RWE 3rd Grade Unit 5:
Attributes & Partitioning of Polygons

Teachers notes:

Tasks 1, 2, & 3 require the use of the class Geometry Hands on Kit. Also, since these activities are formative, you may have the students complete them individually, with partners, or small groups. The students should engage in conversations to enhance their understanding of the topic.

Tasks 4 & 5 together are assessed for the RWE grade in Skyward, and therefore should be completed by the students individually.

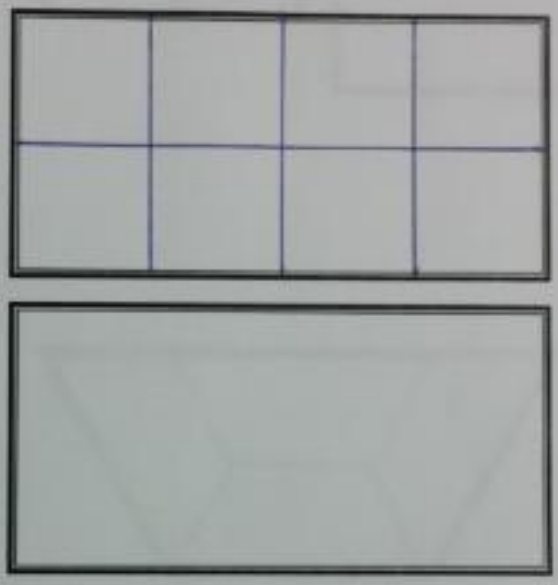
Unit 3: Task 1 & 2

TASK 1: On the template below, write the name of each new shape pan on the line. Notice that some pans have more than one name. Label the pans with all the appropriate names!

TASK 2: Use the geometric shapes from the class set to find how Pizza Hut can slice the new shaped pizza into equal slices. Trace your geometric shapes to show the shape of the pieces you chose. In the table, write the name of the slices you chose for each pan and how many equal pieces of that shape fit into the new shape pan.

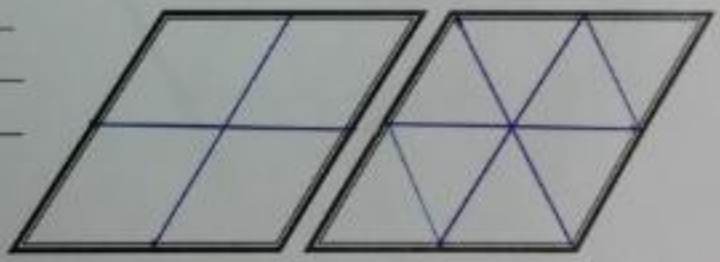
Pan 1:

quadrilateral
parallelogram
rectangle



Pan 2:

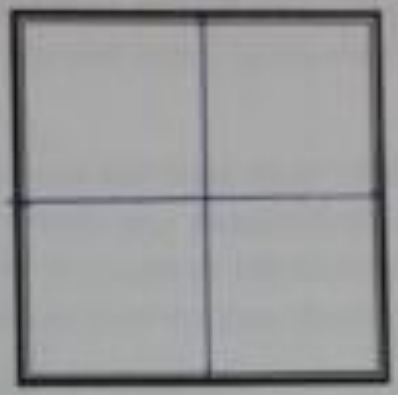
quadrilateral
parallelogram
rhombus



Unit 3: Task 1 & 2 (continued)

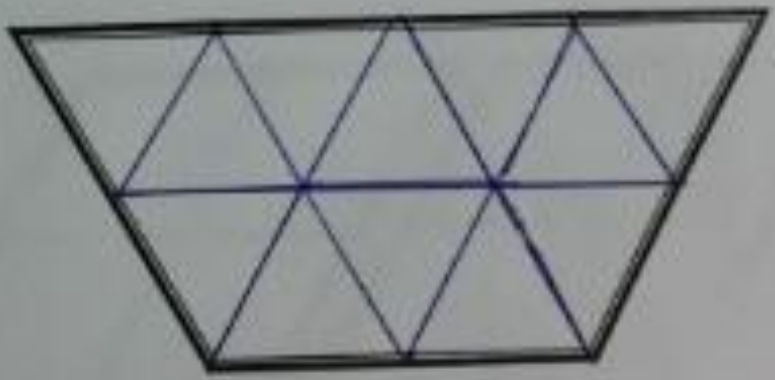
Pan 3:

regular quadrilateral
parallelogram
rectangle
rhombus
square



Pan 4:

quadrilateral
trapezoid



Unit 5: Task 2 (continued)

1. Complete the table.

Pan Number	Shape of the Slices	Amount of slices
1	square	8
2	rhombus	4
2	triangle	8
3	Square slices	4
4	trapezoid	4
4	triangle	12

2. Did any pan have more than one geometric shape that was used to divide it equally? Use mathematical vocabulary to explain which pan(s) and which shapes were used.

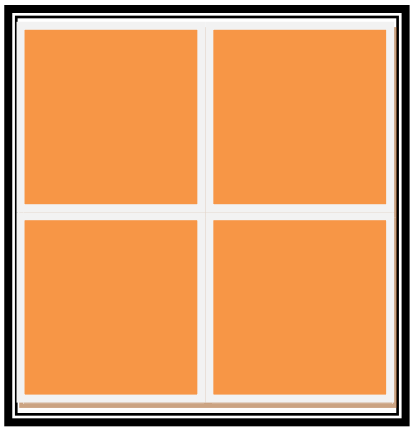
Yes, pan 2 and 4 have more than one way to divide the pan equally using the given shapes. The pan #2 is a rhombus and it can be divided into 4 smaller rhombuses. It also can be divided into triangle size pieces. Eight triangle pieces fit into the rhombus pan. The pan # 4 is a trapezoid. The trapezoid pan can be divided equally into 4 smaller trapezoids. It also can be divided into triangle size pieces. Since three triangles fit into the trapezoid and four trapezoids fit into the pan, the pan can be divided into 12 triangle shaped pieces. I know this because I can either count the pieces or multiply 4 (number of trapezoids) by 3 (number of triangles in a trapezoid) and get 12 triangles. (Students' answers may not be as detailed. Have with students conversations to develop this depth of knowledge.)

Unit 5: Task 3 Formative

What are all the ways people can share whole pieces of pizza from each type of pan?

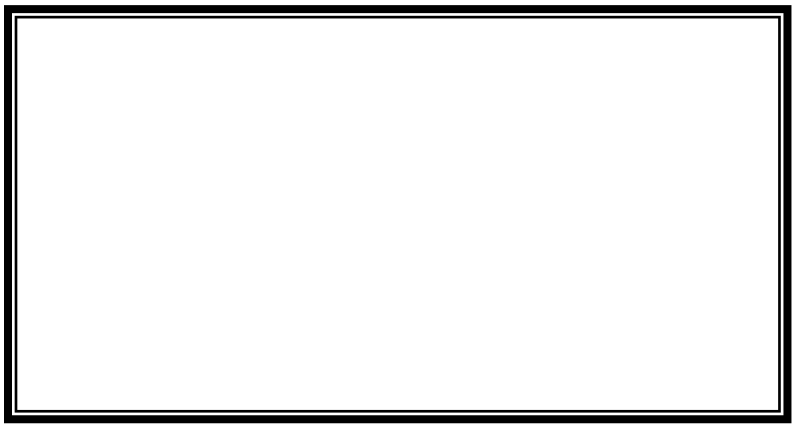
Represent all possibilities of people sharing equally whole slices of the new shaped pizzas. Use the table to show the number of people and the fractional piece they will eat.
(pan 3 is completed for you as an example)

Pan 3:



Number of people sharing pizza	Fractional Part of Pizza Each Person Gets
4	$\frac{1}{4}$
2	$\frac{2}{4}$ or $\frac{1}{2}$
1	$\frac{4}{4}$ or $1\ whole$

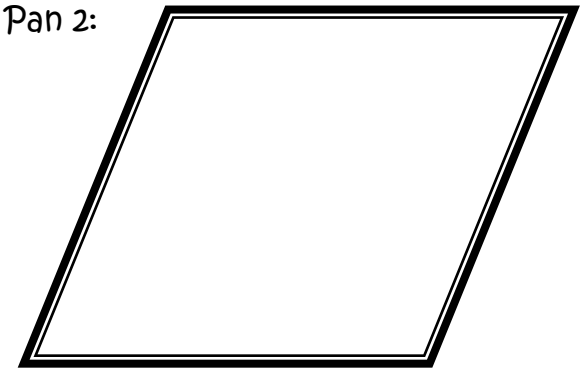
Pan 1:



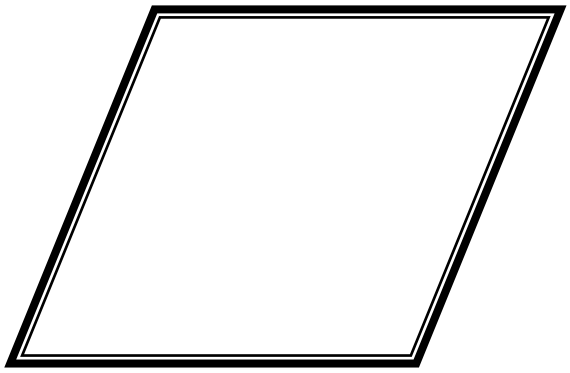
Number of people sharing pizza	Fractional Part of Pizza Each Person Gets
8	$\frac{1}{8}$
4	$\frac{2}{8}$ or $\frac{1}{4}$
2	$\frac{4}{8}$ or $\frac{1}{2}$
1	$\frac{8}{8}$ or 1 whole

Unit 5: Task 3 (continued)

Pan 2:



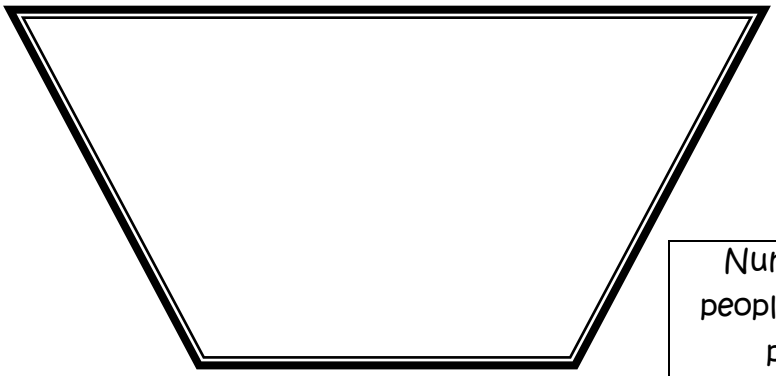
Number of people sharing pizza	Fractional Part of Pizza Each Person Gets
4	$\frac{1}{4}$
2	$\frac{2}{4}$ or $\frac{1}{2}$
1	$\frac{4}{4}$ or $1\ whole$



Number of people sharing pizza	Fractional Part of Pizza Each Person Gets
8	$\frac{1}{8}$
4	$\frac{2}{8}$ or $\frac{1}{4}$
2	$\frac{4}{8}$ or $\frac{1}{2}$
1	$\frac{8}{8}$ or 1 whole

Unit 5: Task 3 (continued)

Pan 4:



Number of people sharing pizza	Fractional Part of Pizza Each Person Gets
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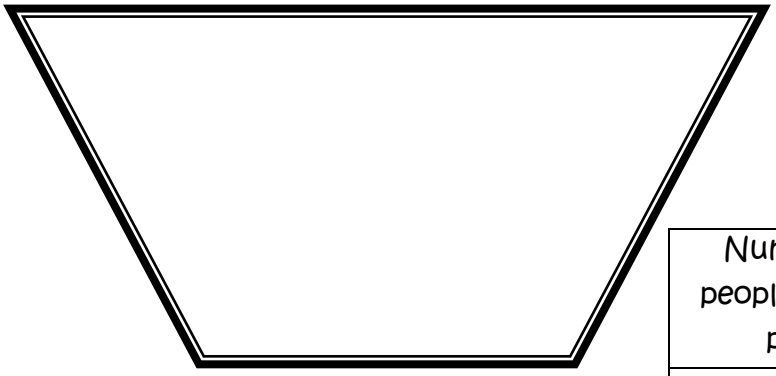
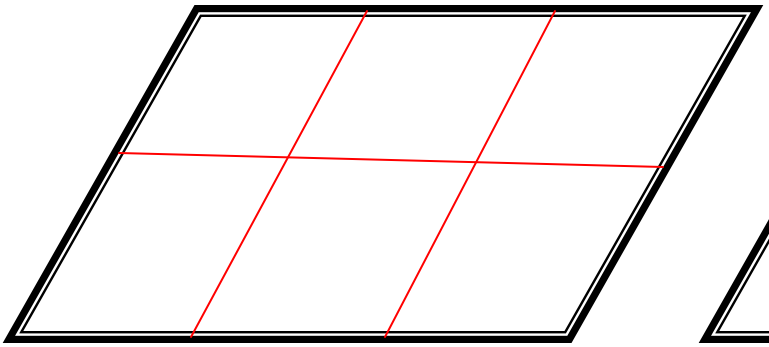


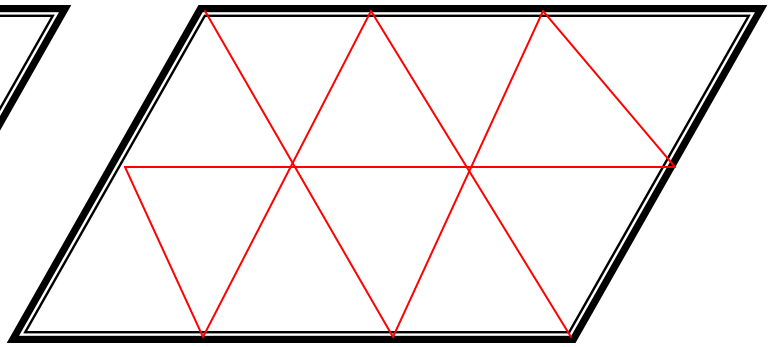
Number of people sharing pizza	Fractional Part of Pizza Each Person Gets
8	$\frac{1}{8}$
4	$\frac{2}{8}$ or $\frac{1}{4}$
2	$\frac{4}{8}$ or $\frac{1}{2}$
1	$\frac{8}{8}$ or 1 whole

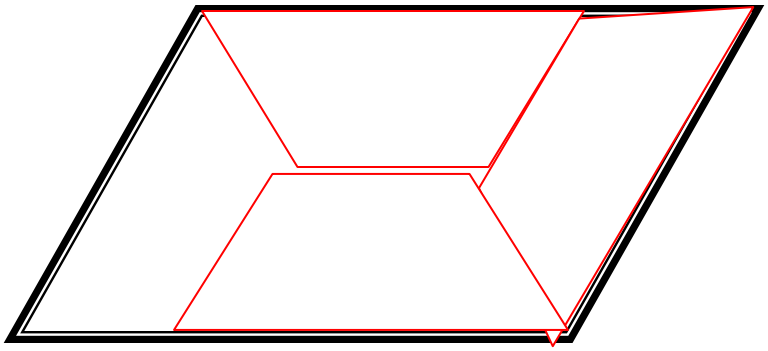
Unit 5: Task 4 Assessed

Using the classroom shapes, show Pizza Hut how to divide or cut the parallelogram shaped pizza.

Figure out the **greatest** number of kids and the **least** number of kids that could eat from this new shaped pizza. Show below the different ways to cut the new pizza shape.







Name of Slice Shape	Number of Slices per Pizza	Fraction for 1 Slice	Fraction for all Slices
Rhombus	6	$\frac{1}{6}$	$\frac{6}{6}$
Triangle	12	$\frac{1}{12}$	$\frac{12}{12}$
Trapezoid	4	$\frac{1}{4}$	$\frac{4}{4}$

Unit 5: Task 4 (continued)

Reflection: Would you rather have $\frac{1}{2}$ of a pizza or $\frac{1}{8}$ of the same pizza? Does the shape of the pizza affect your answer? Explain your thinking using mathematical vocabulary.

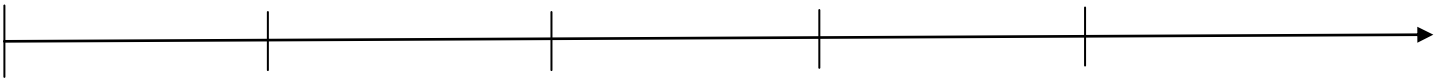
I would rather have $\frac{1}{2}$ of a pizza over $\frac{1}{8}$ of a pizza. The $\frac{1}{2}$ piece is larger than $\frac{1}{8}$ of the same size pizza. I know that $\frac{1}{2}$ is larger than $\frac{1}{8}$ of the same whole because $\frac{1}{2}$ refers to a whole divided into two pieces and having one piece of the two. $\frac{1}{8}$ refers to a whole divided into eight pieces and having one of the eight pieces. The same whole divided by two gives larger pieces than the whole divided into eight pieces. I would prefer to have the larger piece of pizza. (If the students know numerator and denominator, they should use those words in the explanation.)

The shape of the pizza does not affect my answer. Whether the pizza is a circle, square, or any shape, $\frac{1}{2}$ of it is larger than $\frac{1}{8}$ of it, and I would rather have the larger piece. (If the students explain that they want the smaller piece, that is acceptable too. The important part of their answer is the math language they use to explain their preference.)

Unit 5: Task 5 Assessed

The new shaped pizzas fit into the oven differently than the traditional round pizza. Three round pizzas could fit into the oven and would take 20 minutes to cook. Now with the new shaped pizzas, Pizza Hut can fit four pizzas in the oven at the same time. It now takes 20 minutes to cook four pizzas.

If Pizza Hut could cook 12 round pizzas in one hour and twenty minutes, how long will it take them to cook 12 of the new shaped pizzas?



4 pizza – 20 mins 4 pizza – 20 mins 4 pizza – 20 mins
12 ÷ 4 = 3 (12 pizzas to cook ÷ 4 pizzas in a group = 3 groups)

3 x 20 mins = 60 mins
Possible work: (3 x 10) + (3 x 10) = 60
Or
20 + 20 + 20 = 60
Or

$$\begin{array}{r} 20 \\ \times\ 3 \\ \hline 60 \end{array}$$

If the 12 new shaped pizzas start cooking at 5:00 P.M., what time will all the pizzas be done?

5:00 P.M. + 60 mins = 6:00 P.M.
The 12 new pizzas will be finished at 6 o'clock if they start to cook at 5 o'clock

Task 5 (continued)

Final Reflection: Look over your work from earlier tasks. Remember what you learned about the number of slices per shape, the size of the shape and how long it takes to cook the new shaped pizzas. Which shape pan should Pizza Hut use? Explain why you made your recommendation using mathematical language.

(Answers may vary; below is an example.)

I would recommend that Pizza Hut make their pizzas in the shape of a parallelogram. This is a nice shape that can be divided three different ways and it provides flexibility depending on how many people you would like to serve with the pizza. The parallelogram can be cut into trapezoid pieces which are unique, rhombus pieces which are a nice size for a meal or triangle pieces which provide enough pieces to share with many people.

The additional reason I would recommend the parallelogram pizza shape is that Pizza Hut can fit more pizzas in the oven at one time and that is more efficient and uses less time and money to heat the ovens. (The choice of pan does not matter. Students need to supply at least two logical pieces of evidence to support their choice.)

Name: _____

3rd grade Unit 5
Real World Experience Scoring Guide

Pizza Pan Project

Meeting	• Student indicates preference for $\frac{1}{2}$ or $\frac{1}{8}$ of a pizza in Task 4 • Student explains reasoning for choice in Task 4 using math words and shows an understanding of $\frac{1}{2}$ and $\frac{1}{8}$ • Student indicates preference for shape of pizza • Student explains reasons for preference • Student calculates how long will it take cook 12 of the new shaped pizzas • Student calculates what time will all the pizzas be done • Student recommends which shape pan should Pizza Hut use • Student explains the pizza shape recommendation using mathematical language.
Developing	Meets 6 of 8 criteria
Beginning	Meets less than 6 criteria

Comments: