

Math Guidebook, PARCC and EOC Examples Teacher Leader Collaboration Event #1

2nd Grade Math

2.NBT.A.1 2.NBT.A.4

Math Guidebook ECR Task

Sunshine Elementary and Rainbow Academy had a food drive. The chart below shows how many cans of food each class collected for the food drive.

	Kindergarten	1 st grade	2 nd grade	3 rd grade
Sunshine Elementary	139	154	200	220
Rainbow Academy	131	125	139	275

Use the chart to answer the questions below.

- 1. A class at Sunshine Elementary collected a number of cans that was equal to 1 hundred + 4 ones + 5 tens.
 - a. What number represents this number of cans?
 - b. Which class collected this number of cans at Sunshine Elementary?
- 2. A class at Rainbow Academy collected a number of cans that was equal to 1 hundred + 16 tens +15 ones.
 - a. What number represents this number of cans? Show how you found your answer using drawings, numbers, or words.
 - b. What class collected this number of cans at Rainbow Academy?

For Problems 3-5, use the chart on page 1 to find the number of cans each class collected. Write the number on the line. Then complete the place value mat for each problem by telling how many hundreds, tens, and ones are in the number.

3. Sunshine Elementary 3rd grade:

Hundreds	Tens	Ones

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4. Rainbow Academy Kindergarten: _____

Hundreds	Tens	Ones

5. Sunshine Elementary 2nd grade: _____

Hundreds	Tens	Ones

Use the chart on page 1 to compare the values for the classes listed. Write <, >, or = in the circle.

6. Sunshine Elementary Kindergarten

Rainbow Academy 2nd grade



7. Rainbow Academy 3rd grade

Sunshine Elementary 2nd grade

- 1. Demonstrate understanding of the math concept, not just the procedure
- 2. Apply their understanding to real world examples
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- 4. Demonstrate mathematical reasoning by explaining, justifying, or critiquing with precision

2.NBT.A.1

Math Guidebook IT Task

Part A

Organize students to work in pairs. Give each pair of students a set of Part A Numeral Cards and a set of Part A Base Ten Cards. Say, "You will work as a team. Take turns matching each of the base ten cards to the correct numeral card. Each time you make a match, explain your thinking to your partner. If your partner disagrees with your match, ask him/her to explain why."

Part B

As students finish matching the card sets in part A and can explain their work, hand out the base ten blocks (one set per pair of students) and the Part B Recording Sheet (one for each student). Do not collect the card sets from part A. Say, "In this part of the task, you will continue to work as a team. You will use the set of base ten to build the number given on the recording sheet. Then you will write how many hundreds, tens, and ones you used to build the number. You will build the same number in two different ways. Let's complete 248 together."

Part C

When students have completed the recording sheet for Part B, collect the base ten blocks and hand out the Part C Recording Sheet to each student. Explain that students will work independently for this portion of the task. Students will match the given base ten numeral in the left column to the correct representation in the right column. Tell students that when they are finished they will compare their answers with their partner. Partners who disagree should take turns explaining their thinking to each other.

Part B Recording Sheet

Use the base ten blocks to build the given number in two different ways. Record each different way in the chart.

Numeral	First Way	Second Way
248		
562		
477		
304		
222		

Part C Recording Sheet

Match the base ten numerals on the left with the correct representation on the right. Write the letter of the correct choice in the space provided.

1) 3	329	A. 4 hundreds + 9 ones
2) 8	312	B. 4 hundreds + 17 tens + 2 ones
3) 4	409	C. 6 hundreds + 5 tens
4) 6	550	D. 3 hundreds + 29 ones
5) 5	572	E. 7 hundreds + 10 tens + 12 ones
6) 4	418	F. 4 hundreds + 1 ten + 8 ones

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5.NF.2 5.NF.4a

PARCC EOY Item

Mr. Edmunds shared 12 pencils among his four sons as follows:

- Alan received 1/3 of the pencils
- Bill received ¼ of he pencils
- Carl received more than 1 pencil
- David received more pencils than Carl

PART A

• On the number line, represent the fraction of the total number of pencils that was given to both Alan and Bill combined.

PART B

• What fraction of the total number of pencils did Carl and David each receive? Justify your answer.

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5.NF.A.2 5.NF.A.1

Guidebook Extended Constructed Response (ECR) Task (and exemplar student response)

- 1. Mike collected milk from 3 of his cows at the dairy farm. From the first cow he collected $\frac{4}{5}$ gallon of milk. The second cow produced $\frac{6}{8}$ gallon and the last cow produced $\frac{3}{4}$ gallon.
 - a. How many gallons of milk did Mike collect in all? Show how you found your answer.

$$\frac{4}{5} + \frac{6}{8} + \frac{3}{4} = \frac{4}{5} + \left(\frac{6}{8} + \frac{6}{8}\right) = \frac{4}{5} + \frac{12}{8} = \frac{32}{40} + \frac{60}{40} = \frac{92}{40} = 2\frac{12}{40}$$

Mike collected $2\frac{12}{40}$ gallons of milk.

**Note: Students may also provide $2\frac{3}{10}$ gallons as the answer which is also correct. Other work is also acceptable.

b. After using some of the milk he collected for baking, Mike found that he only had $\frac{5}{6}$ gallon of milk left. How much milk did he use for baking? Show how you found your answer.

$$2\frac{3}{10} - \frac{5}{6} = 2 + \frac{3}{10} - \frac{5}{6} = \frac{3}{10} + \left(2 - \frac{5}{6}\right) = \frac{3}{10} + 1\frac{1}{6} = \frac{18}{60} + 1\frac{10}{60} = 1\frac{28}{60}$$

Mike used $1\frac{28}{60}$ gallons for baking.

Note: Students may also give $1\frac{7}{15}$ gallons as the answer. Both answers should be considered correct. Students who have correct work based on an incorrect answer in **part a should also be given credit. There are other possible methods for arriving at this answer.

2. Mike baked brownies, cookies, and cake for treats for the family and others working on the farm. He used $\frac{1}{8}$ pound less flour to make the cookies than he used to make the cake. He used $\frac{1}{4}$ pound more flour to make the cake than to make the brownies. If Mike used $\frac{1}{2}$ pound of flour to make the cake, how much flour did he use to make the brownies? How much flour did he use to make the cookies? Show how you found your answer.

Cake =
$$\frac{1}{2}$$
 pound of flourCookies = Cake - $\frac{1}{8}$ Brownies = Cake - $\frac{1}{4}$ Cookies = $\frac{1}{2} - \frac{1}{8} = \frac{4}{8} - \frac{1}{8} = \frac{3}{8}$ Mike used $\frac{3}{8}$ pound of flour to make the cookies.Brownies = $\frac{1}{2} - \frac{1}{4} = \frac{2}{4} - \frac{1}{4} = \frac{1}{4}$ Mike used $\frac{1}{4}$ pound of flour to make the brownies.

3. With the remaining $\frac{5}{6}$ gallon of milk, Mike decided to make chocolate milk and strawberry milk for his children to have with their baked treats. He used $\frac{1}{3}$ gallon of milk for the chocolate milk and $\frac{1}{4}$ gallon of milk for the strawberry milk. How much regular milk was left over? Show how you found your answer.

$$\frac{5}{6} - \left(\frac{1}{3} + \frac{1}{4}\right) = \frac{5}{6} - \left(\frac{4}{12} + \frac{3}{12}\right) = \frac{5}{6} - \left(\frac{7}{12}\right) = \frac{10}{12} - \frac{7}{12} = \frac{3}{12}$$

There is $\frac{3}{12}$ gallon of white milk left over.

**Note: Students may also give $\frac{1}{4}$ gallon for their answer which is correct. There are also other acceptable methods for the work.

- 5. Demonstrate understanding of the math concept, not just the procedure
- 6. Apply their understanding to real world examples
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5.NF.A.1 5.NF.A.2

PARCC EOY Item

Ammaar put 4/7 of the money he earned raking leaves in the bank. He spent 1/3 of all of his money on a book.

Part A

Drag and drop the fractions into the boxes to create an expression with common denominators that can be used to find the difference between the fraction of money Ammaar put in the bank and the fraction he spent on the book. Fractions may be used more than once or not at all. Drag and drop the fractions into the appropriate boxes.

1/10 4/10 7/10 8/10 1/21 4/21 7/21 12/21

Part B

What is the difference between the fraction of money Ammaar put in the bank and the fraction he spent on the book?

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5.NF.A.1 5.NF.A.2

Math Guidebook IT Task

The table below shows the possible rainfall amounts over a 24-hour period in four different cities.

City	Rainfall (in inches)
New Orleans	$1\frac{1}{2}$
Lafayette	$\frac{1}{10}$
Baton Rouge	$\frac{7}{8}$
Shreveport	$2\frac{3}{4}$

- 1. Choose two cities from the table above and complete the questions that follow.
 - a) City One: _____City Two: ___
 - b) Look at the rainfall amounts for the two cities you chose. Which one had more rainfall during the 24-hour period? What is the difference between the two rainfall amounts? Show how you found the difference.
- 2. Look at the rainfall amounts for the two cities you did not choose. Which of these two cities received less rain during the 24-hour period? What is the difference between the two rainfall amounts? Show how you found the difference.
- 3. What was the total rainfall for all four cities during the 24-hour period? Show your work.
- 4. Complete the table above by adding information for the city of Alexandria. Alexandria had a rainfall amount that was more than Lafayette but less than Baton Rouge. Show or explain how you determined a possible rainfall amount for Alexandria.

Where do you see places where students would have to:

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7.NS.A.3

PARCC EOY Item

At the start of the month, the value of an investment was \$48.45. By the end of the month, the value of the investment changed by a loss of \$13.80. What was the value, in dollars, of the investment at the end of the month?

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7.NS.A.1c 7.NS.A.3

Math Guidebook ECR Task

Aakash, Bao Ying, Chris, and Donna all live on the same street as their school. The street runs from east to west.

- Aakash lives 5 ½ blocks to the west of the school.
- Bao Ying lives 4 ¼ blocks to the east of the school
- Chris lives 2 ¾ blocks to the west of the school.
- Donna lives 6 ½ blocks to the east of the school.

Use this information to complete the following.

- a. Represent the relative position of the houses on a number line with the school at zero, points to the west represented by negative numbers, and points to the east represented by positive numbers.
- b. How far does Bao Ying live from Aakash? Show how you arrived at your answer using sums or differences.
- c. Donna says she lives 3 ¾ blocks away from Chris. Is she correct? Explain your reasoning using the number line or by using sums or differences.

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7.NS.A.1 7.NS.A.3

Math Guidebook IT Task

The members of your group have been selected as the officers for your school's Junior Beta Club. This executive committee is responsible for tracking all money deposited into the club's account as well as all money spent during the year. The committee also needs to create a budget for the remainder of the year. At the beginning of September, the balance in the account was \$253.24.

- 1. Listed below are the activities the club spent money on or collected money for: (table omitted)
 - a. Using the table above, create a number line to represent the amount of money added to the account during this three-month period.
 - b. Using the table above, create a number line to represent the amount of money spent during this three-month period.
 - c. How much money is in the account at the end of November? Show two different ways to find the balance of the account.
- 2. This year the club also voted to include some fun activities throughout the year and an end-of-year trip to celebrate the club's success. Below is a list of the suggested activities and fundraisers. (table omitted)
 - a. Create a monthly budget for the remainder of the year. In your budget, you will propose which fun activity or activities your club should pursue. You will also propose which fundraisers your club should use to raise the money to finish the year. Keep the following points in mind: (points omitted)

Your budget should include a month by month statement as well as a short narrative explaining why you chose certain activities and fundraisers. Each monthly statement should show how you calculated the balance at the end of each month. In your narrative, be sure to explain how you determined which fundraisers to choose, which activity to choose, and when to conduct certain fundraisers. Also, be sure to state how much money will be remaining at the end of May. Be prepared to share your budget with the class.

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Algebra I

HSA-CED.A.3

EOC-Like EOY Item

Leah would like to earn at least \$120 per month. She babysits for \$5 per hour and works at an ice cream shop for \$8 per hour. Leah cannot work more than a total of 20 hours per month. Let x represent the number of hours Leah babysits and y represent the number of hours Leah works at the ice cream shop.

Part A

Graph the solution set of the system of linear inequalities in the coordinate plane.

Part B

Which pairs (x, y) represent hours that Leah could work to meet the given conditions? A. (4, 15) B. (5, 12) C. (10, 9) D. (15, 5) E. (19, 1)

Part C

Given the conditions in Part A, if Leah babysits for 7 hours this month, what is the minimum number of hours she would have to work at the ice cream shop to earn at least \$120? Give your answer to the nearest whole hour.

Part D

Given the conditions in Part A, Leah prefers babysitting over working at the ice cream store. What is the maximum number of hours she can babysit to be able to earn at least \$120 per month? Give your answer to the nearest whole hour.

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Algebra I

HSA-CED.A.3 HSA-REI.C.6 HSA-REI.D.12

Math Guidebook ECR Task (Task adapted with permission from Universal Achievement, LLC)

A new home security company is planning to open a technical support center to answer customer phone calls and emails. The company plans to purchase a large building with an open floor plan to house cubicles where operators will sit while they work. There are two options for cubicles: a small cubicle for one operator that is approximately 36 square feet and a larger cubicle for two operators that is approximately 60 square feet. The company knows it wants a minimum of 15 cubicles in the technical support center; however, because of the rising costs of employee benefits, the company wants to keep the total number of operators at a maximum of 20.

- 1. Write a system of inequalities to model the requirements for the new technical support center that would help the company determine the number of cubicles to build and the number of operators that could be employed. *Be sure to define any variables used.*
- 2. Graph the solution set of the system you created. State any additional constraints the model may have. *Be sure to label the graph.*
- 3. Which combination of small and large cubicles will allow the company to employ the maximum number of operators with the minimum number of cubicles? *Provide evidence to support your response.*
- 4. The first location the company finds is smaller than it would like. The space will only hold 10 cubicles total. If the company still wants to employ up to 20 operators, is it possible in this space to have the maximum number of cubicles and operators with a combination of both small and large cubicles? *Provide evidence to support your response.*
- 5. The location the company decides to use has an 1,800-square-foot open floor plan. The owner of the company also decides to remove the maximum limit from the number of operators he is willing to employ. He wants six fewer small cubicles than large cubicles. Calculate the maximum number of operators that can be employed in the 1,800-square-foot space using six fewer small cubicles than large cubicles. *Provide evidence to support your response.*

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Algebra I

HSA-CED.A.3 HSA-REI.D.12

Math Guidebook IT Task

Lilla and Siriana plan to open a lemonade stand during the summer. The friends have divided the work as described below. The friends agree to sell regular lemonade for \$0.75 per serving and strawberry lemonade for \$1.25 per serving.

Lilla decides that she will make two flavors of lemonade: regular and strawberry.

- It takes her 10 minutes to make a one-gallon pitcher of regular lemonade.
- It takes her 15 minutes to make a one-gallon pitcher of strawberry lemonade.
- She plans to spend no more than four hours making lemonade.

Siriana has decided to work outside and sell the lemonade.

- She plans to spend no more than six hours selling lemonade.
- She estimates she will sell one pitcher of lemonade (of either flavor) every third of an hour.
- 1. How many pitchers of each type of lemonade would you recommend Lilla and Siriana make and sell? Explain your reasoning. Use equations, inequalities, graphs and/or tables to aid your explanation. In your explanation, also include how much money Lilla and Siriana will earn if they sell every serving in every pitcher of lemonade you recommend they make.
- 2. Choose **one** of the following scenarios to investigate. Determine how your answer might change based on the scenario you choose. Explain your reasoning. Use equations, inequalities, graphs, and/or tables to aid your explanation.
 - Lilla and Siriana have to pay for the supplies to make the lemonade from their earnings. It costs \$10 to make a pitcher of regular lemonade and \$12 to make a pitcher of strawberry lemonade.
 - Siriana plans to spend no more than 4 hours selling lemonade.
 - Siriana plans to spend no more than 7 hours selling lemonade.
 - The friends sell both types of lemonade for the same price.
 - Lilla and Siriana want their total earnings to be a minimum of \$300.

Task adapted with permission from Universal Achievement, LLC.

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