## 2nd Grade

### Grade Level Overview

#### Sample Mathematics Learning Plan – Addition & Subtraction

<table>
<thead>
<tr>
<th>Big Idea/ Topic</th>
<th>• Build fluency with addition and subtraction.</th>
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<tbody>
<tr>
<td><strong>Standard Alignment</strong></td>
<td>MGSE2.OA.1 Use addition and subtraction within 100 to solve one and two step word problems by using drawings and equations with a symbol for the unknown number to represent the problem.</td>
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<tr>
<td></td>
<td>MGSE2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</td>
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<tr>
<td><strong>Diagnostic Assessment</strong></td>
<td>The attached diagnostic assessment assesses students’ understanding of problem-solving strategies. Within this assessment, students are asked to determine a strategy for fluency with numbers.</td>
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<td></td>
<td>Students are usually proficient when they focus on a strategy relevant to particular facts. When these facts are mixed with others, students may revert to counting as a strategy and ignore the efficient strategies they have previously learned.</td>
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Instructional Design

Desmos Activity link: The Candy Bowl

Engage

1. **Act 1: Notice and Wonder**

Watch the video and complete the chart below with what you notice and what you wonder.

**Teacher Moves**

Act I – Whole Group - Pose the conflict and introduce students to the scenario by showing Act I video to students.

- **Synchronous** Complete during a classroom discussion while pausing the activity to highlight student responses. It might be useful to restrict the activity to screens 1 - 6, initially, to maintain rigor within the activity.

- **Asynchronous** Introduce the problem to students in a virtual platform; this can be done via e-document or video. Allow students to share responses within the Desmos platform and provide feedback via the teacher dashboard. Additionally, students could use an audio/video to share. Provide feedback to individual student responses and highlight multiple strategies used by students. It might be useful to restrict the activity to screens 1 - 6, initially, to maintain rigor within the activity.

- **Unplugged/ Offline** Provide the opening image for students to engage in the task. Have students share ideas through email/text/phone. Provide feedback to students and share other students’ ideas before engaging in the remaining sections. It might be useful to restrict the activity to screens 1 - 6, initially, to maintain rigor within the activity.

Explore
2. Our Class Question
What other mathematical questions could you ask about this situation?

Teacher Moves
On this screen, you will share the "Class Question" that you will investigate as a class. Students will also have the opportunity to write other mathematical questions regarding this situation.

You will repeat the Class Question often during this activity, so students are frequently reminded what they're working towards.

Edit the "Note" section as necessary.

Sample Responses
Anticipated questions students may ask and wish to answer:
- How many Snickers were in the bowl to start?*
- How many did the teachers eat?
- How many Twix candies are there in the bowl now?
- How much candy was in the bowl in the beginning?
*Main question(s) to be investigated

3. Estimate (Too Low, A...)
We want to find out How many Snickers were in the bowl?

Watch the video again and make an estimate for your answer to the class question.

Use the table below to enter:
- A brave answer that is too low.
- A brave answer that is too high.
- Your true estimate.

Press "Submit" when done.

Teacher Moves
If done synchronously, consider using "Pacing" to restrict students to this screen. Teacher may want to explain how to come up with "too low" and "too high" estimates.

Check your teacher dashboard to:
- ensure every student has submitted a too low, too high, and estimate.
- take snapshots of students' estimates to engage in a class discussion

- **Synchronous**: Complete Desmos activity during synchronous learning as described above, either face to face, virtual, or blended. It might be useful to restrict the activity to screens 1 - 6, initially, to maintain rigor within the activity.
- **Asynchronous**: Give students time to complete the screens and provide feedback. Ensure that enough time is provided for students to participate and respond to your feedback and edit responses as needed. It might be useful to restrict the activity to screens 1 - 6, initially, to maintain rigor within the activity.
- **Unplugged/ Offline**: Provide the paper versions task. Allow students time to complete the work and submit through email/text or other means. Provide feedback and share with other students and
provide access to other students’ thinking. It might be useful to restrict the activity to screens 1 - 6, initially, to maintain rigor within the activity.

**Apply**

4 **Sketch your Estimate**

students will see their too low and too high estimates on the number line.

students are reminded of their estimate and asked to place it on the number line [students should just place a point for their estimate].

**Teacher Moves**

If done synchronously, consider using "Pacing" to include screens 1-6, in case students would like to go back and revise their estimates.

This is an additional opportunity for students to strengthen their number sense using a number line.

5 **Your Estimate**

[Students will see their estimates and range on the number line.]

Explain how you came up with your estimate.

**Teacher Moves**

If done synchronously, consider using "Pacing" to include screens 1-6, in case students would like to go back and revise their estimates.

Look for opportunities to discuss student ranges, e.g. using student Snapshots:

• what makes a brave range?
• what estimates are not the midpoint of the too low and too high?

6 **Act 2: What do you n...**

Remember, we want to find out How many Snickers were in the bowl? What information do you need to know, to answer the class question?

**Teacher Moves**

Remind students of the class question.

Students will think about what they need to know in order to answer the question. Once they decide what information they need, the teacher will provide necessary information on the next slide(s).

Consider using the "snapshot" tool to display student responses to the whole class.

Edit the "Note" section as necessary.
Remember, we want to find out How many Snickers were in the bowl? Write down the relevant information from the image.

Do you have enough information to answer your class question?

**Teacher Moves**

Restrict this page until students ask for this information.

Use the information you’ve been given to answer the class question (show your work on your paper).

How many Snickers were in the bowl?

Write your answer below (as a number only), then explain your thinking.

**Teacher Moves**

Students should respond here with a numerical answer. Their numerical answer will be used on the next screen.

Considering adding the Act 1 and/or Act 2 images to this slide with the relevant information that students need to answer the question.

Watch the video to see how your answer matches with the actual answer.

You answered {student's answer shows here}.

Is your answer reasonable? Is it the same as the actual answer? Explain your thinking below.

**Teacher Moves**

Upload the image/video for Act 3. This often provides students with the real-life answer to the class question. Sometimes that matches with the mathematical answer, and sometimes it does not.

Note: Not all 3-Act Tasks have a "reveal". This slide could be edited to ask students to explain the reasonableness of their answer, without showing them an Act 3 image/video.

Edit the "note" section as necessary.

- **Synchronous**: Complete Desmos activity during synchronous learning as described above, either face to face, virtual, or blended.
- **Asynchronous**: Give students time to complete the screens and provide feedback. Ensure that enough time is provided for students to participate and respond to your feedback and edit responses as needed.
● **Unplugged/ Offline**: Provide students with access to the paper version of the task. Ask students to complete the questions and have them submit responses via email/text/phone. Provide feedback, share these responses with other students, and share other students’ responses with them.

**Reflect**

Students could have an opportunity to reflect with an exit ticket. Wrapping up the lesson with the problem “Josh won 14 tokens from a game. He won 29 tokens from a second game. After the second game, he used 21 tokens for a prize. How many tokens does he have now?”

● **Synchronous** - Students will reflect upon the Desmos lesson in a journal. Students will share 1 strategy to solve the problem. Share reflections anonymously with the class.

● **Asynchronous** - Students will reflect upon the Desmos lesson in a journal. Students will share 1 strategy to solve the problem. Students could utilize a video/recording application.

● **Unplugged/ Offline** - A paper copy could be sent to the student to reflect with pencil and paper. If math notebooks are a part of teacher routines, the reflection could be performed here.

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**Evidence of Student Success**

**Formative Assessment Questions:**

● What strategy did you use?
● Were you able to write a number sentence, draw a picture, and/or make a model that shows your thinking?
● What did you include with your work that would help someone else understand how you thought about and solved the problem?
● Explain a different strategy that you heard one of your classmates use to solve this problem? What did you think about this strategy? How does it relate to your strategy?

**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 Supports:**
Students should have ample experiences working on various types of problems that have unknowns in all positions, including *result unknown*, *change unknown*, and *start unknown*. Students should be encouraged to solve one- and two-step problems using drawings, objects and equations.

<table>
<thead>
<tr>
<th>Engaging Families</th>
<th>Below is a link to a website that provides several opportunities for students to practice using their problem-solving skills through engaging games and activities.</th>
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<td><a href="https://www.topmarks.co.uk/maths-games/7-11-years/problem-solving">https://www.topmarks.co.uk/maths-games/7-11-years/problem-solving</a></td>
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Appendix

Diagnostic Assessment

1. Using the 99-chart model the following direction set:
   • Start at 16
   • Add 10
   • Subtract 1
   • Move ahead 10 more

2. Ask students to suggest directions to get to the number 45 from the number 14.

3. Provide the students an ending point and allow them to create their own set of directions for a specific number.

4. In the morning there are 25 students in the cafeteria. 18 more students come in. After a few minutes, some students leave. If there are 14 students still in the cafeteria, how many students left the cafeteria? Model the situation and write an equation for your problem.