Culminating Task

Performance Task: Cell Phone Plans

STANDARDS FOR MATHEMATICAL CONTENT

MCC4.NF.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100*[1].

MCC4.NF.6 Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*

MCC4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of the comparisons with the symbols >, +, or <, and justify the conclusions, e.g. by using a visual model.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make sure of structure.
8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

As culminating performance task for this unit, this task is designed for students to use portions of all of the standards studied during this unit. It is important even now for students to explain and justify their reasoning as evidence of their learning. This task is very similar to the "Taxi Cab" task earlier in the unit. While at that time the task was used a constructing task for students develop understanding and meaning, this task is intended to be a performance task.

You may want to develop and use a problem-solving rubric. Include students as a part of the rubric-making, allowing them input on what the most important parts of their project will be and also highlighting with them what is most important- the "whys" and "hows" behind their answer, rather than just getting the right answer.

ESSENTIAL QUESTIONS

- How can I determine the best cell phone plan?

MATERIALS

- A copy of "Cell Phone Plans" for each student

GROUPING

Individual or partner

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Task:

- Introduce the problem. Make sure students understand they are to defend their choice and use mathematics (shown in number and word form) to defend their choices.
- Have students briefly read the task and make predictions about which Cell Phone company they think will be the best deal. Have them explain their thinking for their predictions.

Students will follow the directions below from the "Cell Phone Plans" recording sheet.

It is time for McKinley to purchase a new cell phone. With so many new phones and so many companies, McKinley has a lot to consider before she purchases her phone. Read all the information she has gathered below and help her decide which plan is best! Rank the three plans according to which you think is the best deal and be prepared to defend your thinking! Use math words, numbers, models, and symbols to explain your thinking!

McKinley's Usual Phone Usage Per Month

- 300 minutes of talk time
- 200 texts
- 200 megabytes of data

Phone Company	Monthly Fee	Talk Time	Texts	Data Usage
Cecelia's Cells	$30	200 minutes free (2/10 of a dollar per minute after that)	100 texts free (10 texts per dollar after that)	50 megabytes free (2/100 of a dollar per megabyte after that)
Matt's Mobiles	None	5/100 of a dollar per minute	25/100 of a dollar per text	1/10 of a dollar per megabyte
Phyllis's Phones	$ 15	200 minutes free (1/10 of a dollar	150 texts free	150 megabytes

		per minute after that)	(2/10 of a dollar per text after that)	free (2/10 of a dollar after that)

After completing the task, have each pair or person share their work. Focus their discussion on:

- How did you determine the cost for each phone plan?
- How did you organize your work?
- Where have you used decimal fractions and decimal to defend your thinking?
    - Which company they thought was best
    - The mathematical justification for their thinking
    - The methods they used for determining the cost of each company
    - How they combined the tenths and hundredths
- After and while groups are sharing, have them look for groups that had efficient strategies, the similarities between the methods used, and the differences between the methods used.

FORMATIVE ASSESSMENT QUESTIONS

- Which strategies for combining tenths and hundredths did you see today that worked best?
- Were you surprised by the results?
- What did you learn about the decimal representations of the money being spent?
- Were students able to find the correct price for each company using decimals and decimal fractions?
- How did students show connections between tenths and hundredths?

DIFFERENTIATION

Extension

- Have students create their own phone company and write its fees in terms of tenths of a minute. Have them compare their company's price with the company's listed.

Intervention

- Have students use grids, money manipulatives, and/or other concrete models to build each amount of money for each company. Use this concrete model as the basis for the number representations they use to explain their thinking.

Name _____ Date _____

Cell Phone Plans

It is time for McKinley to purchase a new cell phone. With so many new phones and so many companies, McKinley has a lot to consider before she purchases her phone. Read all the information she has gathered below and help her decide which plan is best! Rank the three plans according to which you think is the best deal and be prepared to defend your thinking! Use math words, numbers, models, and symbols to explain your thinking!

McKinley's Usual Phone Usage Per Month

- 300 minutes of talk time
- 200 texts
- 200 megabytes of data

Phone Company	Monthly Fee	Talk Time	Texts	Data Usage
Cecelia's Cells	$30	200 minutes free (2/10 of a dollar per minute after that)	100 texts free (10 texts per dollar after that)	50 megabytes free (2/100 of a dollar per megabyte after that)
Matt's Mobiles	None	5/100 of a dollar per minute	25/100 of a dollar per text	1/10 of a dollar per megabyte
Phyllis's Phones	$ 15	200 minutes free (1/10 of a dollar per minute after that)	150 texts free (2/10 of a dollar per text after that)	150 megabytes free (2/10 of a dollar after that)