

Name: _____ Date: _____

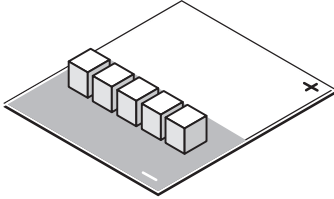
Lesson 3-1: Subtracting Positive and Negative Integers

To subtract a positive integer, take blocks off the positive side of the Basic Mat. To subtract a negative integer, take blocks off the negative side.

Example: Subtract $-5 - (-3)$

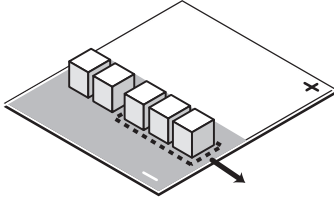
Step 1.

Put 5 unit blocks on the negative side of the mat.



Step 2.

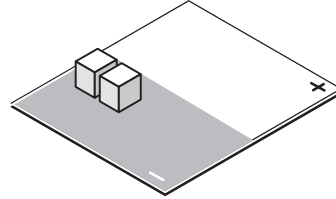
To subtract -3 , take 3 blocks off the negative side.



Step 3.

Read the mat.

-2



Step 4.

Record.

$-5 - (-3) = -2$

Try It

1. To show the problem $7 - 3$, what number do you model first? _____
On which part of the mat do you show this number? _____

2. Model the problem $7 - 3$. What is the answer? _____
Explain the steps you used. _____

Use Algeblocks and the Basic Mat to subtract.

3. $-4 - (-1) = \underline{\hspace{2cm}}$

4. $6 - 1 = \underline{\hspace{2cm}}$

5. $-7 - (-5) = \underline{\hspace{2cm}}$

6. $8 - 2 = \underline{\hspace{2cm}}$

7. $-3 - (-3) = \underline{\hspace{2cm}}$

8. $-6 - (-2) = \underline{\hspace{2cm}}$

9. $7 - 5 = \underline{\hspace{2cm}}$

10. $-8 - (-4) = \underline{\hspace{2cm}}$

11. $-9 - (-3) = \underline{\hspace{2cm}}$

Critical Thinking

12. Draw a number line model for subtracting $-5 - (-3)$. Compare this with the Algeblocks model. What are the advantages of each type of model?

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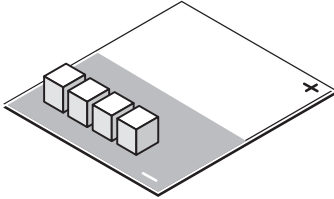
Lesson 3-2: Using Zero Pairs to Subtract Positive Integers

Sometimes you will need to add zero pairs before you can subtract. Remember, to subtract a positive integer, take blocks off the positive side of the mat.

Example: Subtract $-4 - 2$

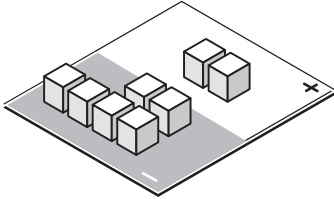
Step 1.

Place 4 unit blocks on the negative side of the mat.



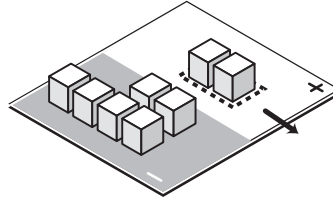
Step 2a.

Add 2 zero pairs so you will be able to take away two positive blocks.



Step 2b.

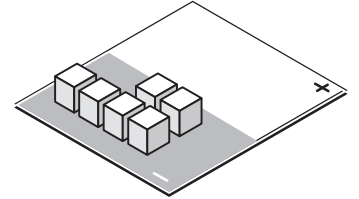
Subtract 2 by taking 2 blocks off the positive side of the mat.



Step 3.

Read the mat.

-6



Step 4.

Record.

$-4 - 2 = -6$

Try It

- In Step 2a, circle the two zero pairs. Mark each block +1 or -1. _____

- Model the problem $2 - 5$. Where do you put the first number, 2? How many zero pairs do you need to add?

Practice

Use Algeblocks and the Basic Mat to subtract.

- | | | |
|---------------------|---------------------|---------------------|
| 3. $1 - 3 =$ _____ | 4. $-1 - 5 =$ _____ | 5. $-3 - 4 =$ _____ |
| 6. $4 - 7 =$ _____ | 7. $2 - 4 =$ _____ | 8. $-2 - 6 =$ _____ |
| 9. $-6 - 3 =$ _____ | 10. $2 - 8 =$ _____ | 11. $1 - 5 =$ _____ |

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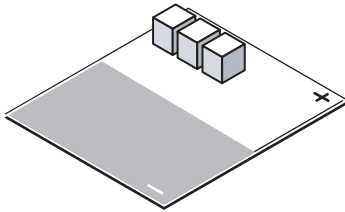
Lesson 3-3: Using Zero Pairs to Subtract Negative Integers

In this example, zero pairs are needed to take -5 away from 3 . Remember, to subtract a negative integer, take blocks off the negative side of the mat.

Example: Subtract $3 - (-5)$

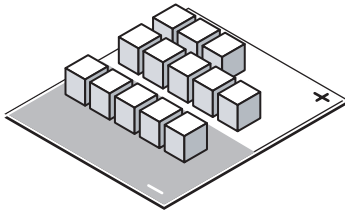
Step 1.

Put 3 unit blocks on the positive side of the mat.



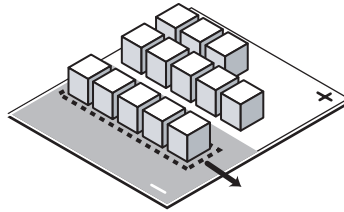
Step 2a.

Make 5 zero pairs so you will be able to take 5 negative blocks off the mat.



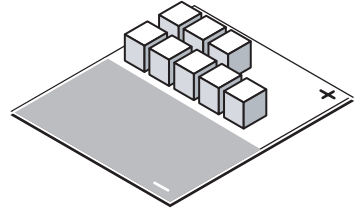
Step 2b.

Subtract -5 by taking blocks off the negative side of the mat.



Step 3.

Read the mat.
8



Step 4.

Record.
 $3 - (-5) = 8$

Try It

- In Step 2a, color the zero pairs red. How many pairs are there? _____
- In Step 2b, why do you take blocks off the negative side of the mat? _____
- Model the problem $-1 - (-4)$. Where do you show the first number, -1 ? _____

 How many zero pairs do you need? _____

Practice

Use Algeblocks and the Basic Mat to subtract negative numbers.

- | | | |
|-------------------------|-------------------------|------------------------|
| 4. $4 - (-2) =$ _____ | 5. $-3 - (-6) =$ _____ | 6. $5 - (-5) =$ _____ |
| 7. $-1 - (-6) =$ _____ | 8. $2 - (-3) =$ _____ | 9. $-4 - (-7) =$ _____ |
| 10. $-2 - (-6) =$ _____ | 11. $-1 - (-3) =$ _____ | 12. $3 - (-8) =$ _____ |
| 13. $-7 - (-1) =$ _____ | 14. $5 - (-4) =$ _____ | 15. $2 - (-5) =$ _____ |

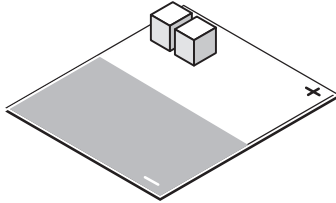
Lesson 3-4: Using Opposites to Subtract Integers

Example: Subtract $2 - (-4)$

Use what you know about opposites to subtract both positive and negative integers. To subtract, add the opposite of the number being subtracted.

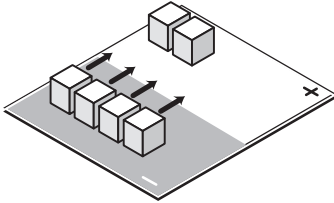
Step 1.

Put 2 unit blocks on the positive side of the mat.



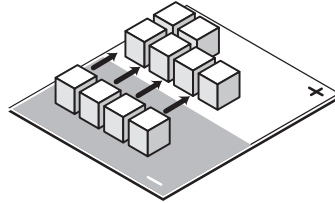
Step 2a.

Put 4 unit blocks on the negative side of the mat.



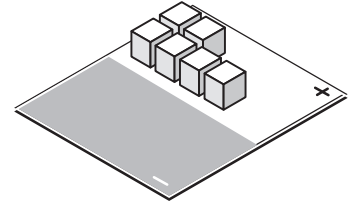
Step 2b.

Move the negative blocks to the positive side and add.



Step 3.

Read the mat.
6



Step 4.

Record.
 $2 - (-4) = 6$

Try It

- In Step 2b, what is indicated by the arrows? _____
- How could you rewrite the example problem to show the addition of the opposite? _____
- Model the problem $-4 - (-3)$. Where do you show the first number, -4 ? _____
What opposite number will you add? _____
How many blocks did you use in all? _____

Practice

Use Algeblocks and the Basic Mat to subtract. Use the strategy of adding the opposite.

- | | | |
|-------------------------|-------------------------|-------------------------|
| 4. $-4 - (-2) =$ _____ | 5. $2 - (-5) =$ _____ | 6. $-5 - (-7) =$ _____ |
| 7. $3 - (-1) =$ _____ | 8. $-6 - (-1) =$ _____ | 9. $5 - (-8) =$ _____ |
| 10. $-7 - (-2) =$ _____ | 11. $6 - (-3) =$ _____ | 12. $-1 - (-4) =$ _____ |
| 13. $7 - (-9) =$ _____ | 14. $-3 - (-5) =$ _____ | 15. $1 - (-1) =$ _____ |

Use Algeblocks and the Basic Mat to subtract. Use zero pairs or adding the opposite.

- | | | |
|----------------------|-------------------------|-------------------------|
| 16. $-5 - 4 =$ _____ | 17. $-2 - (-7) =$ _____ | 18. $7 - (-8) =$ _____ |
| 19. $3 - 6 =$ _____ | 20. $1 - (-6) =$ _____ | 21. $-3 - (-4) =$ _____ |

- A temperature at 2 degrees was recorded in the morning. During the day, the temperature fell 8 degrees. What was the temperature at the time? _____
- Diane has \$5 in her bank account. She writes a check for \$10. After this money is taken out, what is Diane's account balance? _____