Homework Helpers
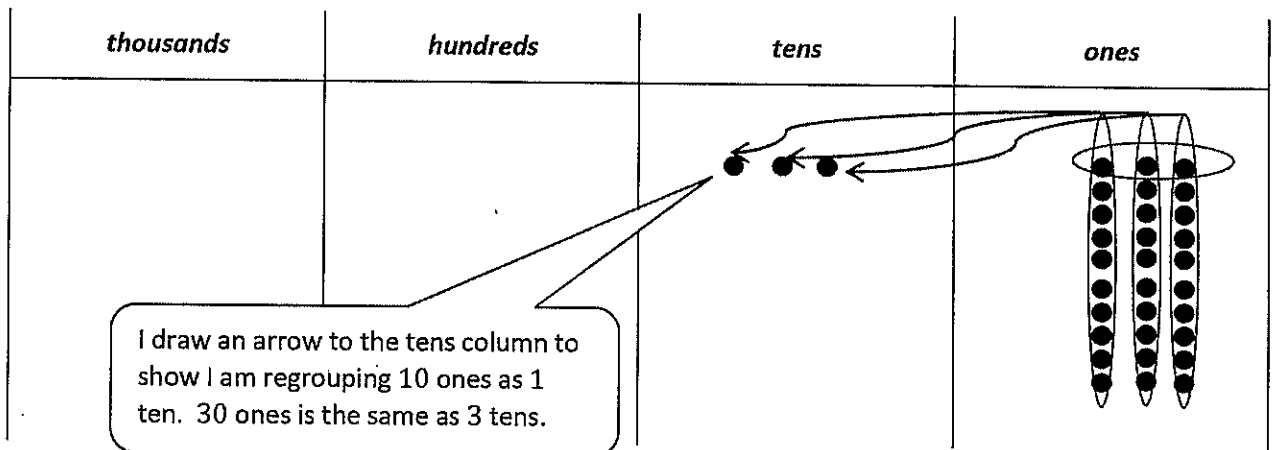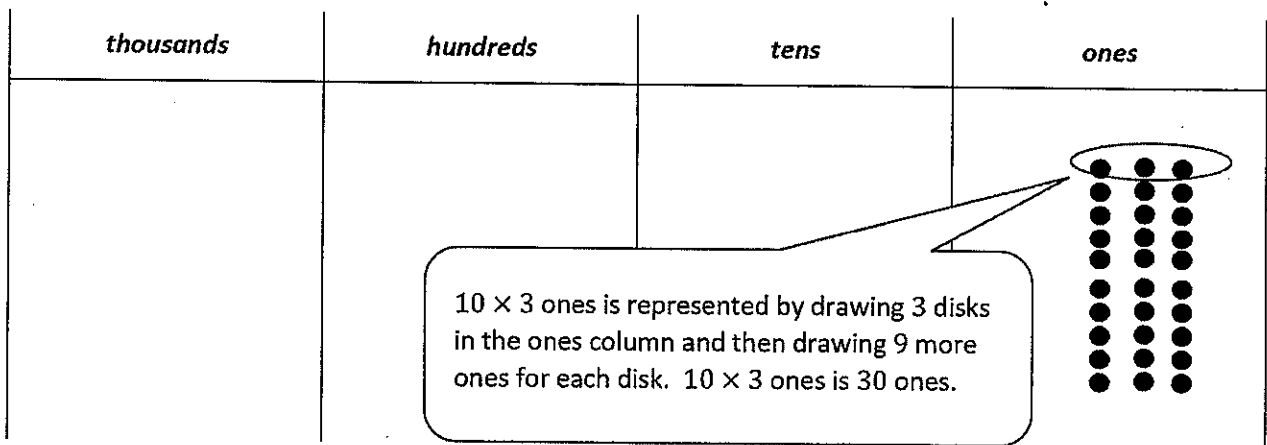
Grade 4
# Module 1

G4-M1-Lesson 1

1. Label the place value charts. Fill in the blanks to make the following equations true. Draw disks in the place value chart to show how you got your answer, using arrows to show any regrouping.

10×3 ones = ___30___ ones = ___3 tens___

thousands	hundreds	tens	ones

10 × 3 ones is represented by drawing 3 disks in the ones column and then drawing 9 more ones for each disk. 10 × 3 ones is 30 ones.

thousands	hundreds	tens	ones

I draw an arrow to the tens column to show I am regrouping 10 ones as 1 ten. 30 ones is the same as 3 tens.

2. Complete the following statements using your knowledge of place value. Then, use pictures, numbers, or words to explain how you got your answer.

   __60__ hundreds is the same as 6 thousands.

thousands	hundreds	tens	ones

I know 1 thousand is the same as 10 hundreds. So, 6 thousands is the same as 60 hundreds.
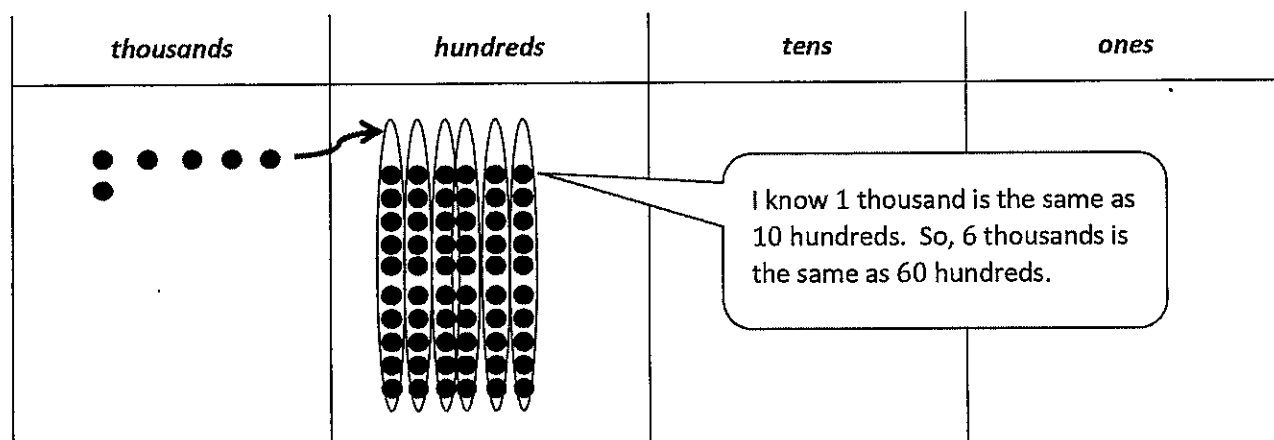
3. Gabby has 50 books in her room. Her mom has 10 times as many books in her office. How many books does Gabby's mom have? Use numbers or words to explain how you got your answer.
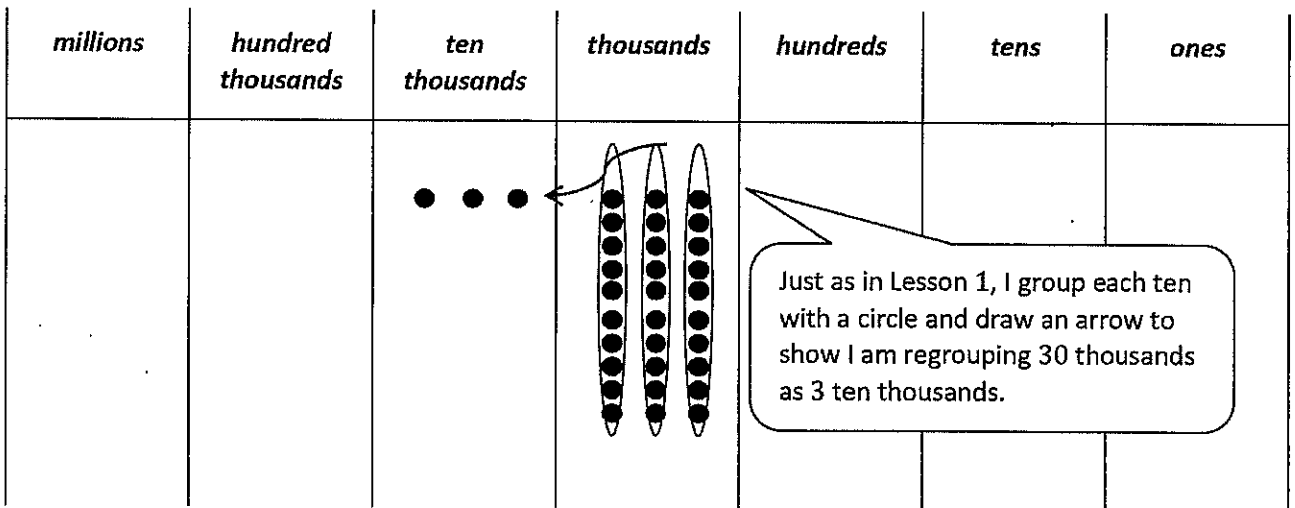
$5\ tens \times 10 = 50\ tens$

Gabby's mom has 500 books in her office.

50 tens is the same as 5 hundreds. I can write my answer in standard form within a sentence to explain my answer.
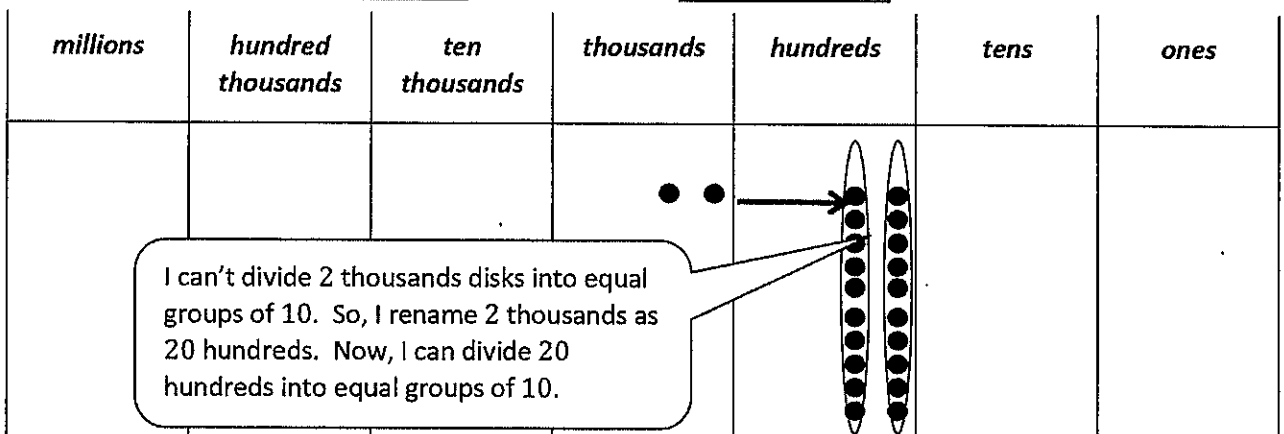
2   Lesson 1:   Interpret a multiplication equation as a comparison.

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G4-M1-Lesson 2

1. Label and represent the product or quotient by drawing disks on the place value chart.

   a. 10×3 thousands $=$ __30__ thousands $=$ __3 ten thousands__

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
		• • •				

Just as in Lesson 1, I group each ten with a circle and draw an arrow to show I am regrouping 30 thousands as 3 ten thousands.

   b. 2 thousands $\div 10 =$ __20__ hundreds $\div 10 =$ __2 hundreds__

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
			• •			

I can't divide 2 thousands disks into equal groups of 10. So, I rename 2 thousands as 20 hundreds. Now, I can divide 20 hundreds into equal groups of 10.

EUREKA MATH
Lesson 2:   Recognize a digit represents 10 times the value of what it represents in the place to its right.

3

2. Solve for the expression by writing the solution in unit form and in standard form.

Expression	Unit Form	Standard Form
(3 tens 2 ones) × 10	30 *tens* 20 *ones*	320

I multiply each unit, the tens and the ones, by 10.

3. Solve.

840 matches are in 1 box. 10 times as many matches are in a package. How many matches in a package?

84 *tens* × 10 *is* 840 *tens or* 84 *hundreds*.

840 × 10 = 8,400

8,400 *matches are in a package*.

I can use unit form to make the multiplication easier and to verify my answer in standard form.

Lesson 2:   Recognize a digit represents 10 times the value of what it represents in the place to its right.

EUREKA MATH

G4-M1-Lesson 3

1. Rewrite the following number, including commas where appropriate:

   30030033003   __30,030,033,003__

   > I use a comma after every 3 digits from the right to indicate the periods, or grouping of units—ones, thousands, millions, and billions.

2. Solve each expression. Record your answer in standard form.

   > I can add 5 tens + 9 tens = 14 tens.

Expression	Standard Form
5 tens + 9 tens	140

   > 14 tens is the same as 10 tens and 4 tens. I can bundle 10 tens to make 1 hundred. 14 tens is the same as 140.

3. Represent each addend with place value disks in the place value chart. Show the composition of larger units from 10 smaller units. Write the sum in standard form.

   3 thousands + 14 hundreds = __4,400__

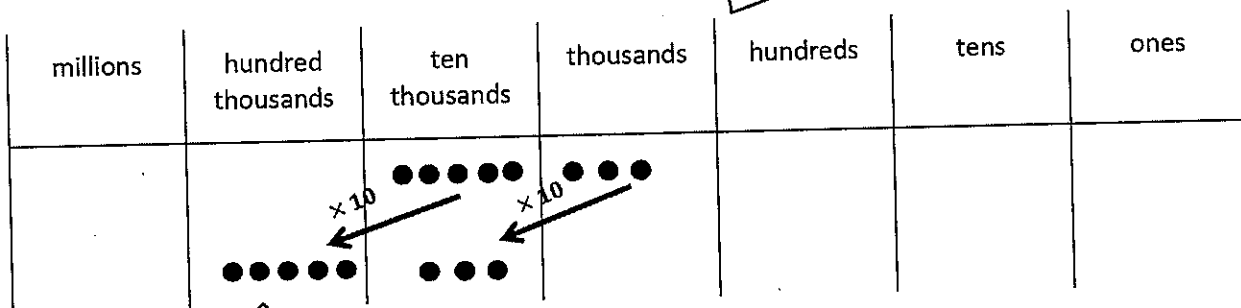 | millions | hundred thousands | ten thousands | thousands | hundreds | tens | ones |
   |----------|-------------------|---------------|-----------|----------|------|------|
   | | | | • • • • | (● ● ● ● ● / ● ● ● ● ● / ● ● ● ●) | | |

   > After drawing 3 thousands and 14 hundreds disks, I notice that 10 hundreds can be bundled as 1 thousand. Now, my picture shows 4 thousands 4 hundreds, or 4,400.

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Lesson 3: Name numbers within 1 million by building understanding of the place value chart and placement of commas for naming base thousand units.

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4. Use digits or disks on the place value chart to represent the following equations. Write the product in standard form.

(5 ten thousands 3 thousands) × 10 = __530,000__

How many thousands are in your answer? __530 *thousands*__

> The place value to the left represents 10 times as much, so I can draw an arrow and label it "× 10".

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones

> 3 ten thousands is 10 times more than 3 thousands. 5 hundred thousands is 10 times more than 5 ten thousands. So, (5 ten thousands 3 thousands) × 10 is 530,000.

6   Lesson 3:   Name numbers within 1 million by building understanding of the place value chart and placement of commas for naming base thousand units.

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G4-M1-Lesson 4

1.

   a.   On the place value chart below, label the units, and represent the number 43,082.

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
		• • • •	• • •		• • • • • • • •	• •

   b.   Write the number in word form.   *forty-three thousand, eighty-two*

> I read 43,082 to myself. I write the words that I say. I add commas to separate the periods of thousands and ones, just as I do when I write numerals.

   c.   Write the number in expanded form. $40,000 + 3,000 + 80 + 2$

> I write the value of each digit in 43,082 as an addition expression. The 4 has a value of 4 ten thousands, which I write in standard form as 40,000. $43,082 = 40,000 + 3,000 + 80 + 2$.

2. Use pictures, numbers, and words to explain another way to say 39 hundred.

Another way to say 39 hundred is 3 thousand, 9 hundred. I can write 3,900, and I draw 39 hundreds disks as 3 thousands disks and 9 hundreds disks.

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones

I know 10 hundreds is the same as 1 thousand. I can bundle 30 hundreds to make 3 thousands.

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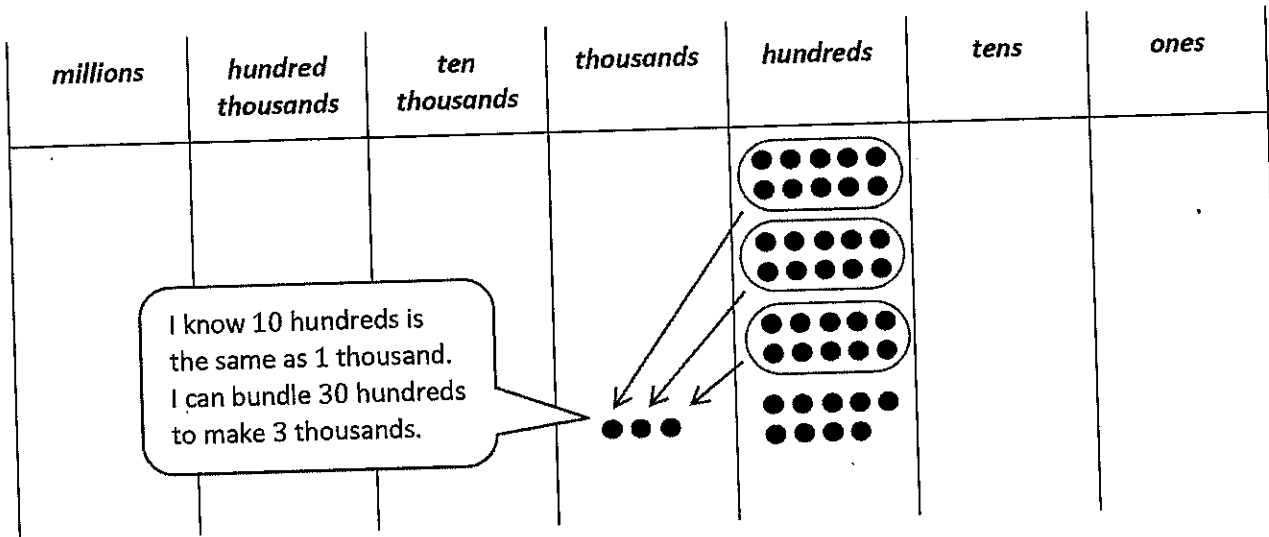
G4-M1-Lesson 5

1. Label the units in the place value chart. Draw place value disks to represent each number in the place value chart. Use <, >, or = to compare the two numbers. Write the correct symbol in the circle.

503,421 (>) 350,491

> I record the comparison symbol for *greater than*.

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
·	●●●●●		●●●	●●●●	●●	●
	●●●	●●●●●		●●●●	●●●●● ●●●●	●

> I record the value of each digit using place value disks, placing 503,421 in the top half and 350,491 in the bottom half of the place value chart. I can clearly see and compare the unit with the greatest value—hundred thousands. 5 hundred thousands is greater than 3 hundred thousands. 503,421 is greater than 350,491.

2. Compare the two numbers by using the symbols <, >, or =. Write the correct symbol in the circle.

six hundred two thousand, four hundred seventy-three (<) $600,000 + 50,000 + 2,000 + 700 + 7$

> It helps me to solve if I write both numbers in standard form.

602,473 (<) 652,707

> Since the value of the largest unit is the same, I compare the next largest unit—the ten thousands. Zero ten thousands is less than five ten thousands. So, 602,473 is less than 652,707. I record the comparison symbol for *less than* to complete my answer.

3. Jill has $1,462, Adam has $1,509, Cristina has $1,712, and Robin has $1,467. Arrange the amounts of money in order from greatest to least. Then, name who has the most money.

thousands	hundreds	tens	ones
1	4	6	2
1	5	0	9
1	7	1	2
1	4	6	7

> Listing the amounts of money in a place value chart helps me to see the values in each unit.

$$\$1,712 > \$1,509 > \$1,467 > \$1,462$$

Cristina has the most money.

> I notice 1,462 and 1,467 both have 1 thousand, 4 hundreds, *and* 6 tens. So, I compare the ones. 7 ones is more than 2 ones. 1,467 is greater than 1,462.

10   Lesson 5:   Compare numbers based on meanings of the digits using <, >, or = to rec⊂ comparison.

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G4-M1-Lesson 6

1. Label the place value chart. Use place value disks to find the sum or difference. Write the answer in standard form on the line.

    a. 100,000 less than six hundred thirty thousand, five hundred seventeen is ___**530,517**___.

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	●●●●● ✗	●●●		●●●●●	●	●●●●● ●●
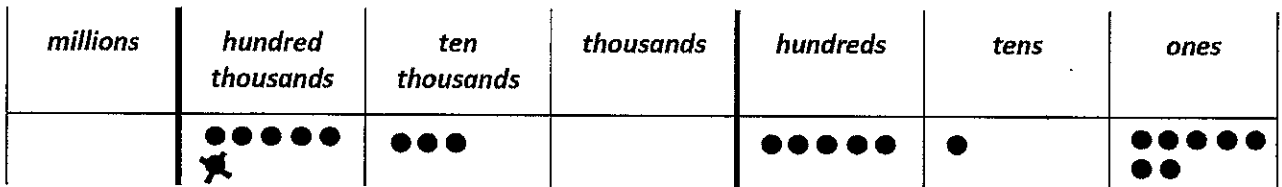
> After modeling 630,517, I cross off 1 hundred thousand disk. 100,000 less than 630,517 is 530,517.

b. 260,993 is **10,000 more** than 250,993.

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	●●	●●●●● Ⓐ		●●●●● ●●●●	●●●●● ●●●●	●●●
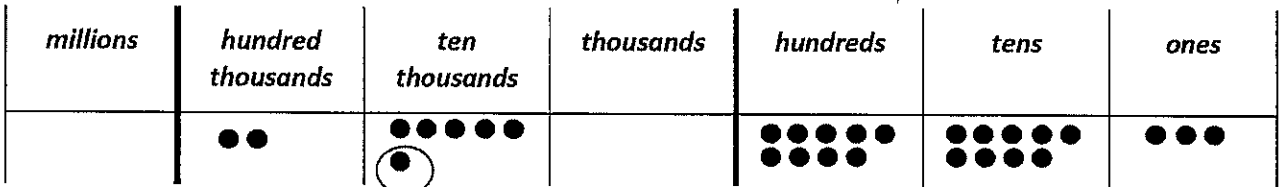
> To model 260,993 in comparison to 250,993, I add 1 ten thousand disk. 60,000 is 10,000 more than 50,000. Therefore, 260,993 is 10,000 more than 250,993.

2. Fill in the blank for this equation:

    $17,082 - 1,000 = $ ___**16,082**___.

> There are 17 thousands in 17,082. 1 thousand less than 17 thousand is 16 thousands.

3. Fill in the boxes to complete the patterns. Explain in pictures, numbers, or words how you found your answers.

245,975	345,975	445,975	545,975	645,975	745,975

Student Response 1:

I see that the hundred thousand unit increases. The other units remain the same. In the first number, there are 2 hundred thousands. Then, there are 4 hundred thousands and 6 hundred thousands. I can fill in the boxes with 3 hundred thousands, 5 hundred thousands, and 7 hundred thousands. Each number in the pattern increases by 1 hundred thousand each time.

> I answer the question, "Are the numbers in the pattern growing or shrinking? By how much?"

Student Response 2:

The numbers increase by $100,000$ *each time.*

hundred thousands	ten thousands	thousands	hundreds	tens	ones
2	4	5	9	7	5
3	4	5	9	7	5
4	4	5	9	7	5
5	4	5	9	7	5
6	4	5	9	7	5
7	4	5	9	7	5

$$245,975 + 100,000 = 345,975$$
$$345,975 + 100,000 = 445,975$$
$$445,975 + 100,000 = 545,975$$
$$545,975 + 100,000 = 645,975$$
$$645,975 + 100,000 = 745,975$$

> I quickly write numerals instead of number disks. I can see clearly that the hundred thousands increase. The other values don't change.
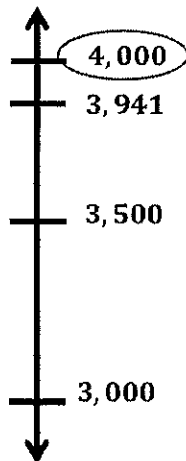
> I write a series of number sentences to show the same change each time. The rule of the pattern is "add 100,000."

12   Lesson 6:   Find 1, 10, and 100 thousand more and less than a given number.

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G4-M1-Lesson 7

1. Round to the nearest thousand. Use the number line to model your thinking.

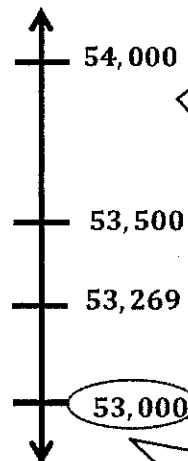   a. $3,941 \approx$ $4,000$ b. $53,269 \approx$ $53,000$

   There are 3 thousands in 3,941. 1 more thousand is 4 thousands. I mark 3,000 and 4,000 as the endpoints of a vertical number line.
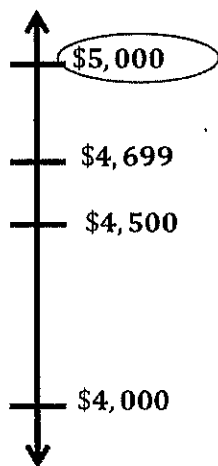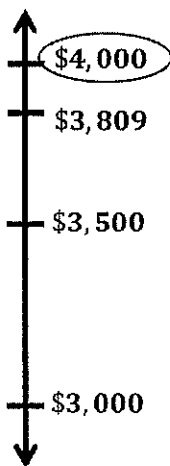
   4,000
   3,941
   3,500
   3,000

   A vertical number line allows me to line up the digits in the numbers I record. It also allows me to more easily think, "Round up or round down?"

   54,000
   53,500
   53,269
   53,000

   53,269 is less than 53,500. 53,269 is closer to 53,000 than 54,000. 53,269 rounded to the nearest thousand is 53,000.

2. In 2013, the family vacation cost $3,809. In 2014, the family vacation cost $4,699. The family budgeted about $4,000 for each vacation. In which year did the family stay closer to their budget? Round to the nearest thousand. Use what you know about place value to explain your answer.

   I draw two number lines, one for each year.

   $4,000
   $3,809
   $3,500
   $3,000

   $5,000
   $4,699
   $4,500
   $4,000

   In 2013, they stayed closer to their budget. I know because $3,809 rounded to the nearest thousand is $4,000, and $4,699 rounded to the nearest thousand is $5,000. In 2014, the family went over their budget by about $1,000.

G4-M1-Lesson 8

1. Complete each statement by rounding the number to the given place value. Use the number line to show your work.

   a. 41,899 rounded to the nearest ten thousand is **40,000**

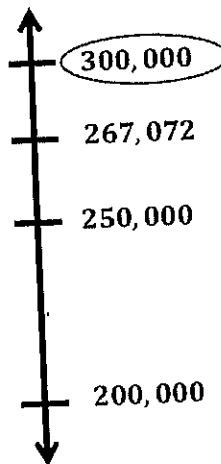   > I ask myself, "How many ten thousands in 41,899? What is 1 more ten thousand?"
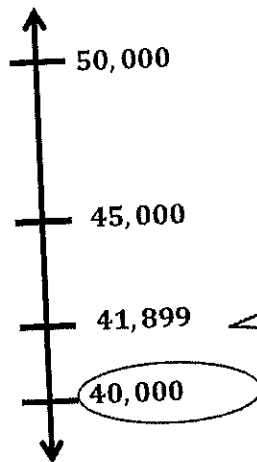
   > I label 41,899 on the number line and notice it is less than 45,000.

   - 50,000
   - 45,000
   - 41,899
   - (40,000)

   b. 267,072 rounded to the nearest hundred thousand is **300,000**

   > I know that there are 2 hundred thousands in 267,072. One more hundred thousand is 3 hundred thousands.

   > Halfway between 200,000 and 300,000 is 250,000.

   - (300,000)
   - 267,072
   - 250,000
   - 200,000

14   Lesson 8:   Round multi-digit numbers to any place using the vertical number line.

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2. 982,510 books were downloaded in one year. Round this number to the nearest hundred thousand to estimate how many books were downloaded in one year. Use a number line to show your work.

```
↑
┤
┤  (1,000,000)
┤
┤── 982,510
┤
┤── 950,000
┤
┤
┤
┤
┤
┤── 900,000
┤
↓
```
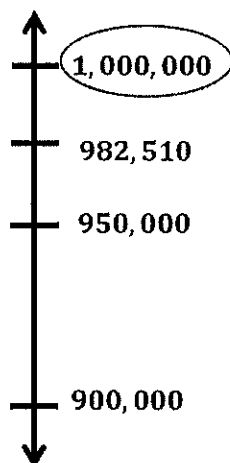
There are 9 hundred thousands in 982,510. 1 more hundred thousand is 10 hundred thousands, or 1 million. I label my endpoints 900,000 and 1,000,000. Halfway is 950,000.

About 1 million books were downloaded in one year.

3. Estimate the difference by rounding each number to the given place value.

$$519{,}240 - 339{,}705$$

a. Round to the nearest hundred thousand.

$$500{,}000 - 300{,}000 = 200{,}000$$

b. Round to the nearest ten thousand.

$$520{,}000 - 340{,}000 = 180{,}000$$

Thinking in unit language makes this subtraction easy: 520 thousands minus 340 thousands equals 180 thousands.

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Lesson 8:   Round multi-digit numbers to any place using the vertical number line.

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G4-M1-Lesson 9

1. Round to the nearest thousand.

    a. $7,598 \approx$ ___8,000___

    > I remember from Lesson 7 how to round to the nearest thousand.

    b. $301,409 \approx$ ___301,000___

    c. Explain how you found your answer for Part (b).

    There are 301 thousands in 301,409. One more thousand is 302 thousands. Halfway between 301 thousands and 302 thousands is 301 thousands 5 hundreds. 301,409 is less than 301,500. Therefore, 301,409 rounded to the nearest thousand is 301,000.

2. Round to the nearest ten thousand.

    a. $73,999 \approx$ ___70,000___

    > I may need to draw a number line to verify my answer.

    b. $65,002 \approx$ ___70,000___

    c. Explain why the two problems have the same answer. Write another number that has the same answer when rounded to the nearest ten thousand.

    Any number equal to or greater than 65,000 and less than 75,000 will round to 70,000 when rounded to the nearest ten thousand. 65,002 is greater than 65,000, and 73,999 is less than 75,000. Another number that would round to 70,000 is 68,234.

Solve the following problems using pictures, numbers, or words.

3. About 700,000 people make up the population of Americatown. If the population was rounded to the nearest hundred thousand, what could be the greatest and least number of people who make up the population of Americatown?

All numbers less than 750,000 round to 700,000 when rounding to the nearest hundred thousand. Therefore, 749,999 is the largest number that rounds to 700,000.

800,000

750,000
749,999

700,000

700,000

650,000

600,000

All numbers greater than or equal to 650,000 round to 700,000. Therefore, 650,000 is the smallest number that rounds to 700,000.
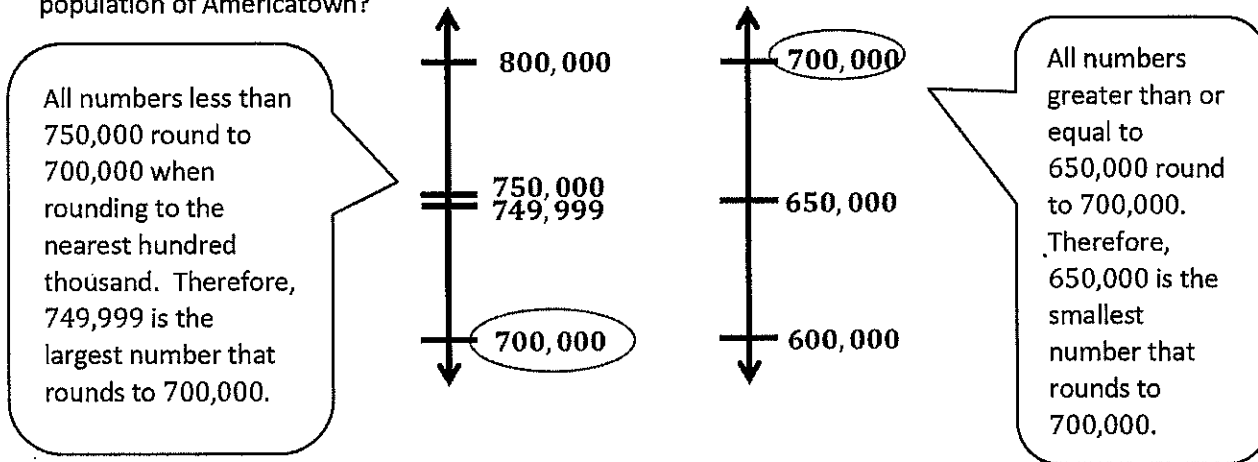
The greatest number of people that could make up the population is 749,999. I know because it is 1 fewer than 750,000. The least number of people that could make up the population is 650,000.

G4-M1-Lesson 10

1. Round 745,001 to the nearest

   > I remember from Lesson 7 to ask myself, "Between what two thousands is 745,001?" I try to picture the number line in my head.

   a. thousand: _____**745,000**_____

   b. ten thousand: _____**750,000**_____

   > I remember from Lesson 8 to find how many ten thousands and how many hundred thousands are in 745,001. Then, add one more of that unit to find the endpoints.

   c. hundred thousand: _____**700,000**_____

Solve the following problem using pictures, numbers, or words.

2. 37,248 people subscribe to the delivery of a local newspaper. To decide about how many papers to print, what place value should 37,248 be rounded to so each person receives a copy? Explain.
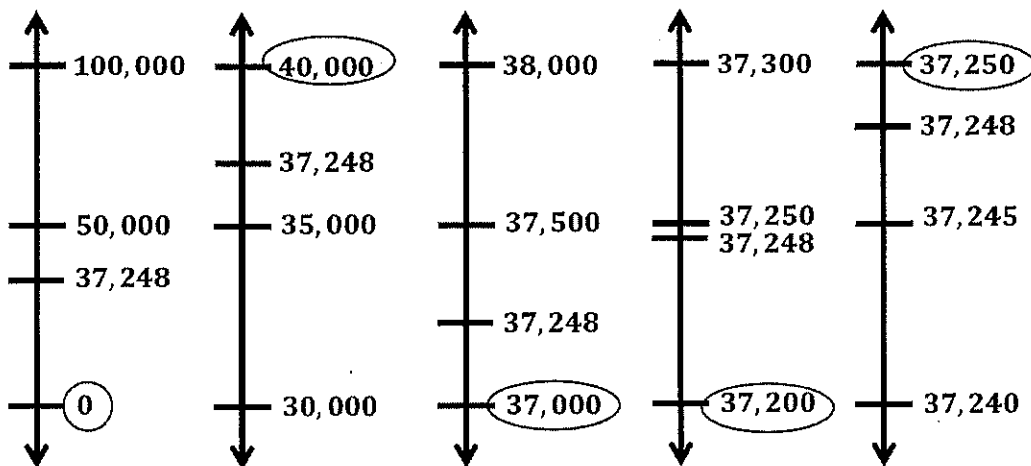
37,248 should be rounded to the nearest ten thousand or the nearest ten. Extra papers will be printed, but if I round to the nearest hundred thousand, thousand, or hundred, there won't be enough papers printed.

> Drawing number lines helps to prove my written answer.

18   Lesson 10:   Use place value understanding to round multi digit numbers to any place
                                using real world applications.

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G4-M1-Lesson 11

> Using an algorithm means that the steps repeat themselves unit by unit. It can be an efficient way to solve a

1. Solve the addition problems using the standard algorithm.

a.
```
   5,  1  2  2
+  2,  4  5  7
------------------
   7,  5  7  9
```

b.
```
   5,  1  2  4
+  2,  4  5  7
------------------
   7,  5  8  1
```

c. $38,192 + 6,387 + 241,458$

```
     3  8,  1  9  2
         6,  3  8  7
+   2  4  1,  4  5  8
---------------------
       1  1  2  1
   2  8  6,  0  3  7
```

> No regroupings here! I just add like units. 2 ones plus 7 ones is 9 ones. I put the 9 in the ones column as part of the sum. Then, I continue to add the number of units of tens, the hundreds, and the thousands.

> I have to regroup ones. 4 ones + 7 ones = 11 ones. 11 ones equals 1 ten 1 one. I record 1 ten in the tens place on the line. I record 1 one in the ones column as part of the sum.

> The order of the addends doesn't matter as long as like units are lined up.

> I add tens. 2 tens + 5 tens + 1 ten = 8 tens. I record 8 tens in the tens column as part of the sum.

2. Draw a tape diagram to represent the problem. Use numbers to solve, and write your answer as a statement.

   In July, the ice cream stand sold some ice cream cones. 3,907 were vanilla. 2,568 were not vanilla. How many cones did they sell in July?
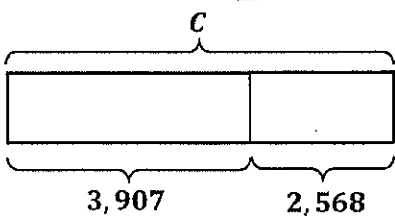
> I can draw a tape diagram. I know the two parts, but I don't know the whole. I can label the unknown with a variable, C.

> I write an equation. Then, I solve to find the total. I write a statement to tell my answer.

C

```
|_____|_____|
   3,907      2,568
```

$$3,907 + 2,568 = C$$

```
   3,  9  0  7
+  2,  5  6  8
-----------------
     1     1
   6,  4  7  5
```

The ice cream stand sold 6,475 cones in July.

G4-M1-Lesson 12

Estimate and then solve. Model the problem with a tape diagram. Explain if your answer is reasonable.

1. There were 4,806 more visitors to the zoo in the month of July than in the month of June. June had 6,782 visitors. How many visitors did the zoo have during both months?

6,782

June [   ]

July [|]   V

4,806
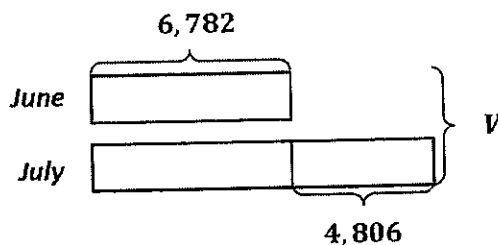
> Since the problem states the relationship between June and July, I can draw two tapes. I make July's tape longer because there were more visitors in July. I partition July's tape into two parts: one part for the number of people in June and the other part for 4,806 more visitors.

a. About how many visitors did the zoo have during June and July?

$$7,000 + 7,000 + 5,000 = 19,000$$

The zoo had about 19,000 *visitors during June and July.*

> To estimate the total, I round each number to the nearest thousand and add those numbers together.

b. Exactly how many visitors did the zoo have during June and July?

```
    6,  7  8  2
    6,  7  8  2
 +  4,  8  0  6
 ───2──1──1────
  1 8,  3  7  0
```

> When I look at my tape diagram, I see that I don't have to solve for July to find the total. This saves me a step.

The zoo had exactly 18,370 *visitors during June and July.*

c. Is your answer reasonable? Compare your estimate to the answer. Write a sentence to explain your reasoning.

Sample Response: My answer is reasonable because my estimate of 19,000 *is only about* 600 *more than the actual answer of* 18,370. *My estimate is greater than the actual answer because I rounded each addend up to the next thousand.*

Lesson 12:   Solve multi-step word problems using the standard addition algorithm modeled with tape diagrams, and assess the reasonableness of answers using rounding.

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2. Emma's class spent four months collecting pennies.

a. During Month 3, the class collected 1,211 more pennies than they did during Month 2. Find the total number of pennies collected in four months.
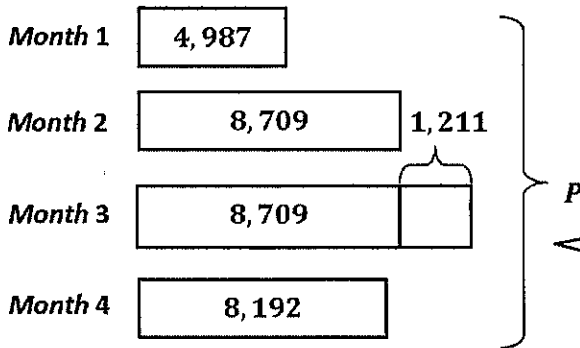
Month	Pennies Collected
1	4,987
2	8,709
3	
4	8,192

Month 1 | 4,987 |

Month 2 | 8,709 | 1,211

Month 3 | 8,709 |

Month 4 | 8,192 |

P

> I draw four tapes to represent each month. Now, I can see how many pennies were collected in Month 3.

$$5,000 + 9,000 + 9,000 + 1,000 + 8,000 = 32,000$$

```
    4,  9   8   7
    8,  7   0   9
    8,  7   0   9
    1,  2   1   1
+   8,  1   9   2
    ─────────────
        2   2   2
    3  1,  8   0   8
```

> I add in unit form: 5 thousands + 9 thousands + 9 thousands + 1 thousand + 8 thousands = 32 thousands. 32 thousand is an estimate of the total number of pennies collected in four months.

The total number of pennies collected in four months was 31,808.

> To find the total pennies collected in the four months, I could solve for Month 3 and then add all of the months together to solve for P. Instead, I just add the value of each of the tapes together. The tape diagram shows me how to solve this in one step, not two.

b. Is your answer reasonable? Explain.

Sample Response: My answer is reasonable. 31,808 is only about 200 less than the estimate of 32,000.

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Lesson 12: Solve multi-step word problems using the standard addition algorithm modeled with tape diagrams, and assess the reasonableness of answers using rounding.

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G4-M1-Lesson 13

1. Use the standard algorithm to solve the following subtraction problems.

> I don't have enough tens to subtract 5 tens from 3 tens. I decompose 1 hundred for 10 tens.

a.
```
    6,  5  6  7
 -  1,  4  5  7
 _____
    5,  1  1  0
```

b.
```
         4  13
    6,  5̸  3̸  7
 -  2,  4  5  7
 _____
    4,  0  8  0
```

> I look across the top number to see if I can subtract. I have enough units, so no regroupings! I just subtract like units. 7 ones minus 7 ones is 0 ones. I continue to subtract the number of units of tens, hundreds, and thousands.

> Now, I have 4 hundreds. I show this by crossing off the 5 and writing a 4 in the hundreds place instead. 10 tens + 3 tens = 13 tens. I show this by crossing off the 3 tens and writing 13 in the tens place instead.

c. $3,532 - 921$

```
    2  15
 3̸, 5̸  3  2
 -    9  2  1
 _____
    2, 6  1  1
```

> Just like in Lesson 11, I write the problem in vertical form, being sure to line up the units.

2. What number must be added to 23,165 to result in a sum of 46,884?
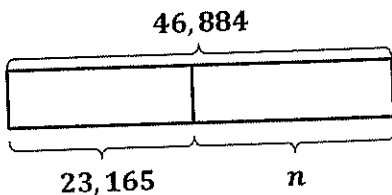
> To solve a word problem, I use RDW: Read, Draw, Write. I read the problem. I draw a picture, like a tape diagram, and I write my answer as an equation and a statement.

$$23,165 + n = 46,884$$

46,884

23,165   n

```
          7  14
    4  6,  8  8̸  4̸
 -  2  3,  1  6  5
 _____
    2  3,  7  1  9
```

$23,719$ *must be added to* $23,165.$

Lesson 13:   Use place value understanding to decompose to smaller units once using the standard subtraction algorithm, and apply the algorithm to solve word problems using tape diagrams.

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Draw a tape diagram to model the problem. Use numbers to solve, and write your answer as a statement. Check your answer.

3. Mr. Swanson drove his car 5,654 miles. Mrs. Swanson drove her car some miles, too. If they drove 11,965 miles combined, how many miles did Mrs. Swanson drive?
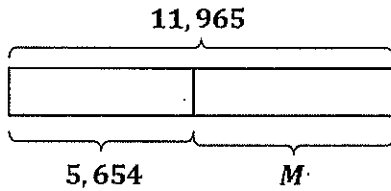
11,965

$$11,965 - 5,654 = M$$

5,654	M

$$\begin{array}{r} 1\,1,965 \\ -\ 5,654 \\ \hline 6,311 \end{array}$$

$$\begin{array}{r} 6,311 \\ +\ 5,654 \\ \hline 1\,1,965 \end{array}$$

Mrs. Swanson drove 6,311 miles.

To check my answer, I add the difference to the known part. It equals the whole, so I subtracted correctly.

G4-M1-Lesson 14

1. Use the standard algorithm to solve the following subtraction problems.

a.
```
         15
    1   5   12   4   14
    2   6   2,   5   4   7
 −      8   5,   3   6   2
    1   7   7,   1   8   5
```

Am I ready to subtract? No! I don't have enough tens, thousands, or ten thousands.

After decomposing, I'm ready to subtract!

b.
```
                      9
    5   15   6   10   10
    6   5   7,   0   0   8
 −  5   7   6,   3   4   3
    8   0,   6   6   5
```

There are not enough tens to subtract 4 tens.

Once my values are greater in every place, I'm ready to subtract.

Draw a tape diagram to represent the following problem. Use numbers to solve, and write your answer as a statement. Check your answer.

2. Stella had 542,000 visits to her website. Raquel had 231,348 visits to her website. How many more visits did Stella have than Raquel?

542,000

Stella

Raquel

I draw a tape diagram. Stella had more visits, and so her tape is longer.
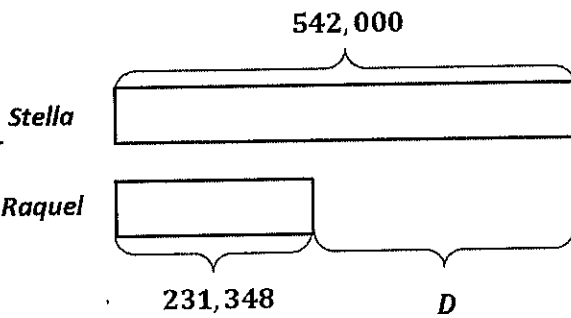
231,348   D

$D = 542,000 - 231,348$

$D = 310,652$

```
              9    9
         1   10   10   10
    5    4   2,   0    0    0
 −  2    3   1,   3    4    8
    3    1   0,   6    5    2
```

```
    3    1   0,   6    5    2
 +  2    3   1,   3    4    8
              1    1    1
    5    4   2,   0    0    0
```

Stella had 310,652 *more visits than Raquel.*

I check my answer with addition. My answer is correct!

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Lesson 14: Use place value understanding to decompose to smaller units up to three times using the standard subtraction algorithm, and apply the algorithm to solve word problems using tape diagrams

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G4-M1-Lesson 15

Use the standard subtraction algorithm to solve the problem below.

1.

```
    6  0  0,  4  0  0
 -     7  2,  6  4  9
```

> I am not ready to subtract.
> I must regroup.

Sample Student A Response:

```
      9  9  13  9
   5  10 10  3  10  10
   6  0  0,  4  0  0
 -    7  2,  6  4  9
   5  2  7,  7  5  1
```

> I work unit by unit, starting with the ones. I can rename 4 hundreds as 3 hundreds 10 tens. Then, I rename 10 tens as 9 tens 10 ones. I'll continue to decompose until I am ready to subtract.
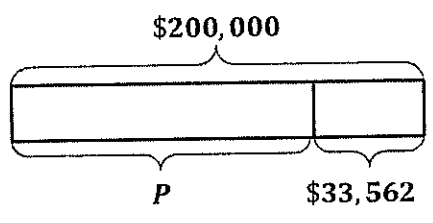
Sample Student B Response:

```
                13
   5  9  9   3  9  10
   6  0  0,  4  0  0
 -    7  2,  6  4  9
   5  2  7,  7  5  1
```

> I need more ones. I unbundle 40 tens as 39 tens 10 ones.

> I need more than 3 hundreds to subtract 6 hundreds. I can rename the 600 thousands as 599 thousands 10 hundreds. 10 hundreds plus 3 hundreds is 13 hundreds.

EUREKA MATH   Lesson 15: Use place value understanding to fluently decompose to smaller units multiple times in any place using the standard subtraction algorithm, and apply the algorithm to solve word problems using tape diagrams.   25

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Use a tape diagram and the standard algorithm to solve the problem below. Check your answer.

2. The cost of the Johnston's new home was $200,000. They paid for most of it and now owe $33,562. How much have they already paid?

$200,000

$$\$200,000 - \$33,562 = P$$

P $33,562$

Sample Student A Response:

```
        9    9    9    9
    1  10   10   10   10   10
    2   0,   0    0    0    0
  -     3   3,   5    6    2
  ─────────────────────────
    1   6   6,   4    3    8
```

> There are a lot of decompositions!

Sample Student B Response:

```
    1   9    9    9    9   10
    2   0    0,   0    0    0
  -     3   3,   5    6    2
  ─────────────────────────
    1   6   6,   4    3    8
```

> I rename 20,000 tens as 19,999 tens 10 ones.

```
    1   6   6,   4    3    8
  +     3   3,   5    6    2
      1   1    1    1    1
  ─────────────────────────
    2   0   0,   0    0    0
```

> I check my answer by adding the two parts. The sum is equal to the cost of the new home. My answer is correct!

The Johnstons have already paid $166,438.

Lesson 15:   Use place value understanding to fluently decompose to smaller units multiple times in any place using the standard subtraction algorithm, and apply the algorithm to solve word problems using tape diagrams.

EUREKA MATH

G4-M1-Lesson 16

1. In its three months of summer business, the local ice cream stand had a total of $94,326 in sales. The first month's sales were $24,314, and the second month's sales were $30,867.

$94,326

$24,314 $30,867 N
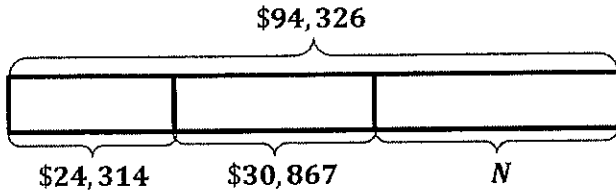
> I label what I know.

a. Round each value to the nearest ten thousand to estimate the sales of the third month.

$$\$24,314 \approx \$20,000$$
$$\$30,867 \approx \$30,000$$
$$\$94,326 \approx \$90,000$$

$$\$20,000 + \$30,000 = \$50,000$$
$$\$90,000 - \$50,000 = \$40,000$$

The sales of the third month were about $\$40,000.$

> To estimate the sales of the third month, I subtract the sum from two months from the total amount.

b. Find the exact amount of sales of the third month.

```
    2   4,  3   1   4
 +  3   0,  8   6   7
    ____1_____1____
    5   5,  1   8   1
```

```
    8  14   2  12
    9̷  4̷,  3̷  2̷   6
 -  5   5,  1   8   1
    _____
    3   9,  1   4   5
```

> When I add the sales of the first and second month, I regroup on the line.

The exact amount of sales of the third month was $\$39,145.$

c. Use your answer from part (a) to explain why your answer in part (b) is reasonable.

My answer of $\$39,145$ *is reasonable because it is close to my estimate of* $\$40,000.$ *The difference between the actual answer and my estimate is less than* $\$1,000.$

EUREKA MATH   Lesson 16:   Solve two-step word problems using the standard subtraction algorithm
fluently modeled with tape diagrams, and assess the reasonableness of
answers using rounding.   27

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2. In the first month after its release, 55,316 copies of a best-selling book were sold. In the second month after its release, 16,427 fewer copies were sold. How many copies were sold in the first two months? Is your answer reasonable?

$$55,316$$

1st Month

2nd Month C

B
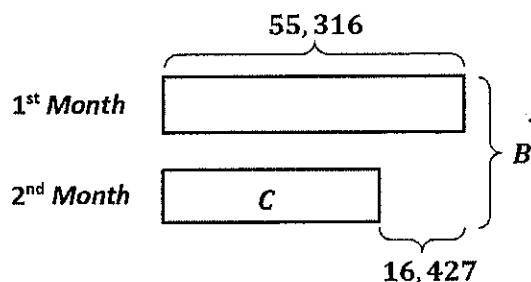
$16,427$

> I draw a shorter tape to represent the second month since fewer books were sold in the second month.

Sample Student A Response:

$C = 55,316 - 16,427$

$C = 38,889$

> I subtract to find the actual number of copies sold in the second month.

$$
\begin{array}{r}
\overset{4}{\cancel{5}}\ \overset{14}{\cancel{5}},\ \overset{12}{\cancel{3}}\ \overset{10}{\cancel{1}}\ \overset{16}{\cancel{6}} \\
-\ 1\ \ 6,\ \ 4\ \ 2\ \ 7 \\
\hline
3\ \ 8,\ \ 8\ \ 8\ \ 9
\end{array}
$$

$B = 55,316 + 38,889$

$B = 94,205$

> Then, I add the number of copies of the first and second month together to find the total.

$$
\begin{array}{r}
5\ \ 5,\ \ 3\ \ 1\ \ 6 \\
+\ 3\ \ 8,\ \ 8\ \ 8\ \ 9 \\
\underset{1\ \ \ 1\ \ \ 1\ \ \ 1}{} \\
\hline
9\ \ 4,\ \ 2\ \ 0\ \ 5
\end{array}
$$

$55,316 \approx 60,000$

$16,427 \approx 20,000$

$60,000 - 20,000 = 40,000$

$60,000 + 40,000 = 100,000$

Sample Student B Response:

$B = 55,316 + 55,316 - 16,427$

$B = 110,632 - 16,427$

$B = 94,205$

> To find the total number copies I can add two units of 55,316 and then subtract 16,427.

$$
\begin{array}{r}
5\ \ 5,\ \ 3\ \ 1\ \ 6 \\
+\ 5\ \ 5,\ \ 3\ \ 1\ \ 6 \\
\underset{\ \ \ \ \ \ 1\ \ \ \ \ \ \ \ \ \ \ \ \ 1\ \ \ \ \ \ }{} \\
\hline
1\ \ 1\ \ 0,\ \ 6\ \ 3\ \ 2
\end{array}
$$

$$
\begin{array}{r}
\overset{0}{\cancel{1}}\ \overset{\overset{10}{\cancel{0}}}{\cancel{1}}\ \overset{10}{\cancel{0}},\ 6\ \overset{2}{\cancel{3}}\ \overset{12}{\cancel{2}} \\
-\ \ \ \ 1\ \ 6,\ \ 4\ \ 2\ \ 7 \\
\hline
9\ \ 4,\ \ 2\ \ 0\ \ 5
\end{array}
$$

$110,632 \approx 111,000$

$16,427 \approx 16,000$

$111,000 - 16,000 = 95,000$

94,205 copies were sold in the first two months.

> I round to the nearest ten thousand. My answer is reasonable. It is about 6,000 less than my estimate. I would expect this difference because I rounded each number *up* to the nearest ten thousand.

> I round to the nearest thousand. My answer is really close to my estimate! When I round to a smaller place value unit, I often get an estimate closer to the actual answer.

Lesson 16: Solve two step word problems using the standard subtraction algorithm fluently modeled with tape diagrams, and assess the reasonableness of answers using rounding.

EUREKA MATH™

G4-M1-Lesson 17

Draw a tape diagram to represent each problem. Use numbers to solve, and write your answer as a statement.

1. Saisha has 1,025 stickers. Evan only has 862 stickers. How many more stickers does Saisha have than Evan?
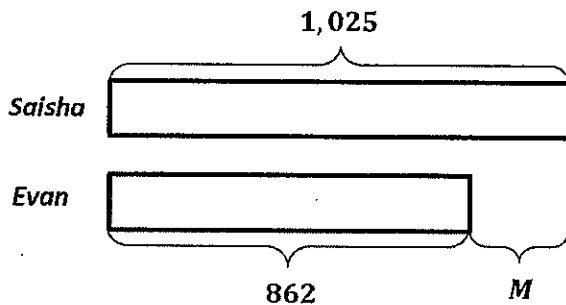
1,025

Saisha

Evan

> I draw Evan's tape just a bit shorter than Saisha's since 862 is pretty close to 1,025. I label the unknown as 'M'.

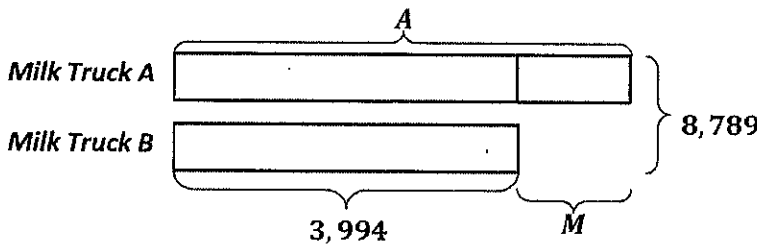**862**   M

$M = 1,025 - 862$

$M = 163$

```
      9
  0  10  12
  1,  0  2  5
 -    8  6  2
  ─────────────
      1  6  3
```

```
     1  6  3
  +  8  6  2
  ─────────────
  1,  0  2  5
```

> I can check my answer by adding. The sum is 1,025. My answer is correct!

Saisha has 163 more stickers than Evan.

2. Milk Truck B contains 3,994 gallons of milk. Together, Milk Truck A and Milk Truck B contain 8,789 gallons of milk. How many more gallons of milk does Milk Truck A contain than Milk Truck B?

A

Milk Truck A

Milk Truck B   } 8,789

3,994   M

$A = 8,789 - 3,994$

$A = 4,795$

```
         16
     7  6  18
  8,  7  8  9
 - 3,  9  9  4
 ─────────────
  4,  7  9  5
```

$M = 4,795 - 3,994$

$M = 801$

```
   3  17
  4,  7  9  5
 - 3,  9  9  4
 ─────────────
      8  0  1
```

> My picture shows me that in order to solve for M, I must first solve for A.

Milk Truck A contains 801 more gallons of milk than Milk Truck B.

3. The length of the purple streamer measured 180 inches. After 40 inches were cut from it, the purple streamer was twice as long as the blue streamer. At first, how many inches longer was the purple streamer than the blue streamer?
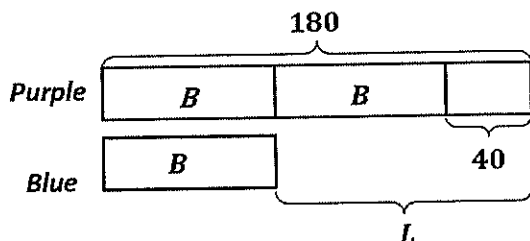
I use unit language to help me solve. The purple streamer is now 140 inches long.

$2B = 18\ tens - 4\ tens$

$2B = 14\ tens\ or\ 140$

$B = 14\ tens \div 2$

$B = 7\ tens$

$B = 70$

I divide to find the length of the blue streamer.

$L = 180 - 70$

$L = 18\ tens - 7\ tens$

$L = 11\ tens$

$L = 110$

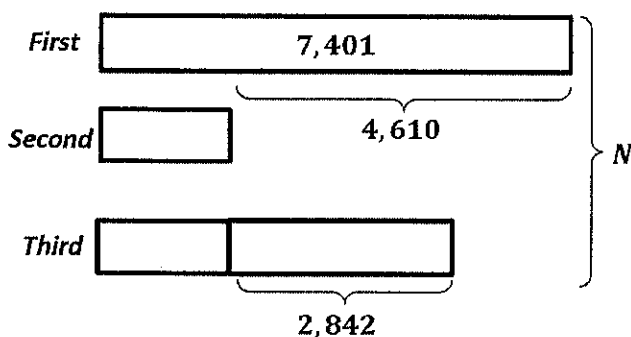I subtract the length of the blue streamer from the original length of the purple streamer.

At first, the purple streamer was 110 inches longer than the blue streamer.

G4-M1-Lesson 18

Draw a tape diagram to represent each problem. Use numbers to solve, and write your answer as a statement.

1. Bridget wrote down three numbers. The first number was 7,401. The second number was 4,610 less than the first. The third number was 2,842 greater than the second. What is the sum of her numbers?

First | 7,401

Second | 4,610

Third | 2,842

N

$$\begin{array}{r} 6 \overset{13}{\cancel{3}} \overset{10}{\cancel{0}} \\ 7, \cancel{4} \cancel{0} \ 1 \\ - \ 4, \ 6 \ 1 \ 0 \\ \hline 2, \ 7 \ 9 \ 1 \end{array}$$

To find the second number, I subtract.

$$\begin{array}{r} 2, \ 7 \ 9 \ 1 \\ + \ 2, \ 8 \ 4 \ 2 \\ 1 \ 1 \\ \hline 5, \ 6 \ 3 \ 3 \end{array}$$

To find the third number, I add 2,842 to the value of the second number.

$$\begin{array}{r} 7, \ 4 \ 0 \ 1 \\ 2, \ 7 \ 9 \ 1 \\ + \ 5, \ 6 \ 3 \ 3 \\ 1 \ 1 \\ \hline 1 \ 5, \ 8 \ 2 \ 5 \end{array}$$

The sum of Bridget's numbers is 15,825.

2. Mrs. Sample sold a total of 43,210 pounds of mulch. She sold 13,305 pounds of cherry mulch. She sold 4,617 more pounds of birch mulch than cherry. The rest of the mulch sold was maple. How many pounds of maple mulch were sold?

Cherry | 13,305

Birch | 4,617
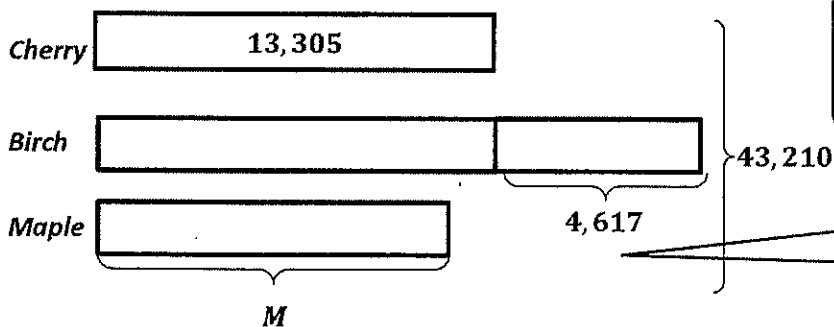
Maple | M

43,210

This problem is different than the other. Here, I know the total, but I don't know one of the parts.

I don't know how long the tape for the maple mulch should be, so I estimate.

$$\begin{array}{r} 1 \ 3, \ 3 \ 0 \ 5 \\ 1 \ 3, \ 3 \ 0 \ 5 \\ + \ \ \ 4, \ 6 \ 1 \ 7 \\ 1 \ \ 1 \ \ \ 1 \\ \hline 3 \ 1, \ 2 \ 2 \ 7 \end{array}$$

$$\begin{array}{r} \overset{11}{} \overset{10}{} \\ 4 \overset{2}{\cancel{3}}, \overset{1}{\cancel{2}} \overset{0}{\cancel{1}} \overset{10}{\cancel{0}} \\ - \ 3 \ 1, \ 2 \ 2 \ 7 \\ \hline 1 \ 1, \ 9 \ 8 \ 3 \end{array}$$
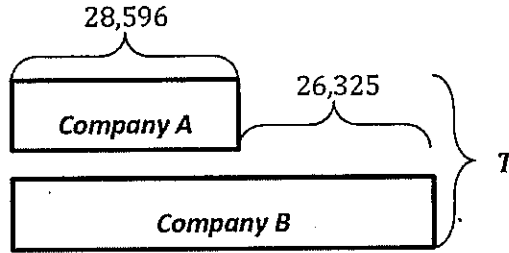
$M = 43,210 - 31,227$

$M = 11,983$

11,983 pounds of maple mulch were sold.

G4-M1-Lesson 19

1. Using the diagram below, create your own word problem. Solve for the value of the variable, T.

There are 28,596 _people who work for_

Company A. There are 26,325 more _people_

who work for Company B than Company A.

How many _people work for the two companies in_

all ?

28,596

| Company A | 26,325 |

| Company B |

T

> After analyzing the tape diagram, I create a context for a word problem and fill in the blanks. I write "how many in all" because the total, T, is unknown.

Company $B = 28,596 + 26,325$

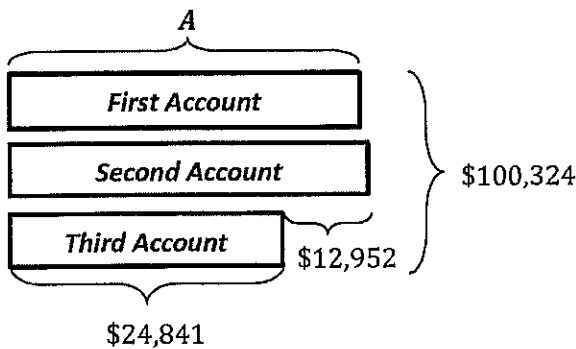$T = $ Company $A + $ Company B

```
   2  8,  5  9  6
+  2  6,  3  2  5
   1      1  1
   5  4,  9  2  1
```

```
   5  4,  9  2  1
+  2  8,  5  9  6
   1     1  1
   8  3,  5  1  7
```

83,517 _people work for the two companies in all._

2. Use the following tape diagram to create a word problem. Solve for the value of the variable, A.

A

| First Account |
| Second Account |
| Third Account |

$100,324

$12,952

$24,841

> I analyze the tape diagram. I find a context, and write a word problem based on what is known and what is unknown. I label the parts.

Mr. W had 3 bank accounts with a total balance of $100,324. He had $24,841 in his third account and $12,952 more in his second account than in his third account. What was the balance of Mr. W's first account?

```
   1  2,  9  5  2
+  2  4,  8  4  1
           1
   3  7,  7  9  3
```

```
   3  7,  7  9  3
+  2  4,  8  4  1
           1  1  1
   6  2,  6  3  4
```

```
           9  9
          10 10 12 12
   1   0  0,  3  2  4
-      6  2,  6  3  4
       3  7,  6  9  0
```

Mr. W's first account had a balance of $37,690.

32   Lesson 19:   Create and solve multi-step word problems from given tape diagrams and equations.

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