## Big Idea/ Topic

- Develop an understanding of addition, subtraction, and strategies for addition and subtraction within 20

## Standard Alignment

MGSE1.OA.6 Add and subtract within 20.

a. Use strategies such as counting on; making ten (e.g., \(8 + 6 = 8 + 2 + 4 = 10 + 4 = 14\)); decomposing a number leading to a ten (e.g., \(13 – 4 = 13 – 3 – 1 = 10 – 1 = 9\)); using the relationship between addition and subtraction (e.g., knowing that \(8 + 4 = 12\), one knows \(12 – 8 = 4\)); and creating equivalent but easier or known sums (e.g., adding \(6 + 7\) by creating the known equivalent \(6 + 6 + 1 = 12 + 1 = 13\)).

b. Fluently add and subtract within 10.

## Diagnostic Assessment

In the attached diagnostic assessment, students will be asked to determine the validity of statements regarding fact families the composition of numbers. First, students determine whether the given statement is true or false. Then, students share why they think it is true or false. Students must justify their choice.

Teachers may wish to give this assessment to pairs of students, listen to the conversations they have and record this as anecdotal evidence.
Instructional Design

Desmos Activity link: Part Whole Strategies for 1st Grade

Engage

Sort the cards into 2 or more categories. Hint: There is more than one way to do this.

● Synchronous: Restrict students to the first screen and highlight unique sorts. Provide students the opportunity to share the reasoning behind their sorts to foster more engagement in the upcoming screens and provide insight into how students are seeing the cards. Complete during a classroom discussion while pausing the activity to highlight student responses.

● 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.

● 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.

Explore
● **Synchronous** Complete during a classroom discussion while pausing the activity specifically after each of the sorts to build on student insights and to highlight student responses. This will help to begin some potentially deep conversations about how they are seeing the numbers and how numbers can be composed and decomposed.

● **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.

● **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.

**Apply**
Students can apply strategies for addition with the [Adding Whole Numbers](#) Desmos Activity. Students apply strategies and have an opportunity to describe the strategy.
3 Challenge #2

Press "Deal" to receive your cards.

Drag cards from your hand to the red and blue areas.

GOAL: Create two groups of cards with the SAME SUM using as many cards as possible.

Teacher Moves

Highlight unique answers for the class. Consider asking students whether the class has found every possible solution.

Dashboard Note: ✓ indicates that the student used at least three cards to make two groups with equal sums.

Sample Responses

Here is a non-exhaustive list:

- $2 + 6 = 8$
- $2 + 8 = 3 + 7$
- $6 + 7 = 2 + 3 + 8$ (Best)

4 Reflection

What strategies have been helpful as you try to use as many cards as possible?

Teacher Moves

Use pacing to restrict students to Screen 4. Give students two or three minutes to record their strategies, then ask several to describe their strategies aloud.

By inviting everyone to write reflectively for a few minutes before they hear from any classmates, you may find more students prepared to share their thoughts aloud with the class.

Sample Responses

I started by finding a solution that only uses three cards. For example, $1 + 2 = 3$. Then I tried to add the same amount to each side. If that didn’t work, I tried to improve my solution by adding a new number to one group and then moving a number half as big over to the other group.
Press "Deal" to receive your cards.

Drag cards from your hand to the red and blue areas.

GOAL: Create two groups of cards with the SAME SUM using as many cards as possible.

**Teacher Moves**

- Highlight unique answers for the class. Consider asking students whether the class has found every possible solution.
- Dashboard Note: ✓ indicates that the student used at least three cards to make two groups with equal sums.

**Sample Responses**

Here is a non-exhaustive list:

- $1 + 6 = 7$
- $1 + 2 + 6 = 9$
- $3 + 9 = 1 + 4 + 7$
- $1 + 2 + 3 + 7 = 4 + 9$
- $1 + 6 + 9 = 2 + 3 + 4 + 7$ (Best)

- **Synchronous** Complete during a classroom discussion while pausing the activity to highlight student responses. Use the anonymizer to focus students on the mathematics rather than who got the most points. The focus should be on the mathematics. Use the anonymizer tool to facilitate this in classroom discussions and/or while sharing screenshots of student work.

- **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.

- **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.
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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.

Evidence of Student Success
Formative Assessment Questions:

- Which strategies are the easiest for you? Why?
- Which strategy(ies) are more of a challenge? Why do you think so?
- Do you think the make a ten strategy might be useful with other numbers… Like make a twenty? What might that look like?
- What do you think about doubles plus 2? How might that work? When do you think it might be useful?
- How about doubles minus 1? Can you think of some numbers that this strategy might work with? We’ll investigate this later, but I thought you might like to think about this before we do.

Marbleslides 10 Frame Addition: Making 10

- Provide Marble Slides activity to gauge student thinking on the concept of addition strategies.

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.
Engaging Families

- Use playing cards to have students create a challenge problem for family and friends to solve.
  - determine the number of cards to deal
  - create two groups of cards with the same sum using as many cards as possible.
  - discuss which strategies help you solve your problem

Open Middle

WINDOW SUM

Directions: Using the digits 0-9, no more than once, complete the puzzle so that the sum of each side is equivalent.

\[
\begin{array}{ccc}
\underline{11} & + & \underline{} & + & \underline{} & = \\
+ & & + & & + & \\
\underline{} & + & \underline{} & + & \underline{} & = \\
\underline{} & + & \underline{} & + & \underline{} & = \underline{11}
\end{array}
\]

Appendix

Justified True/False Statements

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
<th>WHY I (or WE) THINK SO</th>
</tr>
</thead>
</table>

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1. The “make a ten” strategy would be a good strategy to use for this fact:

\[ 3 + 9 \]

2. I can make an addition or subtraction equation with these numbers:

\[ 3, 5, 9 \]

3. The rekenrek below shows a “doubles fact.”

![Rekenrek](image-url)