Nasco Education™

LESSON PLAN

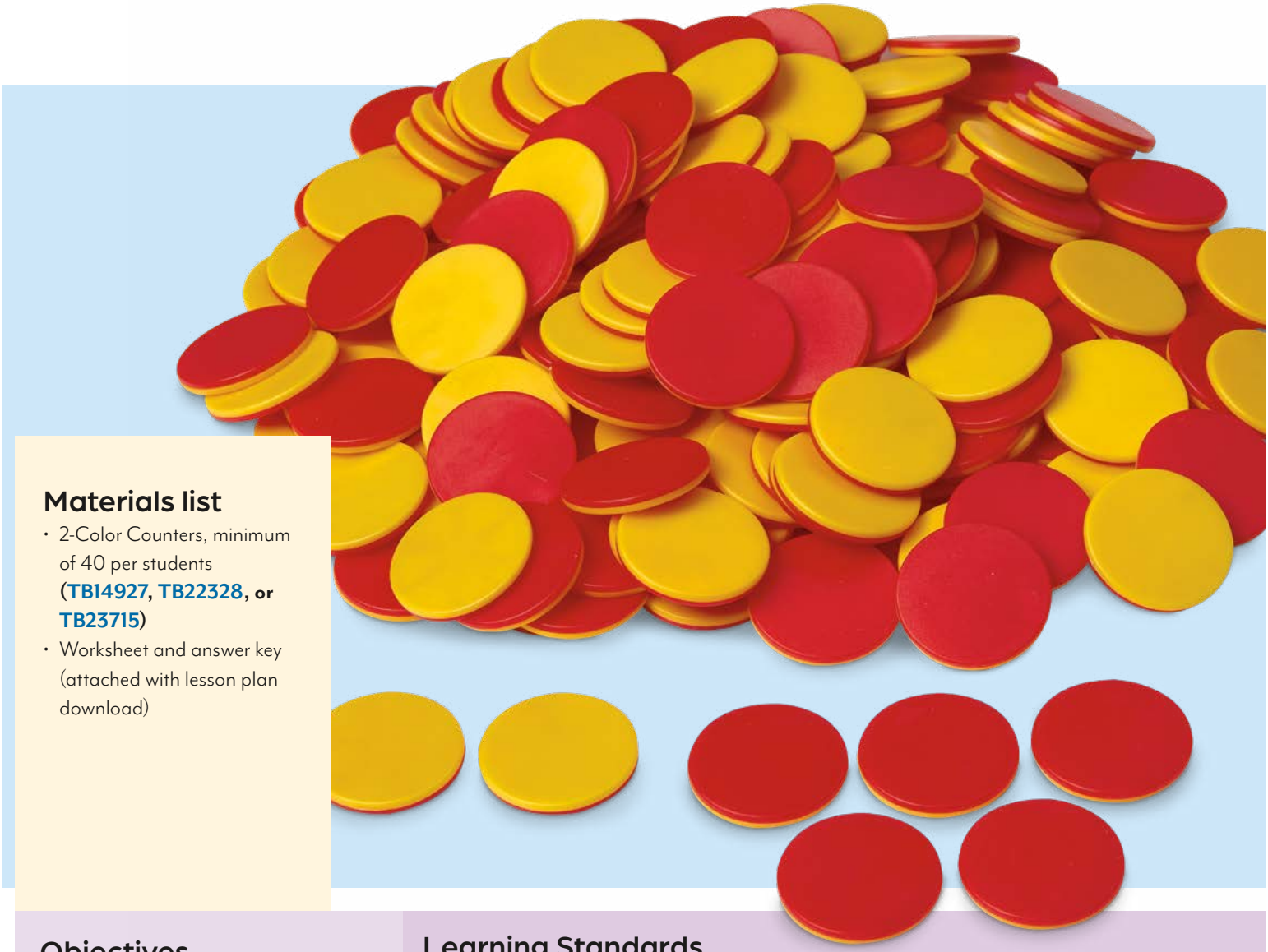
Math

Developed with Kristin Ulrich

Addition of negative numbers from –20 to 20

Volume 13 | Gr. 5

Time: 20-30 mins.



Materials list

- 2-Color Counters, minimum of 40 per students (**TB14927**, **TB22328**, **or TB23715**)
- Worksheet and answer key (attached with lesson plan download)

Objectives

Students will...

- Solve addition problems with positive and negative integers
- Investigate negative integers using manipulatives

Learning Standards

- Add and subtract positive and negative rational numbers fluently.

Introduction

In this lesson, students will be introduced to the concept of adding negative numbers. The two-color counters will be a visual representation for them. The yellow side will always indicate positive numbers, and the red side will always represent negative numbers.

Activity

Tell students that in this lesson, it's very important for them to remember that the yellow side of their counters will always represent positive numbers, and that the red side will always represent negative numbers.

Problem 1: (–8) + 10

1. The first addend is a negative number. Check with students to see if they remember which side of their counters represents the first addend. They should place eight counters with the red side face up in front of them.

2. The second addend is a positive number, meaning that students should be able to tell you that they will be using the yellow side of their counters. Have them put 10 counters with the yellow side face up in front of them.

3. Students may be wondering at this point how having eight red counters and 10 yellow counters determines an answer to the math problem. Tell them there is one more step they need to do to discover the answer. They will need to remove pairs of counters until there are no pairs left. A pair consists of one red counter and one yellow counter. They should be able to remove counter pairs until they are left with two yellow counters. Make sure students do not try to remove the two yellow counters as a pair. They should ONLY be counting one red counter and one yellow counter as a pair.

See if students remember if yellow represents positive or negative *(positive)*. That means the answer to the problem is 2. Have them write that answer for problem 1 on their worksheet.

Problem 2: 6 + (–9)

1. The first addend is 6. Students should represent this by placing six yellow counters in front of them. Continue to ensure they understand why the counters should have the yellow side face up instead of the red *(because 6 is a positive number)*.

2. The second addend is –9. Students should place nine red counters in front of them.

3. Once students have six yellow counters and nine red counters in front of them, they should begin to remove pairs of counters. Again, make sure that each pair they remove consists of one red and one yellow counter. Students should remove six pairs of counters, leaving three red counters behind. From this, students should be able to determine that the answer to this problem is –3 because they have three red counters left, and red represents negative numbers.

Problem 3: (–1) + (–4)

1. The first addend is a negative number. Watch to see if students place one red counter in front of them. Students should be able to tell you, if asked, that they did so because –1 is a negative number, and red represents negative numbers.

2. Students should be able to place four red counters in front of them to represent the second addend.

3. Students should realize that there are no pairs to remove, as all the counters are the same color, and a pair must have one of each color in it. Tell students that this means they have come to the end of the problem, and since all the counters are red, their answer will be a negative number. All the students need to do is count how many counters are in front of them and write –5 for their answer.

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Problem 4: 0 + (–9)

1. Ask students how they would represent the first addend with their counters. They should say that they don't need to put any counters in front of them.

2. Students should move nine red counters in front of them to represent the second addend, as the number is a negative one and red represents negative numbers.

3. Since there are no pairs to remove, they should be able to determine that the answer to the problem is –9.

Practice 1

Allow students to work on problems 5-7 on their own. Remind them one last time that positive numbers are always represented with yellow counters and negative numbers are always represented with red counters. They will need to place their addends in front of them, then remove pairs of counters. A pair always consists of one red and one yellow counter. When there are no more pairs to remove, they will have the answer to the problem.

Checking for Understanding

After students have completed problems 5-7, check for understanding by using the following line of questioning:

Problem 5

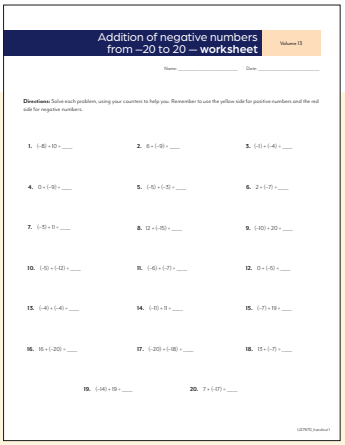
1. How do you represent the first addend, –5? *(Put five red counters in front of you.)*
2. How do you represent the second addend, –3? *(Put three red counters in front of you.)*
3. How many pairs of counters can be removed? *(None)*
4. Why not? *(There are no pairs of counters of opposite colors.)*
5. What's the final answer to the problem, (–5) + (–3)? *(–8)*

Problem 6

1. How do you represent the first addend, 2? *(Put two yellow counters in front of you.)*
2. How do you represent the second addend, –7 *(Put seven red counters in front of you.)*
3. How many pairs of counters can be removed? *(2)*
4. Why? *(There are only two pairs of counters that have opposite colors.)*
5. What's the final answer to the problem, 2 + (–7)? *(–5)*
6. How do you know? *(There are five red counters left after all opposite pairs have been removed.)*

Problem 7

1. How do you represent the first addend, –3? *(Put three red counters in front of you.)*
2. How do you represent the second addend, 11? *(Put 11 yellow counters in front of you.)*
3. How many pairs of counters can be removed? *(3)*
4. Why? *(There are only three pairs of counters that have opposite colors.)*
5. What's the final answer to the problem, (–3) + 11? *(8)*
6. How do you know? *(There are eight yellow counters left after all opposite pairs have been removed.)*


Addition of negative numbers from –20 to 20 — worksheet

Practice 2

Students should now complete the rest of the worksheet individually.

Intervention

- Have students only focus on adding a positive number to a negative number.
- Work with numbers from –10 to 10.

Extension

- Have students create their own problems.
- Work on problems in the range of –50 to 50.

Addition of negative numbers from –20 to 20 — **worksheet**

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Name: _____ Date: _____

Directions: Solve each problem, using your counters to help you. Remember to use the yellow side for positive numbers and the red side for negative numbers.

1. (–8) + 10 = ____

2. 6 + (–9) = ____

3. (–1) + (–4) = ____

4. 0 + (–9) = ____

5. (–5) + (–3) = ____

6. 2 + (–7) = ____

7. (–3) + 11 = ____

8. 12 + (–15) = ____

9. (–10) + 20 = ____

10. (–5) + (–12) = ____

11. (–6) + (–7) = ____

12. 0 + (–5) = ____

13. (–4) + (–4) = ____

14. (–11) + 11 = ____

15. (–7) + 19 = ____

16. 16 + (–20) = ____

17. (–20) + (–18) = ____

18. 13 + (–7) = ____

19. (–14) + 19 = ____

20. 7 + (–17) = ____

Addition of negative numbers from –20 to 20 — **answer key**

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1. (–8) + 10 = **2**

2. 6 + (–9) = **(–3)**

3. (–1) + (–4) = **(–5)**

4. 0 + (–9) = **(–9)**

5. (–5) + (–3) = **(–8)**

6. 2 + (–7) = **(–5)**

7. (–3) + 11 = **8**

8. 12 + (–15) = **(–3)**

9. (–10) + 20 = **10**

10. (–5) + (–12) = **(–17)**

11. (–6) + (–7) = **(–13)**

12. 0 + (–5) = **(–5)**

13. (–4) + (–4) = **(–8)**

14. (–11) + 11 = **0**

15. (–7) + 19 = **12**

16. 16 + (–20) = **(–4)**

17. (–20) + (–18) = **(–38)**

18. 13 + (–7) = **6**

19. (–14) + 19 = **5**

20. 7 + (–17) = **(–10)**