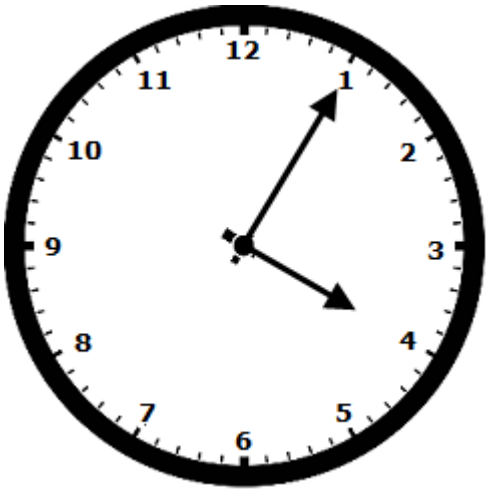
Title:	**Playdate With a Friend**
Grade:	**3**
Claim(s):	**Claim 4: Modeling and Data Analysis** Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems. **Claim 3: Communicating Reasoning** Students clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others. **Claim 2: Problem Solving** Students can solve a range of well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.
Assessment Target(s):	**Claim 4** **B.** Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. **D.** Interpret results in the context of a situation. **E.** Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. **Claim 3** **E.** Distinguish correct logic or reasoning from that which is flawed and—if there is a flaw in the argument—explain what it is. **F.** Base arguments on concrete referents such as objects, drawings, diagrams, and actions. **Claim 2** **A.** Apply mathematics to solve well-posed problems in pure mathematics and arising in everyday life, society, and the workplace. **B.** Select and use appropriate tools strategically. **C.** Interpret results in the context of the situation.
Standard(s):	3.MD.1, 3.OA.1, 3.OA.3, 3.OA.8, 3.NF.1, 3.NF.2a, 3.NF.2b, 3.NF.3b, 3.MD.7b, 3.MD.7d
Mathematical Practice(s):	1, 2, 3, 4, 6
Bloom's Taxonomy Level:	Analyzing - 4
DOK Level:	Strategic Thinking/Reasoning - 3
Score Points:	13 points possible
Difficulty:	Medium
Resources:	N/A
Notes:	N/A
Task Overview:	The students will demonstrate their knowledge of intervals of time, the four operations, fractions, and area.
Teacher Preparation/Resource Requirements:	None required
Time Requirements:	Approximately 60-80 minutes

Prework:	None

Sample Top-Score Response	You have a friend, named Gabriel, over to play at your house after school today. Using your knowledge of time, the four operations, fractions, and finding area, work with your friend to plan a fun afternoon. **Part A** 1. Your mom tells you that because you need to finish your homework before dinner, so Gabriel can only stay over for a certain time period. This is the time Gabriel arrives:  Gabriel has to go home at 5:25 so that you can finish your homework. Enter the length, in minutes, that Gabriel can stay and play. **80 minutes** 2. While you are playing, you decide to have a snack. Gabriel puts some small crackers on his plate. He makes 3 rows of crackers with 6 crackers on each row. Then he puts the same number of crackers on your plate. How many crackers did Gabriel put on your plate? **18 crackers**

Part B

3. You have had a snack, and now you and Gabriel are ready to make bracelets. Your mom has given each of you a cup of colored beads that you can use on your bracelets. Gabriel has the following numbers of colored beads in his cup:

   - 3 red
   - 1 yellow
   - 2 green
   - 2 blue

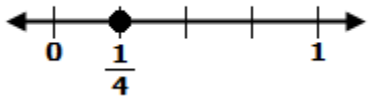
   Before you begin making your bracelets, your mom asks Gabriel what fraction of the beads in his cup is blue. Gabriel incorrectly says that the fraction of blue beads in his cup is $\frac{2}{6}$ because 2 of his beads are blue and 6 of his beads are not blue.

   Explain what mistake Gabriel made, and write the correct fraction that shows the number of blue beads in Gabriel's cup.

   Gabriel made a mistake in the denominator of his fraction. The number should be 8 because there are 8 total beads. Gabriel's fraction should be $\frac{2}{8}$.

4. Next, your mom asks you about the blue beads in your cup, and you tell her that your fraction of blue beads is equal to Gabriel's fraction of blue beads in Question 3. You only have 4 beads in your cup, as shown on the number line below.

   Your cup:



   Explain how the number line helps prove the fractions are equal.

   The fractions are equivalent because they are the same distance away from zero on the number lines. If a number line representing Gabriel's cup were created and broken into fourths, the same point would be marked as is marked on my cup's number line.

5. After you finish making bracelets, you and Gabriel decide to do another art project. For this project, your mom gives you each a piece of poster board with the following sizes:

Your mom also gives you square pieces of tissue paper that are all the same size to glue on your poster board. You can fit exactly 3 squares of tissue paper along the shorter side of the poster board without overlapping them.

How many tissue paper squares will you be able to fit on the poster board? Explain how you know by using the areas of both the poster board and the tissue paper squares.

I can fit 15 tissue paper squares on the poster board. The area of the poster board is 60 inches² because 6 × 10 = 60. Since I know that 3 squares will fit along the shorter side of the rectangle, I can divide 6 by 3 and find that each side of the square must be 2 inches. This means that each square has an area of 4 inches² because 2 × 2 = 4. I can divide 60 by 4 and get 15, which means 15 squares will fit.

6. When your playdate is over, your mom asks you and Gabriel to clean up all the toy cars that you played with in your room. You find three separate piles of cars in your room, and each pile has 12 cars in it. Your mom wants you to put all the cars away equally into four baskets.

Write and solve an equation to show how to find the number of cars in each basket, then explain your equation using words.

The equation is 3 × 12 ÷ 4 = *c*. I found that there are 9 cars in each basket. First, I multiply the number of piles of cars by the number of cars in each pile. Then I divide that total by the 4 baskets to find how many cars are in each basket.

End of Performance Task

Scoring Rubrics for Part A:

Scoring Rubric Question 1:	
1 Point:	The student demonstrates good understanding of measuring time intervals in minutes. The student correctly calculates the amount of time the children will be playing.
0 Points:	The student demonstrates no understanding of measuring time intervals in minutes. The student does not correctly calculate the amount of time the children will be playing.

Scoring Rubric Question 2:	
1 Point:	The student demonstrates good understanding of interpreting products of whole numbers. The student correctly calculates the number of crackers on the plate.
0 Points:	The student demonstrates no understanding of interpreting products of whole numbers. The student does not correctly calculate the number of crackers on the plate.

Soring Rubric for Part B:

Scoring Rubric Question 3:	
2 Points:	The student demonstrates good understanding of fractions. The student correctly explains the mistake Gabriel made and correctly writes the appropriate fraction.
1 Point:	The student demonstrates limited understanding of fractions. The student correctly explains the mistake Gabriel made but does not correctly write the appropriate fraction. OR The student correctly writes the appropriate fraction but does not correctly explain the mistake Gabriel made.
0 Points:	The student demonstrates no understanding of fractions. The student does not correctly explain the mistake Gabriel made and does not correctly write the appropriate fraction.

Scoring Rubric Question 4*:	
2 Points:	The student demonstrates thorough understanding of recognizing equivalent fractions. The student correctly and completely explains why the fractions are equal.
1 Point:	The student demonstrates limited understanding of recognizing equivalent fractions. The student explains why the fractions are equivalent.
0 Points:	The student demonstrates no understanding of recognizing equivalent fractions. The student does not correctly explain why the fractions are equal.

**A student should receive full credit for this question if they correctly calculate with the incorrect numbers from the previous question(s).*

Scoring Rubric Question 5:	
3 Points:	The student demonstrates thorough understanding of finding areas of rectangles with whole-number side lengths. The student correctly identifies the number of smaller squares that will fit, correctly finds the area of the larger rectangle, and correctly finds the area of the smaller squares.
2 Points:	The student demonstrates good understanding of finding areas of rectangles with whole-number side lengths. The student correctly finds the area of the larger rectangle, correctly finds the area of the smaller squares, but does not correctly identify the number of smaller squares that will fit. OR The student correctly identifies the number of smaller squares that will fit, correctly finds the area of the smaller squares, but does not correctly find the area of the larger rectangle.
1 Point:	The student demonstrates limited understanding of finding areas of rectangles with whole-number side lengths. The student correctly finds the area of the rectangle but does not correctly find the area of the smaller squares and does not correctly identify the number of smaller squares that will fit. OR The student correctly finds the area of the smaller squares but does not correctly find the area of the rectangle and does not correctly identify the number of smaller squares that will fit.
0 Points:	The student demonstrates no understanding of finding areas of rectangles with whole-number side lengths. The student does not correctly find the area of the rectangle, does not correctly find the area of the smaller squares, and does not use the information found correctly to identify the number of smaller squares that will fit.

Scoring Rubric Question 6:	
3 Points:	The student demonstrates thorough understanding of solving and representing two-step word problems. The student correctly writes the equation to represent the situation, correctly solves the equation, and correctly explains the equation using words.
2 Points:	The student demonstrates good understanding of solving and representing two-step word problems. The student correctly writes the equation and correctly solves the equation but does not correctly explain the equation using words. OR The student correctly writes the equation and correctly explains the equation but does not correctly solve the equation
1 Point:	The student demonstrates limited understanding of solving and representing two-step word problems. The student correctly writes the equation but does not correctly solve the equation and does not correctly explain the equation using words.
0 Points:	The student demonstrates no understanding of solving and representing two-step word problems. The student does not correctly write the equation, does not correctly solve the equation, and does not correctly explain the equation using words.