# **Background**

Imagine you are teaching a math lesson to a class of 16 second grade students. The purpose of this lesson is to examine the ways properties of operations can be used to add numbers.

You have asked the students to work with a partner to solve the problem 27 + 23 using any method that works best for them. The partners have completed their work. Now you plan to select 3 individual students to present their work to the class.

Look at the strategies below and the descriptions of the students. Then choose which three students you would like to have present.

## The Problem

27 + 23

## **Learning Goal**

Your goal is for the students to be able to understand how properties of operation can be used to add numbers.

- · You want the students to understand that two numbers can be added in any order (commutative property).
  - Example: 3 + 4 = 4 + 3
- You also want the students to understand that 3 numbers can be regrouped and added in any order (associative property).
  - $\cdot$  Example: 9 + (1 + 7) = (9 + 1) + 7

#### **2nd Grade Student Descriptions** Mason (he/him) Jackie (she/they) Carter (he/him) Valentina (she/her) Jackie is a white transgender Carter is a Black boy who Mason is a white boy who Valentina is a Latina girl who speaks English as his first girl who speaks English as speaks English as his first speaks English as her first language. He is on an IEP for her first language. She has no language. He has no language. She has an IEP for severe ADHD. He receives identified disabilities. She identified disabilities, and he speech impairment free or reduced lunch. He has receives free or reduced receives free or reduced (stuttering). She does not a history of high success and lunch. She has a history of lunch. He has a history of receive free or reduced lunch. low participation during math average success and low average success and little to She has a history of average lessons. He also enjoys participation during math no participation during math success and low participation lessons. He also loves to cook during math lessons. She also singing. lessons. She also loves animals. and bake. enjoys spending time in nature. Strategy B Strategy A 27 + 23 • I broke the 27 into 25 and 2. • First I added 20 and 20 to get 40. • Then I added the 2 and 23 to make 25. Then I added 3 more to get 43. Then I knew that 25 plus 25 is 50 because 2 quarters are 50 cents. 40 + 3 = 4325 + 2550 Jada (she/her) Camille (she/her) Alejandro (he/him) Mateo (he/him) Jada is a Black girl who Camille is a white girl who Aleiandro is a Latino boy who Mateo is a Latino boy who speaks English as her first speaks French as her first speaks Spanish as his first speaks Spanish as his first language. She has no language. She is an EL language. He is an EL student language. He is an EL student who speaks English at a identified disabilities, and she student who speaks English who speaks English at an does not receive free or at an advanced level. She has beginner level. He has no intermediate level. He has no reduced lunch. She has a no identified disabilities, and identified disabilities. He identified disabilities. He history of high success and she does not receive free or receives free or reduced receives free or reduced high participation during math reduced lunch. She has a lunch. He has a history of low lunch. He has a history of high lessons. She also plays on a history of high success and success and low participation success and average softball team. high participation during math during math lessons. He also participation during math lessons. She also does loves to play Minecraft. lessons. He also likes to play karate. the guitar. Strategy C Strategy D +2 Step 1 1. I made 27 and 23 +25 with the blocks. 2. I combined the tens together. Then I combined the ones. That's 4 tens, which is 40. Plus 10 ones, 50 which is 50 I started at 23. Step 2 Then I took 2 from the 27 to make a jump of 2. That makes 25.

Then I only needed to add 25 more, so I made another jump

and got 50.

#### CJ (they/them) Ava (she/her) Liam (he/him) Daniela (she/her) CJ is a gender fluid white Ava is a white girl who speaks Liam is a white boy who Daniela is a Latina girl who English as her first language. speaks English as his first child who speaks English as speaks English as her first She has no identified their first language. They have language. She has no language. He has no disabilities. She receives free identified disabilities, and he no identified disabilities, and identified disabilities, and she or reduced lunch. She has a does not receive free or they do not receive free or does not receive free or history of low success and low reduced lunch. He has a reduced lunch. They have a reduced lunch. She has a participation during math history of average success history of high success and history of average success lessons. She also loves average participation during and average participation and low participation during during math lessons. He also math lessons. They also love math lessons. She also loves gardening. loves comic books. to draw and paint. to dance. Strategy F Strategy E First, I added 7 and 3 27 to get 10. I put a zero 23 + 27 + 23 under the 7. I made it 23 + 27 because that's easier for 50 me to think about. Then I put the 1 up 23 + (2 + 25)Then I broke the 27 into 2 and 25. above the 2. Last I (23 + 2) = 25Then I combined the 2 with the 23, and I got added 1 + 2 + 2 to get Oliver (he/him) Adriel (he/him) Grace (she/her) Angel (she/her) Oliver is a white boy who Adriel is an Indigenous boy Grace is an Asian girl who Angel is a Black girl who speaks English as his first who speaks English as his speaks English as her first speaks English as her first first language. He has no language. He has no language. She has an IEP for I language. She has no identified disabilities, and he identified disabilities, and he dvslexia. She does not identified disabilities, and she does not receive free or receives free or reduced receive free or reduced lunch. does not receive free or reduced lunch. He has a lunch. He has a history of She has a history of low reduced lunch. She has a history of high success and average success and low success and average history of low success and low high participation during math participation during math participation during math participation during math lessons. She also plays lessons. He also enjoys riding lessons. He also loves to play lessons. She also enjoys making origami. his bike. soccer. basketball. Strategy G Strategy H 1. I made 27 and 23 with the blocks. 2. I pulled 2 apart from the 27 to make 25. 3. I put the 2 with the 23 to make 25. That makes 25 27 + 23• First I added 20 and 20 to get 40. + 25 which is 50. Then I added 7 and 3 to get 10. 20 + 20 = 40• Then I added 40 and 10 to get 50. 7 + 3 = 1040 + 10 = 50