



LESSON 5.3b
Two-Color Counters

7.NS.1a
7.NS.1b

Objective Adding Integers, Part II

Warm-Up



Use a number line to determine each sum. Then write a sentence to describe the movement you used on the number line to compute the sum of the two integers.

1. $-3 + 1$

2. $-5 + 10$

3. $-8 + (-5)$

4. $6 + (-9)$

8. Draw a model for each, and then complete the number sentence.

a. $-9 + (-4) = \underline{\hspace{2cm}}$

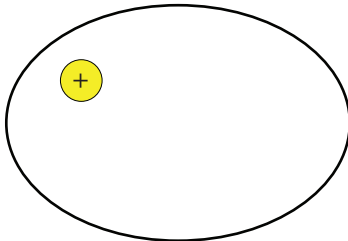
b. $-9 + 4 = \underline{\hspace{2cm}}$

c. $9 + (-4) = \underline{\hspace{2cm}}$

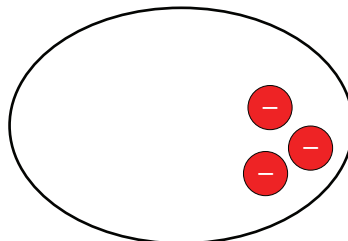
d. $9 + 4 = \underline{\hspace{2cm}}$

9. Complete the model to determine the unknown integer.

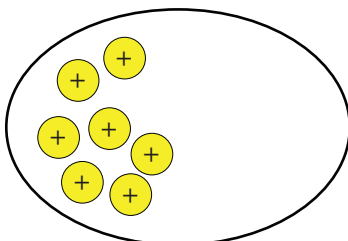
a. $1 + \underline{\hspace{2cm}} = -4$



b. $-3 + \underline{\hspace{2cm}} = 7$



c. $7 + \underline{\hspace{2cm}} = -1$



10. Describe the set of integers that makes each sentence true.

a. What integer(s) when added to -7 give a sum greater than 0?

b. What integer(s) when added to -7 give a sum less than 0?

c. What integer(s) when added to -7 give a sum of 0?

You have now used two models to represent adding integers.

11. For each problem, draw both models to represent the number sentences and determine the sums.

a. $(-6) + 13$

b. $8 + (-13)$

c. $(-3) + (-7)$

d. $2 + 9$

12. Explain the similarities and differences of the models in helping you determine the sum of two integers.



Visual models provide concrete representations of new ideas, like adding signed numbers. But you probably do not want to draw visual models when you have large numbers, lots of addends, fractions, or decimals.

Look back over the activities in this lesson and write rules for adding integers.

1. When adding two integers, what will the sign of the sum be if:
 - a. both integers are positive?

 - b. both integers are negative?

 - c. one integer is positive and one integer is negative?

2. Write a rule that states how to determine the sum of any two integers that have the same sign.

3. Write a rule that states how to determine the sum of any two integers that have opposite signs.

Use the following sums to answer the questions below

$-58 + 24$	$-33 + (-12)$	$26 + (-13)$	$-105 + 25$	$21 + (-56)$
$-35 + (-15)$	$-48 + 60$	$67 + 119$	$153 + (-37)$	$18 + (-17)$

4. Without computing the sums, sort the number sentences into two piles: those that have a positive sum and those that have a negative sum.

a. How can you decide which number sentences have a positive sum and which have a negative sum?

b. List the number sentences in the space provided.

Positive Sums	Negative Sums

c. Use your rules to determine the sum of each number sentence.

5. Determine each unknown addend.

a. _____ + (-25) = 34

b. _____ + 26 = 12

c. 8 + _____ = -24

d. -12 + _____ = -24

e. -15 + _____ = -28

f. _____ + 18 = -3

**Show You
KNOW**

Summarizing Sums

1. Write a number sentence that meets the given conditions.
If it is not possible to create the number sentence, explain why not.

a. Two positive addends with a positive sum.

b. Two positive addends with a negative sum.

c. Two negative addends with a positive sum.

d. Two negative addends with a negative sum.

e. A positive addend and a negative addend with a positive sum.

f. A positive addend and a negative addend with a negative sum.



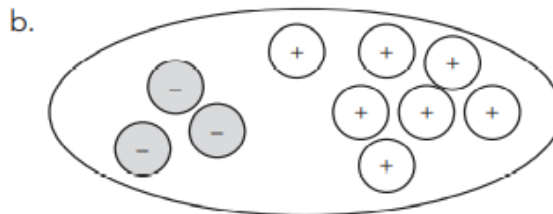
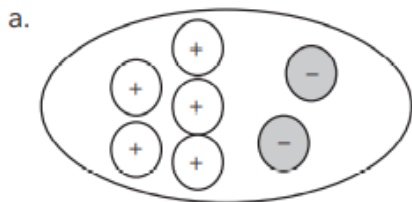
LESSON 5.3b
Two-Color Counters



Objective Adding Integers, Part II

Practice

1. Write a number sentence for each two-color counter model. Then determine the sum.



2. Draw a two-color counter model for each number sentence. Then determine the sum.

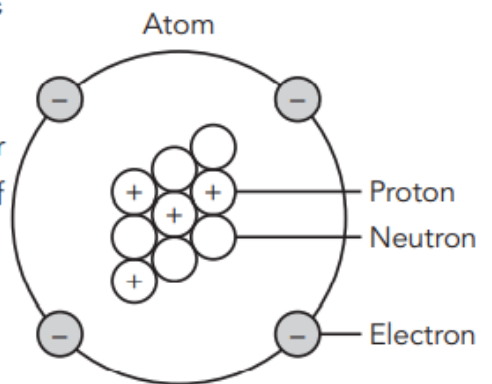
a. $3 + (-6)$

b. $-7 + (-4)$

c. $2 + 5$

d. $10 + (-8)$

3. An atom is made up of protons, neutrons, and electrons. The protons carry a positive (+) charge and make up the nucleus of an atom with the neutrons. Neutrons do not carry a charge. The electrons carry a negative (-) charge and circle the nucleus. Atoms have no positive or negative charge. This means that they must have the same number of protons and electrons. A partial model of a nitrogen atom is shown.



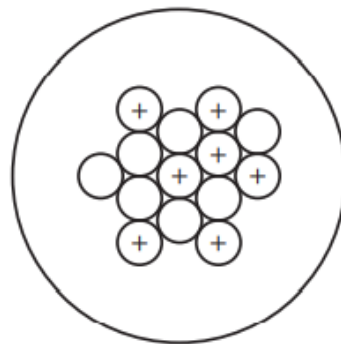
a. How many electrons should be drawn on the model of a nitrogen atom so that it has the same number of protons and electrons?

How did you know?

b. Complete the model of the nitrogen atom by drawing in the electrons.

c. Write a number sentence to represent the sum of the number of protons and electrons in a nitrogen atom.

d. Use a number line to show the sum of the number of protons and electrons in the nitrogen atom.



Determine each sum.

4. $45 + (-27)$

5. $32 + (-98)$

6. $-153 + 74$

7. $-63 + (-41)$

8. $527 + (-289)$

9. $-32 + 98$

10. $-47 + (-95)$

11. $-51 + 134$

