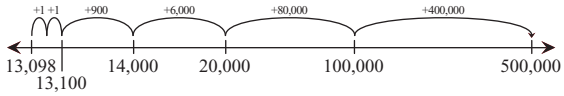
Student Guide

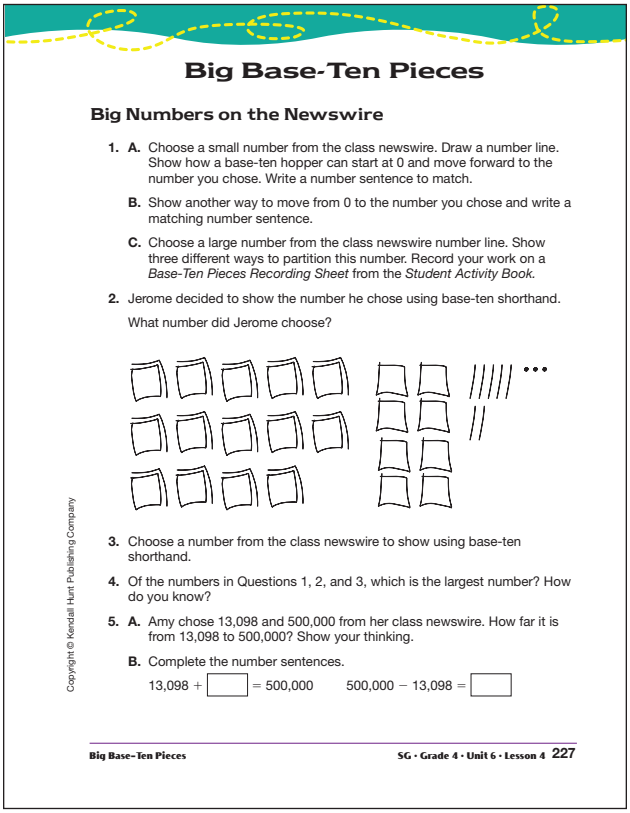
Questions 1–17 (SG pp. 227–231)

1. **A.** Answers will vary.
   B. Answers will vary.
   C. Answers will vary.
2. 14,873
3. Answers will vary.
4. Answers will vary.
5. **A.** 486,902. Strategies will vary.
   Possible strategy:



   B. 13,098 + 486,902 = 500,000
   500,000 – 13,098 = 486,902
6. Possible response: 2 + 900 + 6000 + 80,000 + 400,000 = 486,902
7. **A.** 101,000; strategies will vary.
   Possible strategy:

   B. 399,000 + 101,000 = 500,000
   500,000 – 399,000 = 101,000
8. Answers will vary.



Big Base-Ten Pieces

Big Numbers on the Newswire

1. **A.** Choose a small number from the class newswire. Draw a number line. Show how a base-ten hopper can start at 0 and move forward to the number you chose. Write a number sentence to match.
   B. Show another way to move from 0 to the number you chose and write a matching number sentence.
   C. Choose a large number from the class newswire number line. Show three different ways to partition this number. Record your work on a *Base-Ten Pieces Recording Sheet* from the *Student Activity Book*.
2. Jerome decided to show the number he chose using base-ten shorthand.
   What number did Jerome choose?

3. Choose a number from the class newswire to show using base-ten shorthand.
4. Of the numbers in Questions 1, 2, and 3, which is the largest number? How do you know?
5. **A.** Amy chose 13,098 and 500,000 from her class newswire. How far it is from 13,098 to 500,000? Show your thinking.
   B. Complete the number sentences.
   13,098 + ☐ = 500,000 500,000 − 13,098 = ☐

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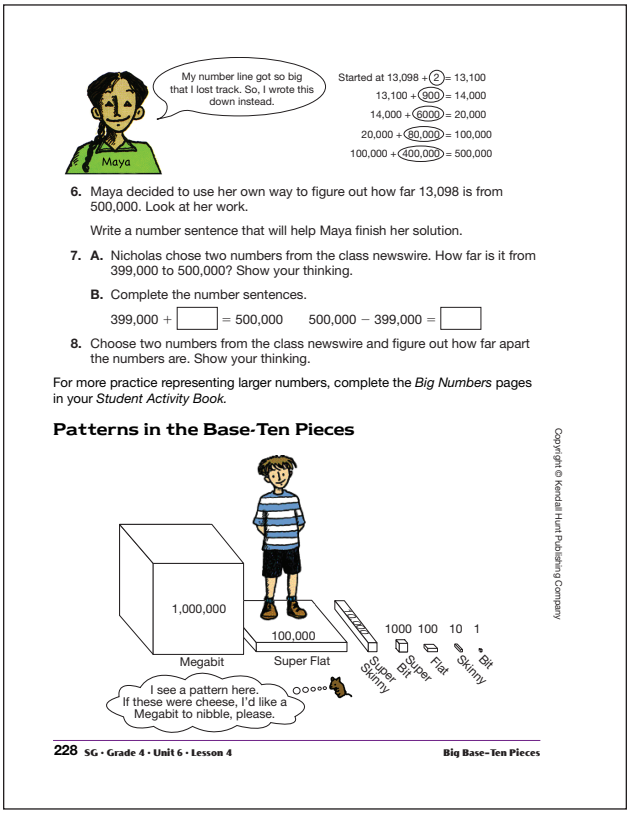

My number line got so big that I lost track. So, I wrote this down instead.

Started at 13,098 + (2) = 13,100
13,100 + (900) = 14,000
14,000 + (6000) = 20,000
20,000 + (80,000) = 100,000
100,000 + (400,000) = 500,000

6. Maya decided to use her own way to figure out how far 13,098 is from 500,000. Look at her work.
   Write a number sentence that will help Maya finish her solution.
7. **A.** Nicholas chose two numbers from the class newswire. How far is it from 399,000 to 500,000? Show your thinking.
   B. Complete the number sentences.
   399,000 + ☐ = 500,000 500,000 − 399,000 = ☐
8. Choose two numbers from the class newswire and figure out how far apart the numbers are. Show your thinking.

For more practice representing larger numbers, complete the *Big Numbers* pages in your *Student Activity Book*.

Patterns in the Base-Ten Pieces

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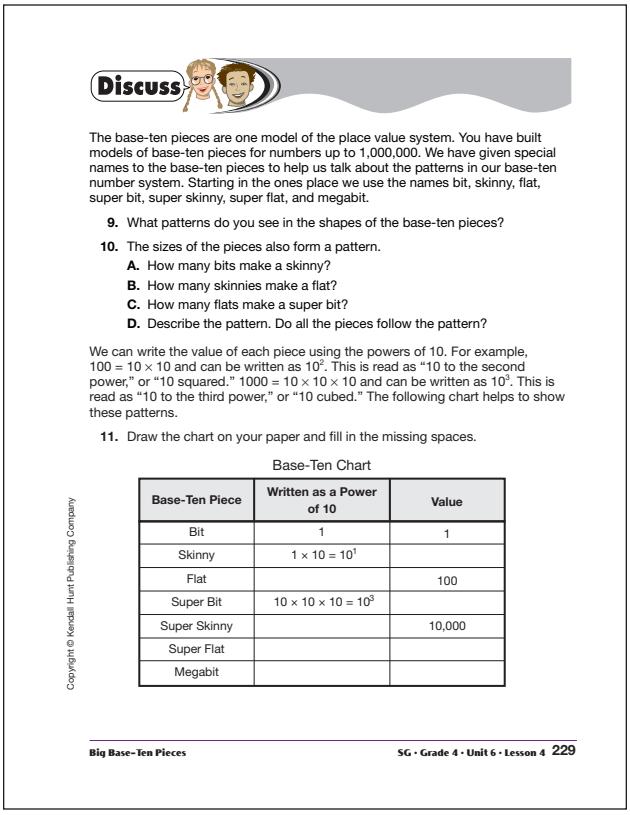

Discuss

The base-ten pieces are one model of the place value system. You have built models of base-ten pieces for numbers up to 1,000,000. We have given special names to the base-ten pieces to help us talk about the patterns in our base-ten number system. Starting in the ones place we use the names bit, skinny, flat, super bit, super skinny, super flat, and megabit.

9. What patterns do you see in the shapes of the base-ten pieces?

10. The sizes of the pieces also form a pattern.
- **A.** How many bits make a skinny?
- **B.** How many skinnies make a flat?
- **C.** How many flats make a super bit?
- **D.** Describe the pattern. Do all the pieces follow the pattern?

We can write the value of each piece using the powers of 10. For example, $100 = 10 \times 10$ and can be written as 10^2. This is read as "10 to the second power," or "10 squared." $1000 = 10 \times 10 \times 10$ and can be written as 10^3. This is read as "10 to the third power," or "10 cubed." The following chart helps to show these patterns.

11. Draw the chart on your paper and fill in the missing spaces.

Base-Ten Chart

Base-Ten Piece	Written as a Power of 10	Value
Bit	1	1
Skinny	$1 \times 10 = 10^1$	
Flat		100
Super Bit	$10 \times 10 \times 10 = 10^3$	
Super Skinny		10,000
Super Flat		
Megabit		

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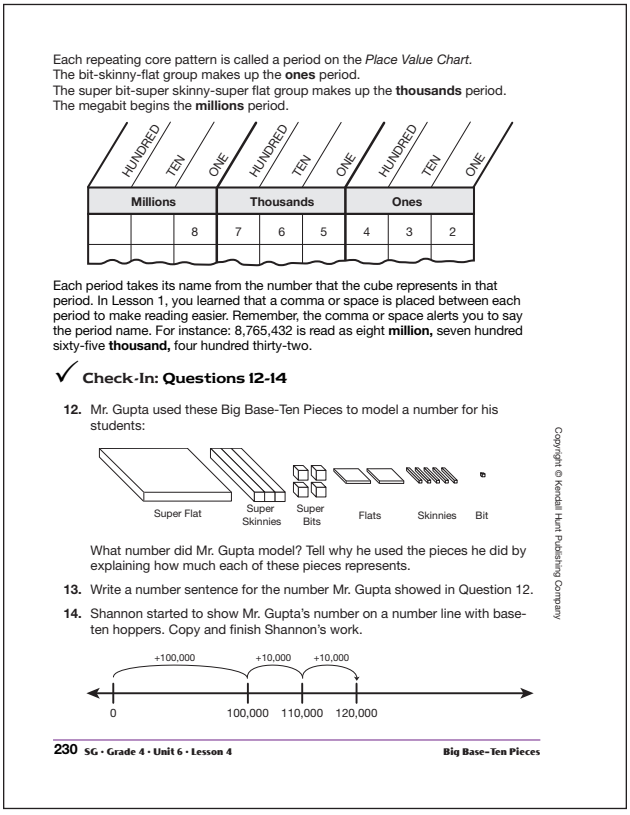

Each repeating core pattern is called a period on the *Place Value Chart*.
The bit-skinny-flat group makes up the **ones** period.
The super bit-super skinny-super flat group makes up the **thousands** period.
The megabit begins the **millions** period.

HUNDRED	TEN	ONE	HUNDRED	TEN	ONE	HUNDRED	TEN	ONE
Millions			Thousands			Ones		
		8	7	6	5	4	3	2

Each period takes its name from the number that the cube represents in that period. In Lesson 1, you learned that a comma or space is placed between each period to make reading easier. Remember, the comma or space alerts you to say the period name. For instance: 8,765,432 is read as eight **million,** seven hundred sixty-five **thousand,** four hundred thirty-two.

✓ **Check-In: Questions 12-14**

12. Mr. Gupta used these Big Base-Ten Pieces to model a number for his students:

What number did Mr. Gupta model? Tell why he used the pieces he did by explaining how much each of these pieces represents.

13. Write a number sentence for the number Mr. Gupta showed in Question 12.

14. Shannon started to show Mr. Gupta's number on a number line with base-ten hoppers. Copy and finish Shannon's work.

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9. Beginning with the bit, the shapes form the pattern: bit (cube), skinny, flat, bit (cube), skinny, flat, bit (cube).

10. A.* 10

B.* 10

C.* 10

D.* Each piece is 10 times as large as the piece to its right. All the pieces follow the pattern.

11.

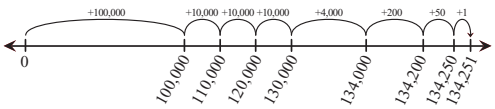
Base-Ten Chart

Base-Ten Piece	Written as a Power of 10	Value
Bit	1	1
Skinny	$1 \times 10 = 10^1$	10
Flat	$10 \times 10 = 10^2$	100
Super Bit	$10 \times 10 \times 10 = 10^3$	1,000
Super Skinny	$10 \times 10 \times 10 \times 10 = 10^4$	10,000
Super Flat	$10 \times 10 \times 10 \times 10 \times 10 = 10^5$	100,000
Megabit	$10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^6$	1,000,000

12. 134,251; Look for an understanding of the values of the pieces. Mr. Gupta's super flat shows 100,000, the 3 super skinnies show 30,000, the 4 super bits show 4000, the 2 flats show 200, the 5 skinnies show 50 and the bit shows 1.

13. 100,000 + 30,000 + 4,000 + 200 + 50 + 1 = 134,251

14.



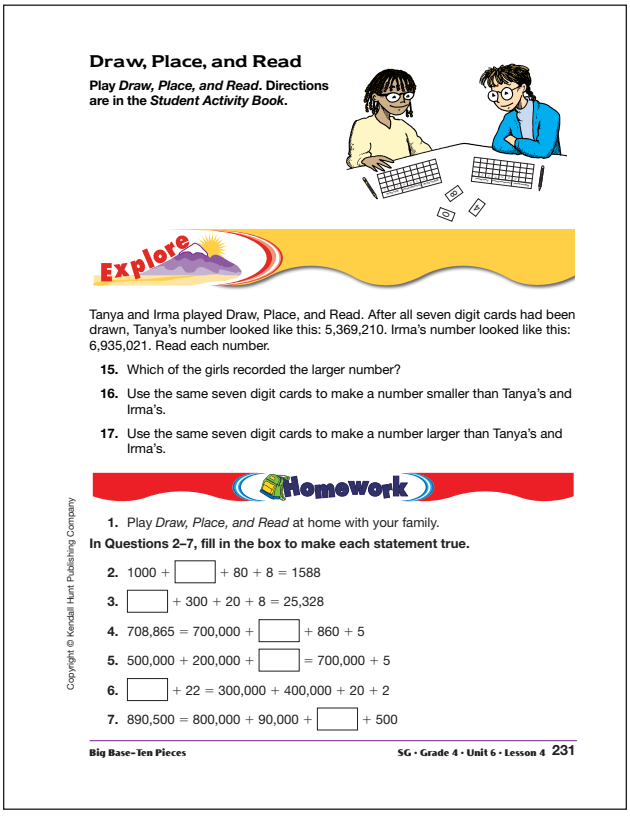
***Answers and/or discussion are included in the lesson.**

15. Irma
16. Possible response: 1,230,569
17. Possible response: 9,653,021

Homework

Questions 1–7 (SG p. 231)

1. Students play the game at home.
2. 500
3. 25,000
4. 8000
5. 5
6. 700,000
7. 0



Draw, Place, and Read

Play *Draw, Place, and Read*. Directions are in the *Student Activity Book*.

Explore

Tanya and Irma played Draw, Place, and Read. After all seven digit cards had been drawn, Tanya's number looked like this: 5,369,210. Irma's number looked like this: 6,935,021. Read each number.

15. Which of the girls recorded the larger number?

16. Use the same seven digit cards to make a number smaller than Tanya's and Irma's.

17. Use the same seven digit cards to make a number larger than Tanya's and Irma's.

Homework

1. Play *Draw, Place, and Read* at home with your family.

In Questions 2–7, fill in the box to make each statement true.

2. 1000 + ☐ + 80 + 8 = 1588

3. ☐ + 300 + 20 + 8 = 25,328

4. 708,865 = 700,000 + ☐ + 860 + 5

5. 500,000 + 200,000 + ☐ = 700,000 + 5

6. ☐ + 22 = 300,000 + 400,000 + 20 + 2

7. 890,500 = 800,000 + 90,000 + ☐ + 500

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