### Big Idea(s)/ Topic(s)

- Develop an understanding of fractions, especially unit fractions (fractions with a numerator 1).

### Standard(s) Alignment

| MGSE3.NF.1 | Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts (unit fraction). |

### Diagnostic Assessment

**Unit Fractions - Examples and Non-Examples**

In this Diagnostic Assessment, students will be able to share examples and non-examples of Unit Fractions. This will give the teacher insight of what students may or may not already know about unit fractions.
Instructional Design

Desmos Activity:  **Unit Fractions - 3rd Grade**

**Overview** - In this Learning Plan, students will engage in the idea of understanding Unit Fractions, which are fractions with a numerator of 1. Specifically, students will engage in the concept of fractions referring to just one part of a whole. Students will have multiple opportunities to share their understanding of fractions via responses or illustrations.

**Engage:** Students will engage in an opening activity, “Which One Doesn’t Belong” to spark discussion about Unit Fractions. Students will be shown 4 pictures of fractions to determine Which One Doesn’t Belong and why?

**Explore:** Students will engage in the **Desmos Activity: Unit Fractions - 3rd Grade**. In this activity, students will explore various scenarios to gain additional experiences to learn about unit fractions as well as share their understanding of unit fractions.

**Apply:** Students will construct a fraction portfolio in which they find real world examples of unit fractions ( ½, ⅓, ¼, ⅙ and ⅛) either digitally or pencil/paper.

**Reflect:** Students will have opportunities throughout the Learning Plan to reflect and share their knowledge of the intended learning target of developing an understanding of unit fractions.

Materials - Electronic Device, Printed materials, or pencil/paper for unplugged/offline learners.

- **Synchronous** – This Learning Plan may be most effective in a school setting in which Synchronous instruction occurs. Students will have opportunities to share their understanding of fractions as well as engage in interactive activities to support their learning even further.
- **Asynchronous** – The activities in this Learning Plan can be adapted for students to work and their own pace. Work can later be accessed by the teacher to gain an insight of student understanding.
- **Unplugged/ Offline** - The activities in this Learning Plan can be adapted for students to work with pencil/paper and still gain an understanding of unit fractions.

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**Engage**

**Which One Doesn’t Belong?**
To get students talking about fractions, show students the following task card and ask, “Which One Doesn’t Belong?” Each of the fractions has a reason for why it may not belong, so there is no “wrong answer” as long as reasoning is evident. Some possible student responses include the following:

- The top left may not belong because it is the only that doesn’t have exactly 1 part shaded.
- The top right may not belong because the shape is partitioned with a vertical and a horizontal line.
- The bottom left may not belong because it is the only shape partitioned with only horizontal lines.
- The bottom right may not belong because it is the only one that has blue shading.

**Note:** There are other possible reasons students may find to explain why any of these may not belong.

- **Synchronous** - Show the image on a projector/smart board. Have individual students share which picture does not belong and have them explain why.
- **Asynchronous** - Share this image with students. Have the student share his/her thought process of which one does not belong and why. To further the discussion, see if the student can determine a reason as to why each picture could, “not belong.”
- **Unplugged/ Offline** - Print/draw these illustrations on a piece of paper. Have the student share his/her thought process of which one does not belong and why. To further the discussion, see if the student can determine a reason as to why each picture could, “not belong.”

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**Explore**

**Unit Fractions - 3rd Grade**

To further explore the concept of Unit Fractions, students will engage in the Desmos Task: **Unit Fractions - 3rd Grade**. In this activity, students will have multiple ways to represent a unit fractions, including \( \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{6} \) and \( \frac{1}{8} \). Students will also engage in opportunities to share their work and thinking with classmates.
- **Synchronous**: Complete Desmos activity during synchronous learning, either face to face, virtual, or blended.
- **Asynchronous**: Allow students to work at their own pace on an electronic device. Student work can be monitored through the Teacher Dashboard through the Desmos platform.
- **Unplugged/Offline**: Use paper and pencil to allow students the opportunities to illustrate unit fractions when using shapes. Most slides can be adapted to pencil/paper.

**Screenshots from Desmos: Unit Fractions Activity**

Word Problem

Susie pulls out her plate as she prepares to eat dinner. Her plate has 4 equal sections. She places broccoli in one of the parts.

How much of Susie’s plate has broccoli?

Draw on the image to show your work.

- 1/2 plate of broccoli
- 1/3 plate of broccoli
- 1/4 plate of broccoli
- 1/6 plate of broccoli

Explain your thinking:

Your Garden may look like this...

On the last 1/4 of your garden, draw any fruit or vegetable you’d like. Label it so your teacher knows what you planted.
Apply

Allow students the opportunity to create a fraction portfolio, either digitally, or on paper. Allow students to explore the school, or home, to determine where unit fractions can be found. Encourage students to find an example of ½, ⅓, ¼, ⅙ and ⅛. (Example, ½ of a sandwich. ⅓ of a dinner plate is covered in macaroni and cheese.) Have students either take pictures to upload into a Google Slide of PowerPoint Presentation or record in a notebook. Linked is a Usable Template (Google Slides)

- **Synchronous** - Have students take pictures (if Chromebooks with camera options are available) to upload into a Google Slide of PowerPoint Presentation.
- **Asynchronous** - Have students work at their own pace at home if students are not in a school setting. The final project can be shared with the teacher.
- **Unplugged/ Offline** - Have students draw a representation of real-world unit fractions that they find. This can be completed on paper or in a notebook.

Reflect

The Desmos: Unit Fractions activity allows opportunities for students to share and reflect upon their thinking.
● **Synchronous** - Complete slides in a whole group setting. Students will be allowed to see the responses of classmates in real-time. Responses can be used to further guide instruction.

● **Asynchronous** - Students may complete the slides at their own pace. Students will still be allowed to see responses of classmates who have previously completed these screens.

● **Unplugged/ Offline** - Have students reflect upon their learning and share their thinking with an adult. Students may record their answers to these questions using pencil/paper.

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**Evidence of Student Success**
• Students may refer back to the initial Diagnostic Assessment to determine if their ideas of examples/non-examples have changed as a result of engaging in the steps of this Learning Plan.
• Analyze student responses and models that were engaged in throughout the Desmos Activity. Use responses to guide additional instruction.
• Analyze student work samples when identifying real-world examples of various unit fractions.
• Student success is evident when students are able to communicate, verbally or visually, an accurate understanding of unit fractions.

### Student Learning Supports

**Establish mathematics goals to focus learning.**
- Make instructions and expectations clear for the activities.
- Make explicit connections between current and prior lessons or units.

**Facilitate meaningful mathematical discourse.**
- Explicitly model and teach good “discussion board” etiquette.

**Pose purposeful questions.**
- Predetermine when you will call on the student or use the pause feature within the activities.
- Break class into small discussion groups to work collaboratively and then have groups report back to the whole group.

**Support productive struggle in learning mathematics.**
- Offer outlines and other scaffolding tools and share tips that might help students learn.
- Provide feedback using the feedback feature within activities and offer corrective opportunities.
- Consider the pacing of the lesson.

**Elicit and use evidence of student thinking.**
Anticipate any misconceptions or questions students might have about the task, materials or technology. Proactively address them with readily available and accessible resources.

### Additional Learning Support Strategies
- Identify additional strategies to support students as they progress towards mastery of the big idea.

### Engaging Families

Students can deepen their understanding of Unit Fractions by completing the following activities. Students may find it helpful to review the concepts alongside their parents, siblings, or friends at home.

**Introduction Video:**
- [LearnZillion - Introduction Video](#)
Activities/Games:

- Identify Unit Fractions Game - SnappyMaths.com
- Match Fractions to a Model - ABCya!
- Math Playground - Unit Fractions

## Appendix

### Diagnostic Assessment

**Example or Non-Example**

<table>
<thead>
<tr>
<th>List as many <strong>examples</strong> of Unit Fractions as you can here:</th>
<th>List as many <strong>non-examples</strong> of Unit Fractions as you can here:</th>
</tr>
</thead>
</table>
State the rule or reasoning you used to decide if something is an example or non-example.