**The Race**

**Task #8**

(This Task builds from Task 1, 2, 3, 4, 5, 6, and 7)

*Adapted from North Carolina Department of Public Instruction*

**Student Objectives:** “I can decompose a fraction on a number line.”

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| **Standards to Measure** | **Mathematical Practices** |
| **4.NF.3** Understand a fraction a/b with a>1 as a sum of fractions 1/b.  **a.** Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.  **b.** Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.* | 1. Make sense of problems and persevere in solving them.  8. Look for and express regularity in repeated reasoning. |

**Materials:**

Race handout

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| G  **Engage Students with the Goal** | State and Rate  Objective: “I can decompose a fraction on a number line.”  Students rate themselves to the goal (1, 2, 3, 4). | Setting Objectives and Providing Feedback |
| A  **Access Prior**  **Knowledge** | **Ask students:**  Show students the visual below and ask them:  “Have you ever run a relay race before? What happens in a relay race that is different than a regular race?”  relay-race | Nonlinguistic Representation  Identifying Similarities and Differences |
| N  **New Information** | Today we are going to get ready for a relay race. Before we run the race we need to make a plan.  Each team will have three people on it. Each person on a team has to run in the race, but they do not need to run the same distance. There are certain places during the race where you can hand off the baton to the next runner. You are going to get a chance to plan the distances of each runner on your team before the race begins.  Let’s work together to try to make a plan for a team. Today’s race will have different places that a team can hand off their baton to the next runner.  Draw a line on the board with a start and finish line. Mark 5 locations, equal distance apart, where students can hand off the baton. This will break the track into 6 separate sections. Students may have a difficult time with the concept that there are 5 locations to hand off, but 6 sections to the race.  This is a good time to discuss the fact that the distance between the marks is what we are considering and not the marks.  Have students talk with their teammates to determine some possibilities to setting up the race.  Remember that each person doesn’t have to run the same distance.  Share a few of the students’ ideas, and ask what fraction of the race each student will need to run.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |   S X X F  In this race the first runner runs 3/6 of the race, the second runner runs 2/6, and the final runner runs 1/6.  Write an equation for each idea. 3/6 + 2/6 + 1/6 = 6/6 or 1 whole Look for multiple ways to set up the race.  Look for multiple ways to set up the race. | Cooperative Learning  Nonlinguistic Representation  Cues, Questions, and Advance Organizers |
| A  **Application** | Students work on planning four different races. (worksheets attached)  For each race the student teams need to find multiple ways to set up each race. They record the distance each runner will run, and then write an equation that will equal one whole.  Have students share their possibilities for each race and discuss their favorite and the reason why they chose it.  Make the connection between the races and a number line from 0 – 1.  How are these similar?  **An extension to this lesson**  Set up a race outside using cones as hand off positions. Have the students run the race according to their plans.  What are some possibilities if we had only 2 people on a team? 4 people? | Cooperative Learning  Generating and Testing Hypotheses  Practice and Homework  Similarities and Differences |
| G  **Revisit the Goal** | State and Rate  Objective: “I can decompose a fraction on a number line.”  Students rate themselves to the goal (1, 2, 3, 4). | Setting Objectives and Providing Feedback |

**Evaluation of Students**

**Formative:**

While students are working, observe them and pose questions to check for their mathematical understanding.

**Summative:**

Students’ work from the Explore phase can be used as a summative assessment.

**Plans for Individual Differences**

**Intervention:**

If students are having difficulties provide them with fractions manipulatives (fraction bars, fraction tiles) to help them visualize the idea of decomposing a whole unit.

**Extension:**

If students are in need of an extension have them design a relay race that is 2 laps long so they have to decompose the number 2. You could also have them design a race that is 2 ½ laps long.

**Race 1**

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**S F**

This race has **6** different sections to run. What are some possibilities that your team can run?

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| --- | --- | --- | --- |
| Runner 1 | Runner 2 | Runner 3 | Equations |
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Which one of your options is your favorite one? Explain why.



**Race 2**

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**S F**

This race has **4** different sections to run. What are some possibilities that your team can run?

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| --- | --- | --- | --- |
| Runner 1 | Runner 2 | Runner 3 | Equations |
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Which one of your options is your favorite one? Explain why.

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**Race 3**

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**S F**

This race has **10** different sections to run. What are some possibilities that your team can run?

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| --- | --- | --- | --- |
| Runner 1 | Runner 2 | Runner 3 | Equations |
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Which one of your options is your favorite one? Explain why.

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**Race 4**

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**S F**

This race has **8** different sections to run. What are some possibilities that your team can run?

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| --- | --- | --- | --- |
| Runner 1 | Runner 2 | Runner 3 | Equations |
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Which one of your options is your favorite one? Explain why.

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