# **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).
  - Example: 9 + (1 + 7) = (9 + 1) + 7

#### **2nd Grade Student Descriptions** Angel (she/her) Oliver (he/him) CJ (they/them) Liam (he/him) Angel is a Black girl who CJ is a gender fluid white Oliver is a white boy who Liam is a white boy who speaks English as her first speaks English as his first child who speaks English as speaks English as his first language. She has no language. He has no their first language. They have language. He has no identified disabilities, and she identified disabilities, and he no identified disabilities, and identified disabilities, and he does not receive free or does not receive free or they do not receive free or does not receive free or reduced lunch. She has a reduced lunch. He has a reduced lunch. They have a reduced lunch. He has a history of low success and low history of high success and history of high success and history of average success participation during math high participation during math average participation during and average participation lessons. She also enjoys lessons. He also enjoys riding math lessons. They also love during math lessons. He also making origami. his bike. to draw and paint. loves comic books. Strategy A Strategy B 27 + 23 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. 25 + 2Then I knew that 25 plus 25 is 50 because 2 quarters are 50 cents. 40 25 40 + 3 = 4325 + 2550 Grace (she/her) Mateo (he/him) Alejandro (he/him) Jackie (she/they) Grace is an Asian girl who Mateo is a Latino boy who Alejandro is a Latino boy who : Jackie is a white transgender speaks English as her first speaks Spanish as his first speaks Spanish as his first airl who speaks English as language. She has an IEP for language. He is an EL student language. He is an EL student her first language. She has no dyslexia. She does not who speaks English at an who speaks English at a identified disabilities. She receive free or reduced lunch. intermediate level. He has no beginner level. He has no receives free or reduced She has a history of low identified disabilities. He identified disabilities. He lunch. She has a history of success and average receives free or reduced receives free or reduced average success and low participation during math lunch. He has a history of high lunch. He has a history of low participation during math lessons. She also plays success and average success and low participation lessons. She also loves participation during math basketball. during math lessons. He also animals. lessons. He also likes to play loves to play Minecraft. the guitar. Strategy D Strategy C 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, 23 0 50 which is 50. • I started at 23. Step 2

Then I took 2 from the 27 to make a jump of 2.

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

That makes 25.

and got 50.

#### Camille (she/her) Adriel (he/him) Mason (he/him) Valentina (she/her) Camille is a white girl who Adriel is an Indigenous boy Mason is a white boy who Valentina is a Latina girl who speaks French as her first who speaks English as his speaks English as his first speaks English as her first language. He is on an IEP for language. She has an IEP for language. She is an EL first language. He has no student who speaks English identified disabilities, and he severe ADHD. He receives speech impairment at an advanced level. She has receives free or reduced free or reduced lunch. He has (stuttering). She does not no identified disabilities, and lunch. He has a history of a history of high success and receive free or reduced lunch. she does not receive free or average success and low low participation during math She has a history of average success and low participation reduced lunch. She has a participation during math lessons. He also eniovs during math lessons. She also history of high success and lessons. He also loves to play singing. high participation during math enjoys spending time in soccer. lessons. She also does nature. karate. Strategy E Strategy F 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 • Then I put the 1 up me to think about. 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 Carter (he/him) Daniela (she/her) Jada (she/her) Ava (she/her) Jada is a Black girl who Daniela is a Latina girl who Carter is a Black boy who Ava is a white girl who speaks speaks English as her first speaks English as her first speaks English as his first English as her first language. She has no identified language. She has no language. She has no language. He has no disabilities. She receives free identified disabilities, and she identified disabilities, and she identified disabilities, and he does not receive free or does not receive free or receives free or reduced or reduced lunch. She has a reduced lunch. She has a reduced lunch. She has a history of low success and low lunch. He has a history of history of high success and history of average success average success and little to participation during math high participation during math and low participation during no participation during math lessons. She also loves lessons. She also plays on a math lessons. She also loves lessons. He also loves to cook gardening. softball team. to dance. and bake. 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. 2. 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