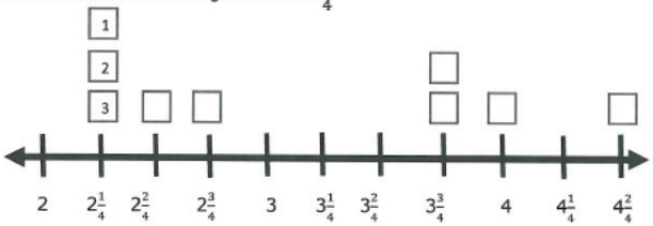
Take L.C.M of
Denominators to subtract fractions

$4 - 2\frac{1}{2} = \frac{8-5}{2} = \frac{3}{2}$ that is $1\frac{1}{2}$

So the difference between the longest and shortest finger is $1\frac{1}{2}$

b) Observe the number line. We can clearly see that the most blocks are lying on $2\frac{1}{4}$

So the most common finger size is $2\frac{1}{4}$



c) Look at the number line carefully. $2\frac{2}{4}$

Count all the blocks which are less than $2\frac{2}{4}$

The answer is 3.

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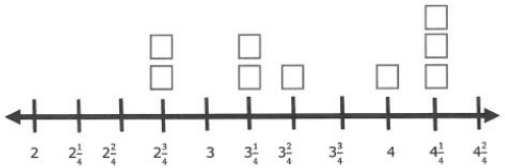
Explanation to #2



a) As we can see on number line the tallest student is $4\frac{1}{4}$ feet and the shortest student is $2\frac{3}{4}$ feet tall.

To find the difference between the longest and shortest student:

Subtract the shortest student i.e. $2\frac{3}{4}$ from the tallest student i.e. $4\frac{1}{4}$

Take L.C.M of

Denominators to subtract fractions

$4\frac{1}{4} - 2\frac{3}{4} = \frac{17-11}{4} = \frac{6}{4}$ that is $1\frac{2}{4}$

So the difference between the tallest and shortest student is $1\frac{2}{4}$

b) Observe the numbers line. We can clearly see that the most blocks are lying on $4\frac{1}{4}$ feet

So the most common height is $4\frac{1}{4}$ feet.

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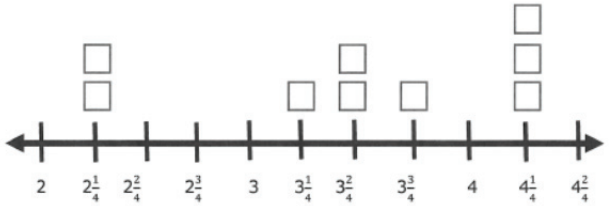
c) See the number line carefully. $4\frac{1}{4}$

Count all the blocks that are less than $4\frac{1}{4}$

The answer is 6.



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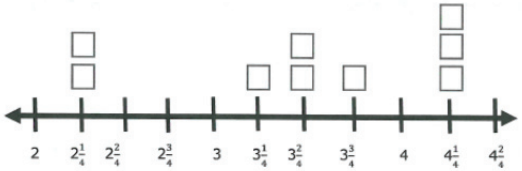
c) Count all blocks which are less than $3\frac{2}{4}$

The answer is 4.

Explanation to #3



Sa) As we can see on number line the longest distance is $4\frac{1}{4}$ miles and the shortest distance is $2\frac{1}{4}$ miles.

To find the difference between the longest and shortest distance:

Subtract the shortest distance i.e. $2\frac{1}{4}$ from the longest distance i.e. $4\frac{1}{4}$

Take L.C.M of denominators to subtract fractions

$4\frac{1}{4} - 2\frac{1}{4} = \frac{17-9}{4} = \frac{8}{4}$ that is 2

So the difference between the longest and shortest distance is 2 miles.

b) Observe the numbers line. We can clearly see that the most blocks are lying on $4\frac{1}{4}$

So the most common distance size is $4\frac{1}{4}$ miles.

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