**CODE: 146** 

# **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** CJ (they/them) Carter (he/him) Grace (she/her) Mateo (he/him) CJ is a gender fluid white Grace is an Asian girl who Carter is a Black boy who Mateo is a Latino boy who child who speaks English as speaks English as his first speaks English as her first speaks Spanish as his first their first language. They have language. He has no language. She has an IEP for language. He is an EL student no identified disabilities, and identified disabilities, and he dyslexia. She does not who speaks English at an they do not receive free or receives free or reduced receive free or reduced lunch. intermediate level. He has no reduced lunch. They have a lunch. He has a history of She has a history of low identified disabilities. He history of high success and average success and little to success and average receives free or reduced average participation during no participation during math participation during math lunch. He has a history of high math lessons. They also love lessons. He also loves to cook lessons. She also plays success and average to draw and paint. and bake. basketball. participation during math lessons. He also likes to play the guitar. Strategy A Strategy B 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. 25 40 + 3 = 4325 + 2550 Jackie (she/they) Adriel (he/him) Camille (she/her) Angel (she/her) Adriel is an Indigenous boy Jackie is a white transgender Camille is a white girl who Angel is a Black girl who girl who speaks English as who speaks English as his speaks French as her first speaks English as her first her first language. She has no first language. He has no language. She is an EL language. She has no identified disabilities. She identified disabilities, and he student who speaks English identified disabilities, and she receives free or reduced receives free or reduced at an advanced level. She has does not receive free or lunch. She has a history of lunch. He has a history of no identified disabilities, and reduced lunch. She has a average success and low average success and low she does not receive free or history of low success and low participation during math participation during math reduced lunch. She has a participation during math lessons. She also loves lessons. He also loves to play history of high success and lessons. She also enjoys animals. soccer. high participation during math making origami. lessons. She also does karate. Strategy C Strategy D Step 1 1. I made 27 and 23 +2 +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, 25 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. That makes 25. • Then I only needed to add 25 more, so I made another jump and got 50.

#### Alejandro (he/him) Oliver (he/him) Mason (he/him) Ava (she/her) Alejandro is a Latino boy who Mason is a white boy who Oliver is a white boy who Ava is a white girl who speaks English as her first language. speaks Spanish as his first speaks English as his first speaks English as his first language. He is an EL student language. He is on an IEP for She has no identified language. He has no disabilities. She receives free who speaks English at a severe ADHD. He receives identified disabilities, and he beginner level. He has no free or reduced lunch. He has does not receive free or or reduced lunch. She has a identified disabilities. He a history of high success and reduced lunch. He has a history of low success and low receives free or reduced low participation during math history of high success and participation during math lunch. He has a history of low high participation during math lessons. She also loves lessons. He also eniovs success and low participation lessons. He also enjoys riding gardening. singing. during math lessons. He also his bike. loves to play Minecraft. 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 50. Daniela (she/her) Liam (he/him) Valentina (she/her) Jada (she/her) Daniela is a Latina girl who Liam is a white boy who Valentina is a Latina girl who Jada is a Black girl who speaks English as her first speaks English as his first speaks English as her first speaks English as her first language. She has no language. He has no language. She has an IEP for language. She has no identified disabilities, and she identified disabilities, and he speech impairment identified disabilities, and she does not receive free or does not receive free or (stuttering). She does not does not receive free or reduced lunch. She has a reduced lunch. He has a receive free or reduced lunch. reduced lunch. She has a history of average success She has a history of average history of high success and history of average success and low participation during and average participation success and low participation high participation during math math lessons. She also loves during math lessons. He also during math lessons. She also lessons. She also plays on a loves comic books. enjoys spending time in to dance. softball team. nature. Strategy H Strategy G 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