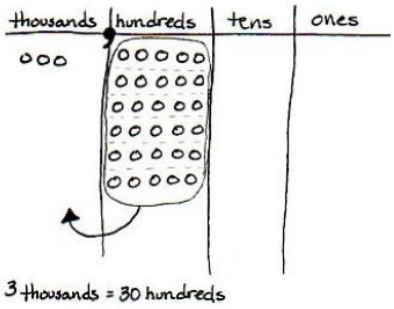
Grade 4 • Module 1

Place Value, Rounding, and Algorithms for Addition and Subtraction

OVERVIEW

In this 25-day Grade 4 module, students extend their work with whole numbers. They begin with large numbers using familiar units (hundreds and thousands) and develop their understanding of millions by building knowledge of the pattern of *times ten* in the base ten system on the place value chart (**4.NBT.1**). They recognize that each sequence of three digits is read as hundreds, tens, and ones followed by the naming of the corresponding base thousand unit (thousand, million, billion).[1]



The place value chart is fundamental to Topic A. Building upon their previous knowledge of bundling, students learn that 10 hundreds can be composed into 1 thousand and, therefore, 30 hundreds can be composed into 3 thousands because a digit's value is 10 times what it would be one place to its right (**4.NBT.1**). Students learn to recognize that in a number such as 7,777 each 7 has a value that is 10 times the value of its neighbor to the immediate right. One thousand can be decomposed into 10 hundreds, therefore 7 thousands can be decomposed into 70 hundreds.

Similarly, multiplying by 10 shifts digits one place to the left, and dividing by 10 shifts digits one place to the right.

$$3{,}000 = 10 \times 300 \qquad 3{,}000 \div 10 = 300$$

In Topic B, students use place value as a basis for comparing whole numbers. Although this is not a new concept, it becomes more complex as the numbers become larger. For example, it becomes clear that 34,156 is 3 thousands greater than 31,156.

$$34{,}156 > 31{,}156$$

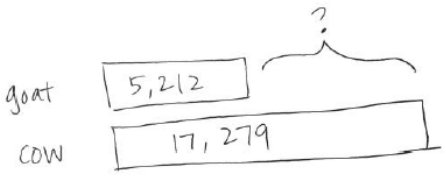
Comparison leads directly into rounding, where their skill with isolating units is applied and extended. Rounding to the nearest ten and hundred was mastered with three-digit numbers in Grade 3. Now, Grade 4 students moving into Topic C learn to round to any place value (**4.NBT.3**), initially using the vertical number line, though ultimately moving away from the visual model altogether. Topic C also includes word problems where students apply rounding to real life situations.

[1] Grade 4 expectations in the NBT standards domain are limited to whole numbers less than or equal to 1,000,000.

In Grade 4, students become fluent with the standard algorithms for addition and subtraction. In Topics D and E, students focus on single like-unit calculations (ones with ones, thousands with thousands, etc.), at times requiring the composition of greater units when adding (10 hundreds are composed into 1 thousand) and decomposition into smaller units when subtracting (1 thousand is decomposed into 10 hundreds) (**4.NBT.4**). Throughout these topics, students apply their algorithmic knowledge to solve word problems. Students also use a variable to represent the unknown quantity.

The module culminates with multi-step word problems in Topic F (**4.OA.3**). Tape diagrams are used throughout the topic to model *additive compare* problems like the one exemplified below. These diagrams facilitate deeper comprehension and serve as a way to support the reasonableness of an answer.

A goat produces 5,212 gallons of milk a year.
A cow produces 17,279 gallons of milk a year.
How much more milk does a goat need to produce to make the same amount of milk as a cow?



17,279 – 5,212 = _____

A goat needs to produce _____ more gallons of milk a year.

The Mid-Module Assessment follows Topic C. The End-of-Module Assessment follows Topic F.

Familiar Terms and Symbols[5]

- =, <, > (equal to, less than, greater than)
- Addend (e.g., in 4 + 5, the numbers 4 and 5 are the addends)
- Algorithm (a step-by-step procedure to solve a particular type of problem)
- Bundling, making, renaming, changing, exchanging, regrouping, trading (e.g., exchanging 10 ones for 1 ten)
- Compose (e.g., to make 1 larger unit from 10 smaller units)
- Decompose (e.g., to break 1 larger unit into 10 smaller units)
- Difference (answer to a subtraction problem)
- Digit (any of the numbers 0 to 9; e.g., What is the value of the digit in the tens place?)
- Endpoint (used with rounding on the number line; the numbers that mark the beginning and end of a given interval)
- Equation (e.g., 2,389 + 80,601 = _____)
- Estimate (an approximation of a quantity or number)
- Expanded form (e.g., 100 + 30 + 5 = 135)
- Expression (e.g., 2 thousands × 10)
- Halfway (with reference to a number line, the midpoint between two numbers, e.g., 5 is halfway between 0 and 10)
- Number line (a line marked with numbers at evenly spaced intervals)
- Number sentence (e.g., 4 + 3 = 7)
- Place value (the numerical value that a digit has by virtue of its position in a number)
- Rounding (approximating the value of a given number)
- Standard form (a number written in the format 135)
- Sum (answer to an addition problem)
- Tape diagram (bar diagram)
- Unbundling, breaking, renaming, changing, regrouping, trading (e.g., exchanging 1 ten for 10 ones)
- Word form (e.g., one hundred thirty-five)

NOTES ON *EXPRESSION*, *EQUATION*, AND *NUMBER SENTENCE*:

Please note the descriptions for the following terms, which are frequently misused.

- **Expression:** A number, or any combination of sums, differences, products or divisions of numbers that evaluates to a number (e.g., 3 + 4, 8 × 3, 15 ÷ 3 as distinct from an equation or number sentence).
- **Equation:** A statement that two expressions are equal (e.g., 3 × ___ = 12, 5 × b =20, 3 + 2 = 5).
- **Number sentence** (also addition, subtraction, multiplication or division sentence): An equation or inequality for which both expressions are numerical and can be evaluated to a single number (e.g., 4 + 3 = 6 + 1, 2 = 2, 21 > 7 × 2, 5 ÷ 5 =1). Number sentences are either true or false (e.g., 4 + 4 < 6 × 2 and 21 ÷ 7 = 4) and contain no unknowns.

[5] These are terms and symbols students have used or seen previously.

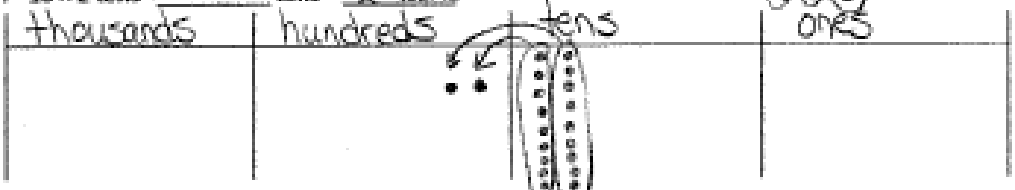
4th Grade Module 1 Lesson 1

Name Jack Date

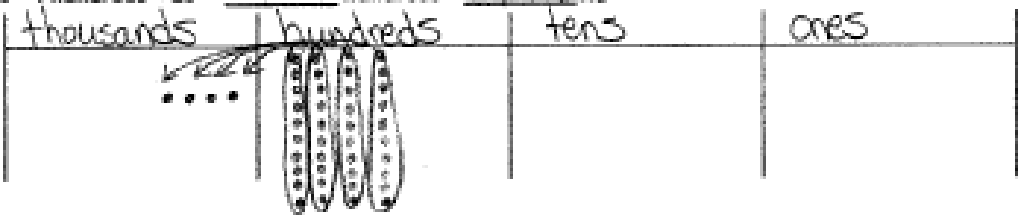
1. Label the place value charts. Fill in the blanks to make the following equations true. Draw disks in the place value chart to show how you got your answer, using arrows to show any bundling.

a. 10 × 3 ones = 30 ones = 3 tens

b. 10 × 2 tens = 20 tens = 2 hundreds



c. 4 hundreds × 10 = 40 hundreds = 4 thousands



2. Complete the following statements using your knowledge of place value:

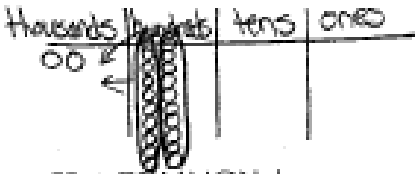
a. 10 times as many as 1 ten is 10 tens.

b. 10 times as many as 3 tens is 30 tens or 3 hundreds.

c. Ten times as many as 9 hundreds is 9 thousands.

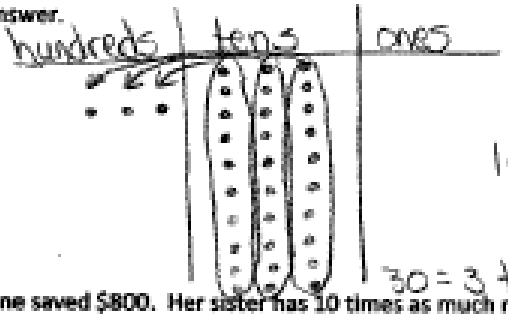
d. 2 thousands is the same as 20 hundreds.

Use pictures, numbers, or words to explain how you got your answer for Part (d).



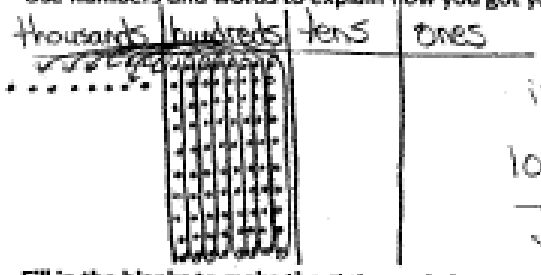
You can group 20 hundreds into 2 groups of 10 hundreds. Each group of 10 hundreds can be bundled to make 1 thousand.

3. Matthew has 30 stamps in his collection. Matthew's father has 10 times as many stamps as Matthew. How many stamps does Matthew's father have? Use numbers and words to explain how you got your answer.



Ten times as many as 30 (3 tens) is 30 tens or 3 hundreds.
10 x 3 tens = 30 tens = 3 hundreds
Matthew's father has 300 stamps

4. Jane saved $800. Her sister has 10 times as much money. How much money does Jane's sister have? Use numbers and words to explain how you got your answer.



Ten times as many as 800 (8 hundreds) is 80 hundreds or 8 thousands.
10 x 8 hundreds = 80 hundreds = 8 thousands
Jane's sister has $8,000.

5. Fill in the blanks to make the statements true.

a. 2 times as much as 4 is 8.

b. 10 times as much as 4 is 40.

c. 500 is 10 times as much as 50.

d. 6,000 is ten times as many as 600.

6. Sarah is 9 years old. Sarah's grandfather is 90 years old. Sarah's grandfather is how many times as old as Sarah?

Ten times as many as 9 ones is 9 tens.
10 x 9 ones = 9 tens = 90.

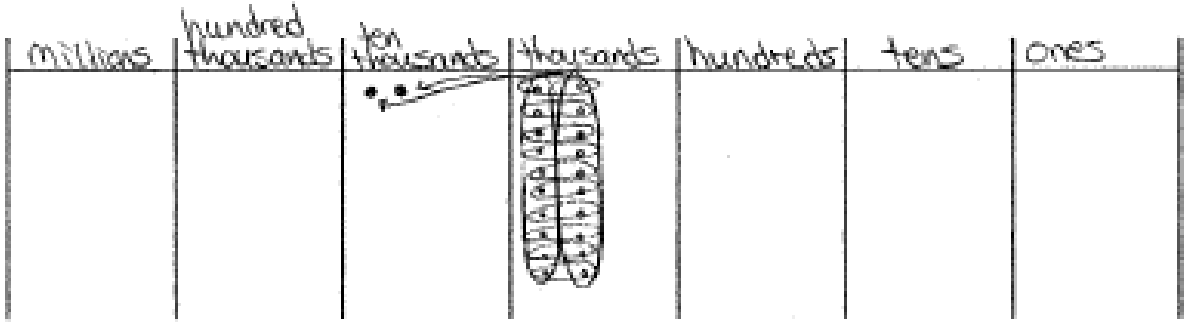
Sarah's grandfather is 10 times as old as Sarah.

4th Grade Module 1 Lesson 2

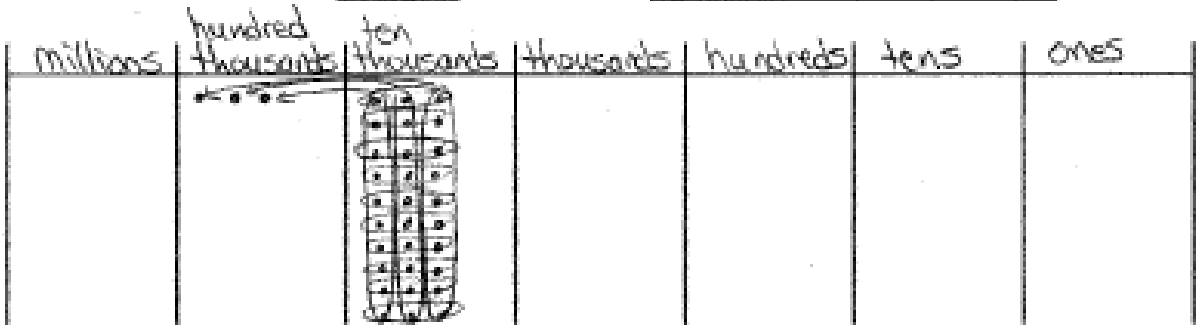
Name Jack Date

1. As you did during the lesson, label and represent the product or quotient by drawing disks on the place value chart.

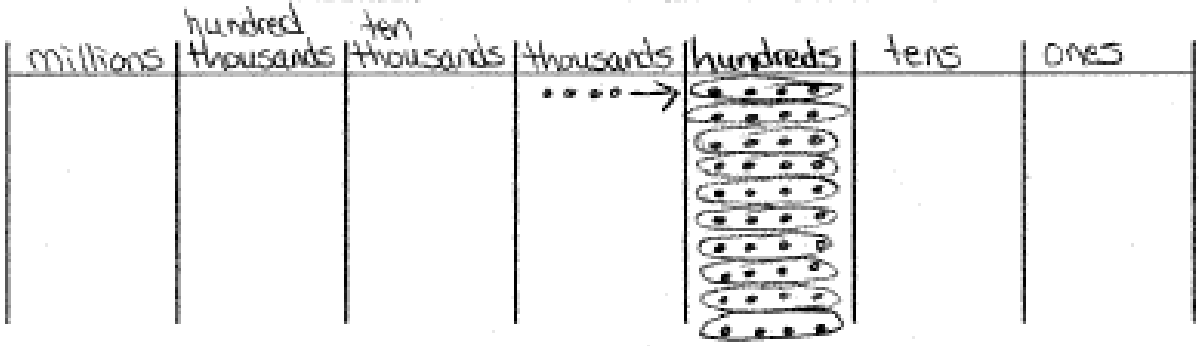
a. 10 × 2 thousands = 20 thousands = 2 ten thousands



b. 10 × 3 ten thousands = 30 ten thousands = 3 hundred thousands



c. 4 thousands ÷ 10 = 40 hundreds ÷ 10 = 4 hundreds



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

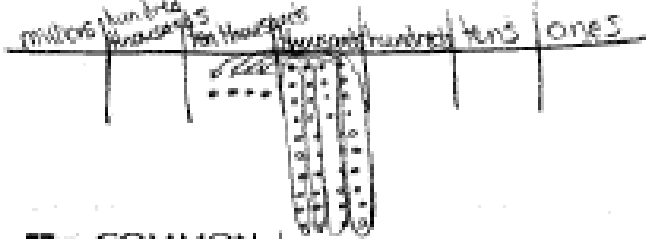
Expression	Unit form	Standard Form
10 × 6 tens	60 tens	600
7 hundreds × 10	70 hundreds	7,000
3 thousands ÷ 10	3 hundreds	300
6 ten thousands ÷ 10	6 thousands	6,000
10 x 4 thousands	40 thousands	40,000

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

Expression	Unit form	Standard Form
(4 tens 3 ones) x 10	4 hundreds 3 tens	430
(2 hundreds 3 tens) × 10	2 thousands 3 hundreds	2,300
(7 thousands 8 hundreds) × 10	7 ten thousands 8 thousands	78,000
(6 thousands 4 tens) ÷ 10	6 hundreds 4 ones	604
(4 ten thousands 3 tens) ÷ 10	4 thousands 3 ones	4,003

4. Explain how you solved 10 × 4 thousands. Use a place value chart to support your explanation.

10 x 4 thousands = 40 thousands



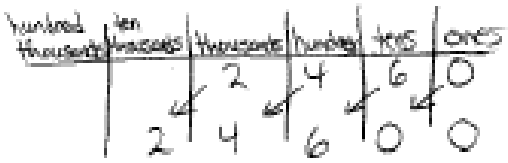
I know that multiplying by ten shifts the digits to the left. Ten times 4 thousands will give us 4 ten thousands. 4 ten thousands = 40,000

5. Explain how you solved (4 ten thousands 3 tens) ÷ 10. Use a place value chart to support your explanation.

When dividing by ten, each digit shifts to the right one column.
4 ten thousands ÷ 10 = 4 thousands
3 tens ÷ 10 = 3 ones

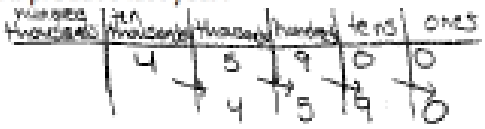
6. **Jacob saved 2 thousand dollar bills, 4 hundred dollar bills, and 6 ten dollar bills to buy a car. The car costs 10 times as much as he has saved. How much does the car cost?**

$2,000 + $400 + $60 = $2,460
$2,460 × 10 = $24,600
The car costs $24,600.



7. Last year the apple orchard experienced a drought and didn't produce many apples. But this year, the apple orchard produced 45 thousand Granny Smith apples and 9 hundred Red Delicious apples, which is 10 times as many apples as last year. How many apples did the orchard produce last year?

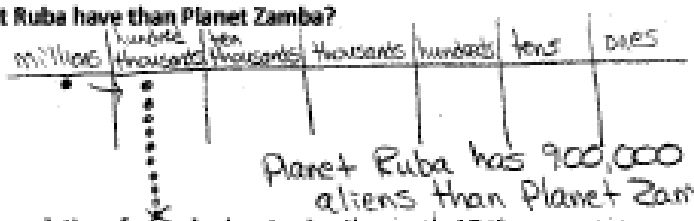
45,000 + 900 = 45,900
45,900 ÷ 10 = 4,590
Last year the orchard produced 4,590 apples.



8. **Planet Ruba has a population of 1 million aliens. Planet Zamba has 1 hundred thousand aliens.**
   a. **How many more aliens does Planet Ruba have than Planet Zamba?**

1 million = 10 hundred thousands

10 hundred thousands
− 1 hundred thousands
9 hundred thousands



Planet Ruba has 900,000 more aliens than Planet Zamba.

   b. **Write a sentence to compare the populations for each planet using the words *10 times as many*.**

The population of Planet Ruba is 10 times as many as Planet Zamba.

4th Grade Module 1 Lesson 3

Name Jack Date _____

1. Rewrite the following numbers including commas where appropriate:

a. 1234 1,234 b. 12345 12,345 c. 123456 123,456

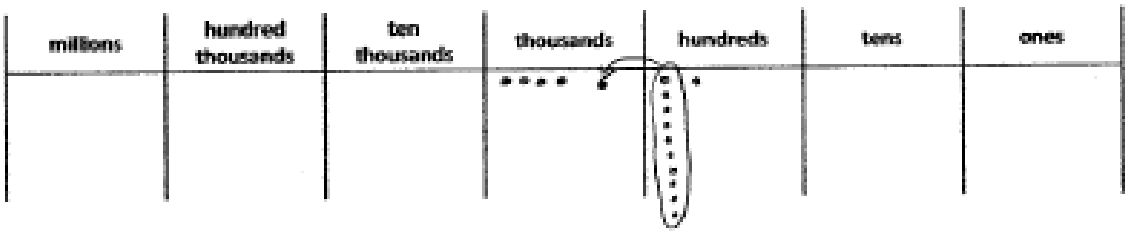
d. 1234567 1,234,567 e. 12345678901 12,345,678,901

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

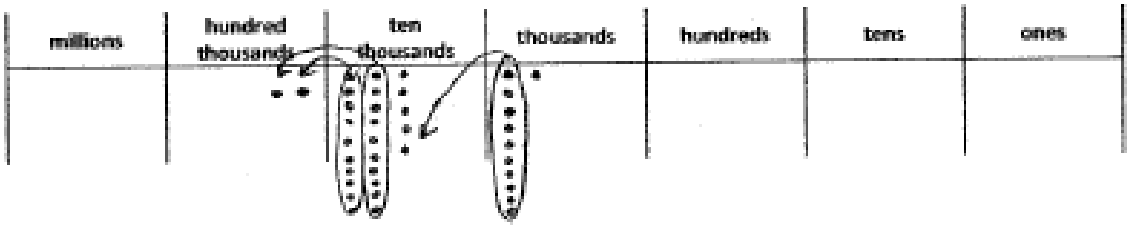
Expression	Standard Form
5 tens + 5 tens	100
3 hundreds + 7 hundreds	1,000
400 thousands + 600 thousands	1,000,000
8 thousands + 4 thousands	12,000

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.

a. 4 thousands + 11 hundreds = 5,100



b. 24 ten thousands + 11 thousands = 251,000



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

a. 10 x 3 thousands = 30,000

How many thousands are in the answer? 30

millions	hundred thousands	ten thousands	thousands	Hundreds	Tens	ones
		•••	••• ×10			

b. (3 ten thousands 2 thousands) x 10 = 320,000

How many thousands are in the answer? 320

millions	hundred thousands	ten thousands	thousands	Hundreds	tens	ones
	•••	••• ×10 **	** ×10			

c. (32 thousands 1 hundred 4 ones) x 10 = 321,040

How many thousands are in your answer? 321

millions	hundred thousands	ten thousands	thousands	Hundreds	tens	ones
	•••	••• ×10 ** ×10	•• ×10	• ×10	••••	•••• ×10

5. Lee and Gary visited South Korea. They exchanged their dollars for South Korean bills. Lee received 15 ten thousand South Korean bills. Gary received 150 thousand bills. Use disks or numbers on a place value chart to compare Lee and Gary's money.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
Lee	1	15	0	0	0	0
Gary	1	15	150	0	0	0

Lee and Gary have the same amount of money.
15 ten thousands = 150,000
150 thousands = 150,000

4th Grade Module 1 Lesson 4

Name Jack Date

1a. On the place value chart below, label the units and represent the number 90,523.

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
		9	0	5	2	3

b. Write the number in word form.

Ninety thousand, Five hundred twenty-three

c. Write the number in expanded form.

90,000 + 500 + 20 + 3

2a. On the place value chart below, label the units and represent the number 905,203.

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	9	0	5	2	0	3

b. Write the number in word form.

Nine hundred five thousand, two hundred three

c. Write the number in expanded form.

900,000 + 5,000 + 200 + 3

3. **Complete the following chart:**

Number	Word Form	Expanded Form
2,480	two thousand, four hundred eighty	2,000 + 400 + 80
20,482	twenty thousand, four hundred eighty-two	20,000 + 400 + 80 + 2
64,106	sixty-four thousand, one hundred six	60,000 + 4,000 + 100 + 6
604,016	six hundred four thousand, sixteen	600,000 + 4,000 + 10 + 6
960,060	nine hundred sixty thousand sixty	900,000 + 60,000 + 60

4. **Black Rhinos are endangered, with only 4,400 left in the world. Timothy read that number as "four thousand, four hundred." His father read the number as "44 hundred." Who read the number correctly? Use pictures, numbers or words to explain your answer.**

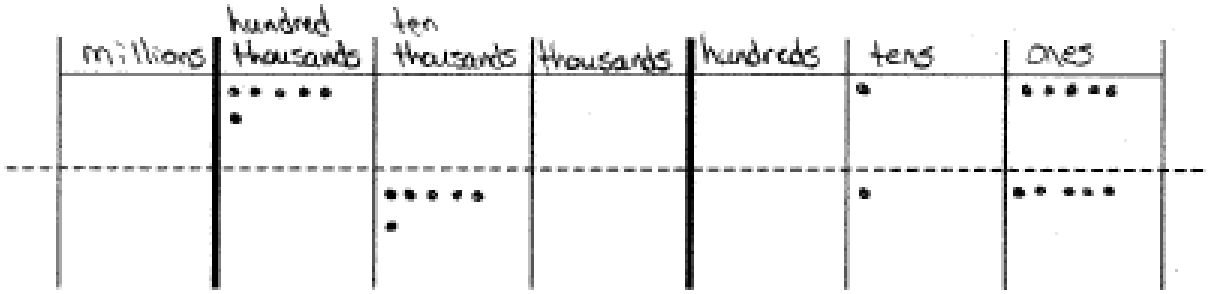
Both Timothy and his father read the number correctly. 4,400 is "four thousand, four hundred". It can also be read as "forty-four hundred" since the 4 thousands can be regrouped as 40 hundreds. 40 hundreds plus 4 hundreds is forty-four hundreds.

4th Grade Module 1 Lesson 5

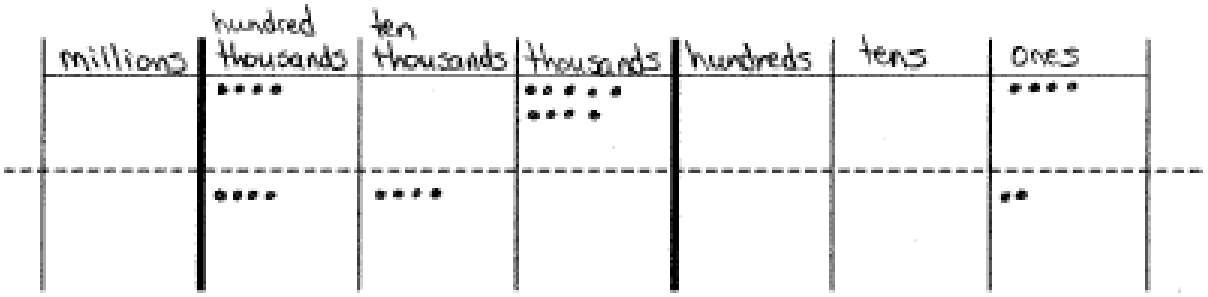
Name Jack Date

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.

a. 600,015 > 60,015



b. 409,004 < 440,002



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

a. 342,001 > 94,981

b. 500,000 + 80,000 + 9,000 + 100 > five hundred eight thousand, nine hundred one

5	8	9	1	0	0
5	0	8	9	0	1

c. 9 hundred thousands 8 thousands 9 hundreds 3 tens = 908,930

9	0	8	9	3	0
9	0	8	9	3	0

d. 9 hundreds 5 ten thousands 9 ones < 6 ten thousands 5 hundreds 9 ones

5	0	9	0	9
6	0	5	0	9

3. **Use the information in the chart below to list the height in feet of each mountain from least to greatest. Then name the mountain that has the lowest elevation in feet.**

Name of Mountain	Elevation in Feet (ft.)
Allen Mountain	4,340 ft.
Mount Marcy	5,344 ft.
Mount Haystack	4,960 ft.
Slide Mountain	4,240 ft.

4,240 ft.
4,340 ft.
4,960 ft.
5,344 ft.

Slide Mountain has the lowest elevation in feet at 4,240 feet.

4. **Arrange these numbers from least to greatest: 8,002 2,080 820 2,008 8,200**

820 2,008 2,080 8,002 8,200

5. **Arrange these numbers from greatest to least: 728,000 708,200 720,800 87,300**

728,000 720,800 708,200 87,300

6. One astronomical unit, or 1 AU, is the approximate distance from Earth to the sun. The following are the approximate distances from Earth to nearby stars given in AUs:

Alpha Centauri is 275,725 AUs from Earth.
Proxima Centauri is 268,269 AUs from Earth.
Epsilon Eridani is 665,282 AUs from Earth.
Barnard's Star is 377,098 AUs from Earth.
Sirius is 542,774 AUs from Earth.

List the names of the stars and their distances in AUs in order from closest to farthest from Earth.

Proxima Centauri - 268,269 AUs
Alpha Centauri - 275,725 AUs
Barnard's Star - 377,098 AUs
Sirius - 542,774 AUs
Epsilon Eridani - 665,282 AUs

4th Grade Module 1 Lesson 6

Name Jack Date

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. 10,000 more than six hundred five thousand, four hundred seventy-two is 615,472

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

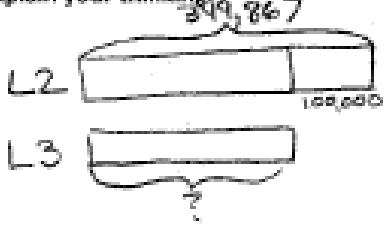
b. 100 thousand less than 400,000 + 80,000 + 1000 + 30 + 6 is 381,036

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	•• •(3)	••••• •••	•		•••	••••• •

c. 230,070 is 100,000 more than 130,070.

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

2. Lucy plays an online math game. She scored 100,000 more points on Level 2 than on Level 3. If she scored 349,867 points on Level 2, what was her score on Level 3? Use pictures, words, or numbers to explain your thinking.



Lucy's Level 3 score was 249,867.

3. **Complete the following equations:**

a. 10,000 + 40,060 = 50,060

b. 21,195 − 10,000 = 11,195

c. 999,000 + 1,000 = 1,000,000

d. 129,231 − 100,000 = 29,231

e. 122,000 = 22,000 + 100,000

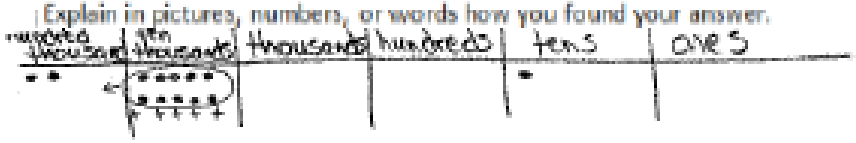
f. 38,018 = 39,018 − 1,000

4. **Fill in the empty boxes to complete the patterns.**

a.

150,010	160,010	170,010	180,010	190,010	200,010

Explain in pictures, numbers, or words how you found your answer.

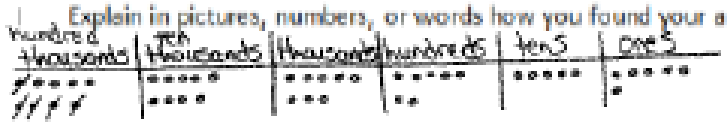


The numbers increase by 10,000 each time.

b.

998,756	898,756	798,756	698,756	598,756	498,756

Explain in pictures, numbers, or words how you found your answer.

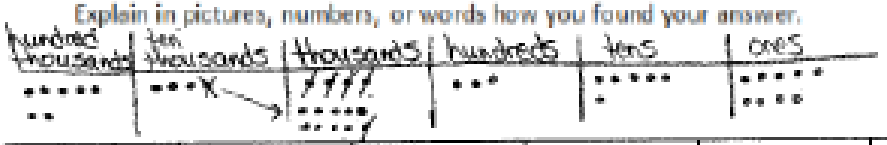


The numbers decrease by 100,000 each time.

c.

744,369	743,369	742,369	741,369	740,369	739,369

Explain in pictures, numbers, or words how you found your answer.

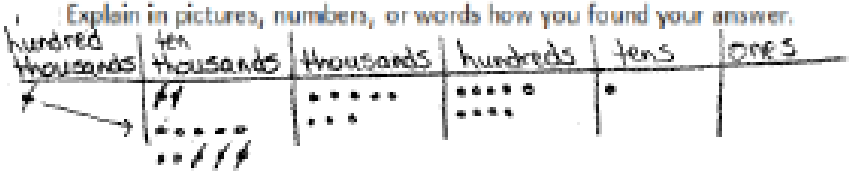


The numbers decrease by 1,000 each time.

d.

128,910	118,910	108,910	98,910	88,910	78,910

Explain in pictures, numbers, or words how you found your answer.



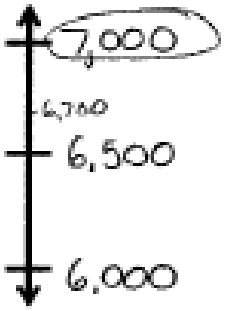
The numbers decrease by 10,000 each time.

4th Grade Module 1 Lesson 7

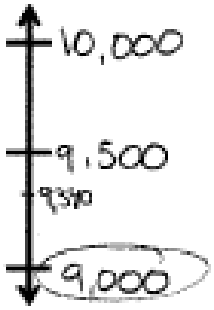
Name Jack Date

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

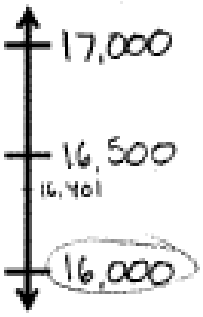
a. 6,700 ≈ 7,000



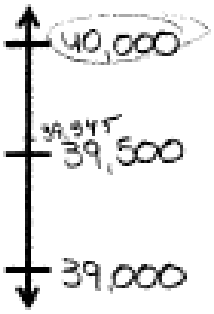
b. 9,340 ≈ 9,000



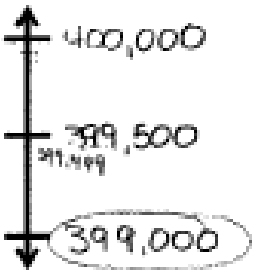
c. 16,401 ≈ 16,000



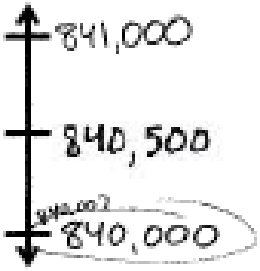
d. 39,545 ≈ 40,000



e. 399,499 ≈ 399,000



f. 840,007 ≈ 840,000



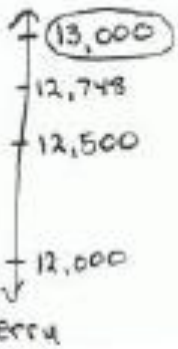
2. A pilot wanted to know about how many kilometers he flew on his last 3 flights. From NYC to London, he flew 5,572 km. Then, from London to Beijing, he flew 8,147 km. Finally, he flew 10,996 km from Beijing back to NYC. Round each number to the nearest thousand, and then find the sum of the rounded numbers to estimate about how many kilometers the pilot flew.

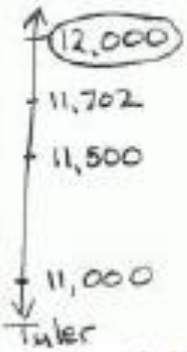
5,572 ≈ 6,000
8,147 ≈ 8,000
10,996 ≈ 11,000

6,000
8,000
+ 11,000
25,000

The pilot flew about 25,000 miles.

3. Mrs. Smith's class is learning about healthy eating habits. The students learned that the average child should consume about 12,000 calories each week. Kerry consumed 12,748 calories last week. Tyler consumed 11,702 calories last week. Round to the nearest thousand to find who consumed closer to the recommended number of calories. Use pictures, numbers, or words to explain.





Tyler consumed closer to the recommended number of calories. When rounding to the nearest thousand, Kerry consumed closer to 13,000 calories. Tyler consumed closer to 12,000 calories.

4. For the 2013-2014 school year, the cost of tuition at Cornell University was $43,000 when rounded to the nearest thousand. What is the greatest possible amount the tuition could be? What is the least possible amount the tuition could be?

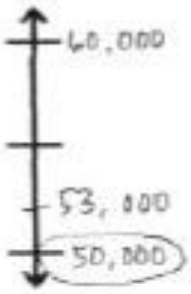
The greatest possible amount the tuition could be is $43,499. The least possible amount is $42,500.

4th Grade Module 1 Lesson 8

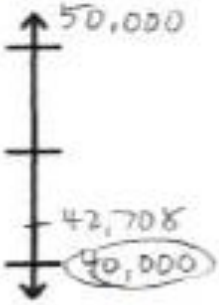
Name: Jack Date: _____

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

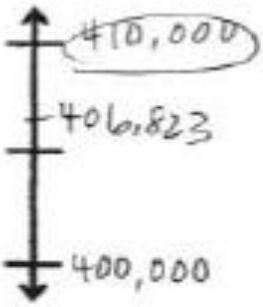
1a. 53,000 rounded to the nearest ten thousand is 50,000.



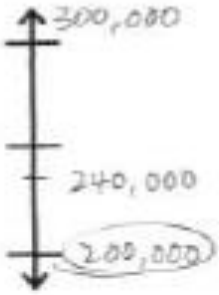
b. 42,708 rounded to the nearest ten thousand is _____.



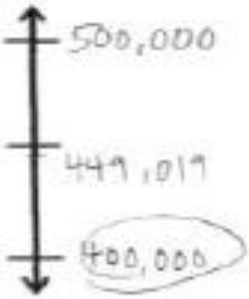
c. 406,823 rounded to the nearest ten thousand is _____.



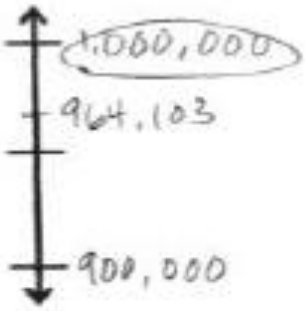
2a. 240,000 rounded to the nearest hundred thousand is 200,000.



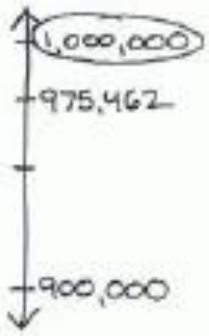
b. 449,019 rounded to the nearest hundred thousand is _____.



c. 964,103 rounded to the nearest hundred thousand is _____.



3. 975,462 songs were downloaded in one day. Round this number to the nearest hundred thousand to estimate how many songs were downloaded in one day. Use a number line to show your work.

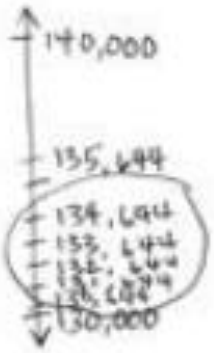


975,462 ≈ 1,000,000

About 1,000,000 songs were downloaded in one day.

4. This number was rounded to the nearest ten thousand. List the possible digits that could go in the thousands place to make this statement correct. Use a number line to show your work.

13,644 ≈ 130,000



0, 1, 2, 3, 4 could all make the statement correct.

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

712,350 – 342,802

a. **Round to the nearest ten thousands:**

710 thousand
- 340 thousand
370 thousand

b. **Round to the nearest hundred thousands:**

700 thousand
- 300 thousand
400 thousand

4th Grade Module 1 Lesson 9

Name Jack Date

1. Round to the nearest thousand.

a. 5,300 = 5,000 b. 4,589 = 5,000

c. 42,099 = 42,000 d. 801,504 = 802,000

e. Explain how you found your answer for Part (d).

For letter d I looked at the thousands place which was a 1. Then I looked to the hundreds place and saw that it was five hundred so I knew to round the thousands place up to 2 thousand.

2. Round to the nearest ten thousand.

a. 26,000 = 30,000 b. 34,920 = 30,000

c. 789,091 = 790,000 d. 706,286 = 710,000

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

The problems have the same answer because 26,000 can be rounded up to 30,000 and 34,920 can be rounded down to 30,000. Another number could be 29,999.

3. Round to the nearest hundred thousand.

a. 840,000 = 800,000 b. 850,471 = 900,000

c. 761,004 = 800,000 d. 991,965 = 1,000,000

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

Two problems are the same because 840,000 is rounded down to 800,000 and 761,004 is rounded up to 800,000. Another number could be 801,111.

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

a. **The 2012 Super Bowl had an attendance of just 68,658 people. If the headline in the newspaper the next day read "About 70,000 People Attend Super Bowl," how did the newspaper round to estimate the total number of people in attendance?**

The newspaper rounded to the nearest ten thousand to estimate the total number of people in attendance.

b. The 2011 Super Bowl had an attendance of 103,219 people. If the headline in the newspaper the next day read "About 200,000 People Attend Super Bowl," is the newspaper's estimate reasonable? Use rounding to explain your answer.

The newspaper's estimate is not reasonable because 103,219 does not round to 200,000. 103,219 rounds to 100,000 when rounding to the nearest hundred thousand.

c. **According to the problems above, about how many more people attended the Super Bowl in 2011 than in 2012? Round each number to the largest place value before giving the estimated answer.**

(2012) 68,658 ≈ 70,000

(2011) 103,219 ≈ 100,000

100,000 one hundred thousand
- 70,000 → - 70 thousand
30,000 30 thousand

About 30,000 more people attended the Super Bowl in 2011 than in 2012.

4th Grade Module 1 Lesson 10

Name Jack Date _____

1. Round 543,982 to the nearest:
   a. thousand: 544,000
   b. ten thousand: 540,000
   c. hundred thousand: 500,000

2. Complete each statement by rounding the number to the given place value.
   a. 2,841 rounded to the nearest hundred is 2,800.
   b. 32,851 rounded to the nearest hundred is 32,900.
   c. 132,891 rounded to the nearest hundred is 132,900.
   d. 6,299 rounded to the nearest thousand is 6,000.
   e. 36,599 rounded to the nearest thousand is 37,000.
   f. 100,699 rounded to the nearest thousand is 101,000.
   g. 40,984 rounded to the nearest ten thousand is 40,000.
   h. 54,984 rounded to the nearest ten thousand is 50,000.
   i. 997,010 rounded to the nearest ten thousand is 1,000,000.
   j. 360,034 rounded to the nearest hundred thousand is 400,000.
   k. 436,709 rounded to the nearest hundred thousand is 400,000.
   l. 1,852,442 rounded to the nearest hundred thousand is 1,900,000.

3. **Empire Elementary School needs to purchase water bottles for field day. There are 2,142 students. Principal Vadar rounded to the nearest hundred to estimate how many water bottles to order. Will there be enough water bottles for everyone? Explain.**

2,142 ≈ 2,100

There will not be enough water bottles because 2,142 rounded to the nearest hundred is 2,100. If Principal Vadar orders 2,100, there will be 42 students without water.

4. **Opening day at the New York State Fair in 2012 had an attendance of 46,753. Decide which place value to round 46,753 to if you were writing a newspaper article. Round the number and explain why it is an appropriate unit to round the attendance to.**

I would round 46,753 to the ten thousands place to get 50,000. For a newspaper article, saying approximately 50,000 were in attendance is a nice round number that is pretty close to the actual number.

5. A jet airplane holds about 65,000 gallons of gas. It uses about 7,400 gallons when flying between New York City and Los Angeles. Round each number to the largest place value. Then find about how many trips the plane can take between cities before running out of fuel.

65,000 ≈ 70,000
7,460 ≈ 7,000

The plane can take about 10 trips between cities before running out of fuel

4th Grade Module 1 Lesson 11

Name Jack Date

1. Solve the addition problems below using the standard algorithm.

a. 6,311 + 268 = 6,579

b. 6,311 + 1,268 = 7,579

c. 6,314 + 1,268 = 7,582

d. 6,314 + 2,493 = 8,807

e. 8,314 + 2,493 = 10,807

f. 12,378 + 5,463 = 17,841

g. 52,098 + 6,048 = 58,146

h. 34,698 + 71,840 = 106,538

i. 544,811 + 356,445 = 901,256

j. 527 + 275 + 752

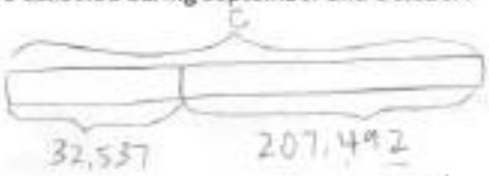
527
+ 275
+ 752
1,554

k. 38,193 + 6,376 + 241,457

38,193
6,376
+241,457
286,026

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

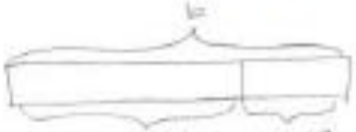
2. In September, Liberty Elementary School collected 32,537 cans for a fundraiser. In October, they collected 207,492 cans. How many cans were collected during September and October?



$$\begin{array}{r} 32,537 \\ +207,492 \\ \hline 240,029 \end{array}$$

240,029 cans were collected during September and October.

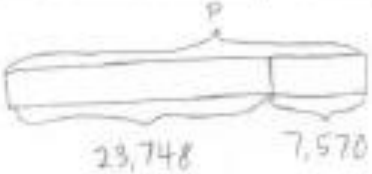
3. A baseball stadium sold some burgers. 2,806 were cheeseburgers. 1,679 burgers didn't have cheese. How many burgers did they sell in all?



$$\begin{array}{r} 2,806 \\ +1,679 \\ \hline 4,485 \end{array}$$

4,485 burgers were sold.

4. On Saturday night, 23,748 people attended the concert. On Sunday, 7,570 more people attended the concert than on Saturday. How many people attended the concert on Sunday?



$$\begin{array}{r} 23,748 \\ +\ 7,570 \\ \hline 31,318 \end{array}$$

31,318 people attended the concert on Sunday.

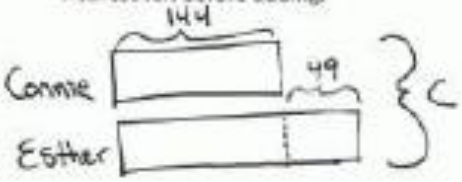
4th Grade Module 1 Lesson 12

Name Jack Date _____

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

1. For the bake sale, Connie baked 144 cookies. Esther baked 49 more cookies than Connie.

   a. About how many cookies did Connie and Esther bake? Estimate by rounding each number to the nearest ten before adding.




```
  140
  140
+  50
-----
  330
```

Connie and Esther baked about 330 cookies.

   b. Exactly how many cookies did Connie and Esther bake?

```
  144
  144
+  49
-----
  337
```

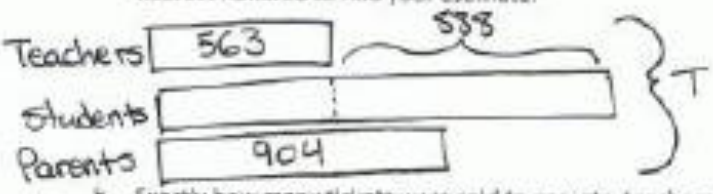
Connie and Esther baked exactly 337 cookies.

   c. Is your answer reasonable? Compare your estimate from (a) to your answer from (b). Write a sentence to explain your reasoning.

Yes, my answer is reasonable. In (a), I estimated the answer by rounding each number to the nearest ten before adding. My estimate was 330 cookies. When I added the actual amounts, my answer was 337 cookies. 337 is very close to 330.

2. Raffle tickets were sold for a school fundraiser to parents, teachers, and students. 563 tickets were sold to teachers. 888 more tickets were sold to students than to teachers. 904 tickets were sold to parents.

   a. About how many tickets were sold to parents, teachers, and students? Round each number to the nearest hundred to find your estimate.



600
600
900
+ 900
3000

About 3,000 tickets were sold to parents, teachers, and students.

   b. Exactly how many tickets were sold to parents, teachers, and students?

563
563
888
+ 904
2,918

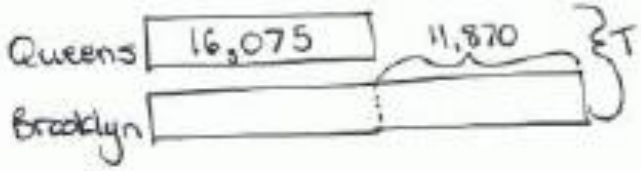
Exactly 2,918 tickets were sold to parents, teachers, and students.

   c. Assess the reasonableness of your answer in (b). Use your estimate from (a) to explain.

My answer for (b) is reasonable. My estimated total was 3,000. The actual total was 2,918. 2,918 is close to 3,000.

3. From 2010 to 2011, the population of Queens increased by 16,075. Brooklyn's population increased by 11,870 more than the population increase of Queens.

   a. Estimate the total combined population increase of Queens and Brooklyn from 2010 to 2011. (Round the addends to estimate.)



16,000
12,000
+ 16,000
44,000

The total combined population increase of Queens and Brooklyn from 2010 to 2011 was about 44,000.

b. Find the actual total combined population increase of Queens and Brooklyn from 2010 to 2011.

16,075
16,075
+ 11,870
44,020

The actual total combined population increase of Queens and Brooklyn from 2010 to 2011 was 44,020.

c. Assess the reasonableness of your answer in (b). Use your estimate from (a) to explain.

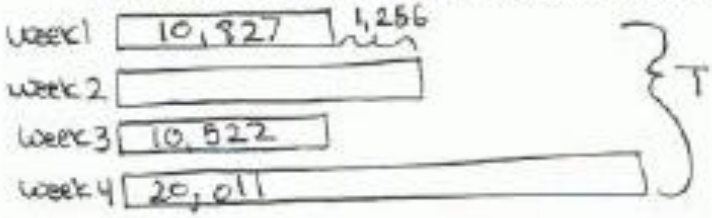
My answer is reasonable. My estimate for the total combined population increase was 44,000. The actual total was 44,020. 44,020 is close to 44,000.

4. During National Recycling Month, Mr. Yardley's class spent 4 weeks collecting empty cans to recycle.

Week	Number of Cans Collected
1	10,827
2	
3	10,522
4	20,011

At the end of 4 weeks, Mr. Yardley's class collected 53,443 cans.

a. During Week 2, the class collected 1,256 more cans than they did during Week 1. Find the total number of cans Mr. Yardley's class collected in 4 weeks.



10,827
+ 1,256
12,083
(week 2)

10,827
12,083
10,522
+ 20,011
53,443

b. Assess the reasonableness of your answer in (a) by estimating the total number of cans collected.

10,827 ≈ 11,000
12,083 ≈ 12,000
10,522 ≈ 11,000
20,011 ≈ 20,000

11,000
12,000
11,000
+ 20,000
54,000

My answer for (a) is reasonable. My estimate was 54,000 and the actual total was 53,443. The actual answer is close to the estimate.

4th Grade Module 1 Lesson 13

Name Jack Date

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

a. $7,525 - 3,502 = 4,023$

b. $17,525 - 13,502 = 4,023$

c. $6,6\overset{1}{2}\overset{1}{5} - 4,417 = 2,208$

d. $4,\overset{5}{8}\overset{12}{2}5 - 435 = 4,190$

e. $6,\overset{4}{3}\overset{16}{8}0 - 470 = 6,030$

f. $\overset{5}{8},\overset{10}{6}25 - 3,502 = 2,523$

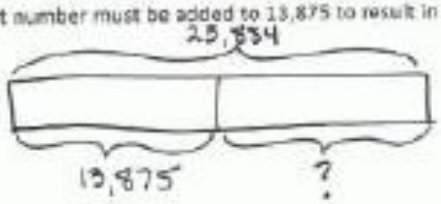
g. $\overset{1}{2}\overset{13}{8},640 - 14,630 = 9,010$

h. $4\overset{2}{8}\overset{11}{4},925 - 204,815 = 227,110$

i. $\overset{1}{2}\overset{11}{8}9,925 - 121,705 = 98,220$

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

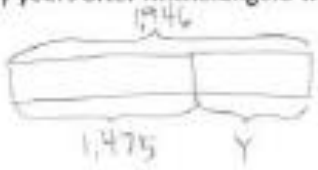
2. What number must be added to 13,875 to result in a sum of 25,884?



$\overset{7}{2}\overset{14}{5},\overset{7}{8}\overset{14}{8}4 - 13,875 = 12,009$

12,009 must be added to 13,875 to result in a sum of 25,884.

3. Artist Michelangelo was born on March 6, 1475. Author Mem Fox was born on March 6, 1946. How many years after Michelangelo was born was Mem born?



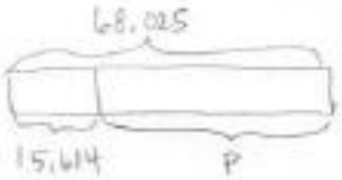
$$\begin{array}{r} {}^{8}\not{1}{}^{14}\not{9}\not{4}\not{6} \\ -\ 1,475 \\ \hline 471 \end{array}$$

Check

$$\begin{array}{r} 1475 \\ +\ 471 \\ \hline 1946 \end{array}$$ ✓

Mem was born 471 years after Michelangelo.

4. During the month of March, 68,025 pounds of king crab were caught. If 15,614 pounds were caught in the first week of March, how many pounds were caught in the rest of the month?



$$\begin{array}{r} {}^{7}\not{6}{}^{10}\not{8},\not{0}25 \\ -\ 15,614 \\ \hline 52,411 \end{array}$$

Check

$$\begin{array}{r} 52,411 \\ +\ 15,614 \\ \hline 68,025 \end{array}$$ ✓

52,411 pounds of king crab were caught in the rest of the month.

5. James bought a used car. After driving exactly 9,050 miles, the odometer read 118,064 miles. What was the odometer reading when James bought the car?

$$\begin{array}{r} {}^{+11}\not{1}\not{1}\not{8},\not{0}64 \\ -\ 9,050 \\ \hline 109,014 \end{array}$$

Check

$$\begin{array}{r} 109,014 \\ +\ 9,050 \\ \hline 118,064 \end{array}$$ ✓

The odometer read 109,014 when James bought the car.

4th Grade Module 1 Lesson 14

Name Jack Date

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

a. 2,480 − 1,370 = 1,090

b. 2,460 − 1,470 = 990

c. 97,684 − 49,700 = 47,984

d. 2,460 − 1,472 = 988

e. 124,306 − 31,117 = 93,189

f. 97,684 − 4,705 = 92,979

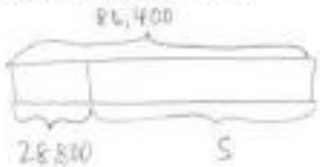
g. 124,006 − 121,117 = 2,889

h. 97,684 − 47,705 = 49,979

i. 124,060 − 31,117 = 92,943

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

2. There are 86,400 seconds in one day. If Mr. Liegel is at work for 28,800 seconds a day, how many seconds a day is he away from work?

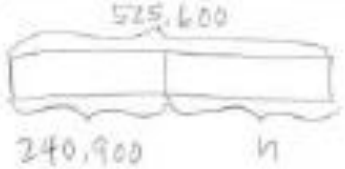


86,400 − 28,800 = 57,600

CHECK: 28,800 + 57,600 = 86,400 ✓

Mr. Liegel is away from work 57,600 seconds.

3. A newspaper company delivered 240,900 newspapers before 6 a.m. on Sunday. There were a total of 525,600 newspapers to deliver. How many more newspapers needed to be delivered on Sunday?

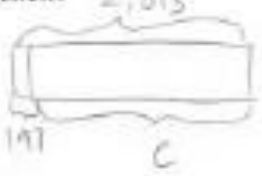


$525,600 - 240,900 = 284,700$

Check: $240,900 + 284,700 = 525,600$ ✓

284,700 more newspapers needed to be delivered on Sunday.

4. A theater holds a total of 2,013 chairs. 197 chairs are in the VIP section. How many chairs are not in the VIP section?

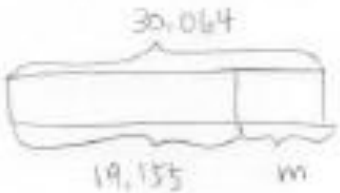


$2,013 - 197 = 1,816$

Check: $1,816 + 197 = 2,013$ ✓

1,816 chairs are not in the VIP section.

5. Chuck's mom spent $19,155 on a new car. She had $30,064 in her bank account. How much money does Chuck's mom have after buying the car?



$30,064 - 19,155 = 10,909$

Check: $19,155 + 10,909 = 30,064$ ✓

Chuck's mom has $10,909 after buying the car.

4th Grade Module 1 Lesson 15

Name Jack Date

1. Directions: Use the standard subtraction algorithm to solve the problems below.

a. 101,000 − 91,680 = 9,980

b. 101,000 − 9,980 = 91,680

c. 242,561 − 44,702 = 197,859

d. 242,561 − 74,987 = 167,574

e. 1,000,000 − 592,000 = 408,000

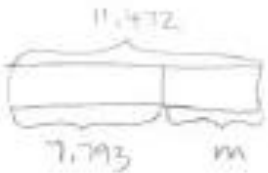
f. 1,000,000 − 592,500 = 407,500

g. 600,000 − 592,569 = 8,089

h. 600,000 − 592,569 = 7,431

Directions: Use tape diagrams and the standard algorithm to solve the problems below. Check your answers.

2. David is flying from Hong Kong to Buenos Aires. The total flight distance is 11,472 miles. If the plane has 7,793 miles left to travel, how far has it already traveled?

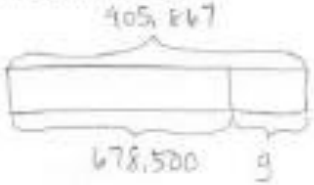


11,472
- 7,793
3,679

check
7,793
+ 3,679
11,472 ✓

The plane has already traveled 3,679 miles.

3. Tank A holds 678,500 gallons of water. Tank B holds 905,867 gallons of water. How much less water does Tank A hold than Tank B?

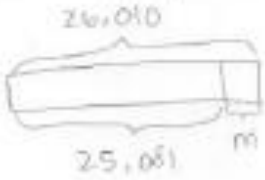


905,867
- 678,500
227,367

check
678,500
+ 227,367
905,867 ✓

Tank A holds 227,367 less gallons of water than Tank B.

4. Mark had $25,081 in his bank account on Thursday. On Friday, he added his paycheck to the bank account, and he then had $26,010 in the account. What was the amount of Mark's paycheck?



26,010
- 25,081
929

check
25,081
+ 929
26,010 ✓

Mark's paycheck was for $929.

4th Grade Module 1 Lesson 16

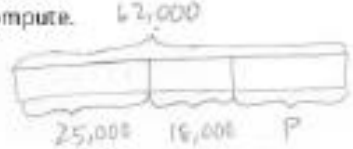
Name Jack Date

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

1. On Monday, a farmer sold 25,196 pounds of potatoes. On Tuesday, he sold 18,023 pounds. On Wednesday, he sold some more potatoes. In all, he sold 62,409 pounds of potatoes.

   a. About how many pounds of potatoes did the farmer sell on Wednesday? Estimate by rounding each value to the nearest thousand, and then compute.

Monday 25,196 ≈ 25,000
Tuesday 18,023 ≈ 18,000
Total 62,409 ≈ 62,000



25,000 + 18,000 = 43,000

62,000 − 43,000 = 19,000

The farmer sold about 19,000 pounds of potatoes on Wednesday.

   b. Find the precise number of pounds of potatoes sold on Wednesday.

25,196 + 18,023 = 43,219

62,409 − 43,219 = 19,190

The farmer sold 19,190 pounds of potatoes on Wednesday.

   c. Is your precise answer reasonable? Compare your estimate from (a) to your answer from (b). Write a sentence to explain your reasoning.

yes, my answer of 19,190 is reasonable. 19,190 rounded to the nearest thousand is 19,000 which was my estimate.

2. A gas station had two pumps. Pump A dispensed 241,752 gallons. Pump B dispensed 113,916 more gallons than Pump A.

   a. About how many gallons did both pumps dispense? Estimate by rounding each value to the nearest hundred thousand and then compute.

   241,752 ≈ 200,000
   113,916 ≈ 100,000

   Pump A 200,000
   Pump B 200,000 + 100,000 = 300,000

   $\begin{array}{r} 200,000 \\ +300,000 \\ \hline 500,000 \end{array}$

   Both pumps dispensed about 500,000 gallons.

   b. Exactly how many gallons did both pumps dispense?

   $\begin{array}{r} 241,752 \\ +113,916 \\ \hline 355,668 \end{array}$

   $\begin{array}{r} 355,668 \\ +241,752 \\ \hline 597,420 \end{array}$

   Both pumps dispensed 597,420 gallons.

   c. Assess the reasonableness of your answer in (b). Use your estimate from (a) to explain.

   My answer of 597,420 gallons is a little far from my estimate of 500,000, but I know if I rounded to a smaller unit, my estimate would be more exact and nearer to the actual answer. If I rounded to the ten thousands, I would get 240,000 + (240,000 + 110,000) = 590,000 which is very close to 597,420.

3. Martin's car had 86,456 miles on it. Of that distance, Martin's wife drove 24,901 miles, and his son drove 7,997 miles. Martin drove the rest.

   a. About how many miles did Martin drive? Round each value to estimate.

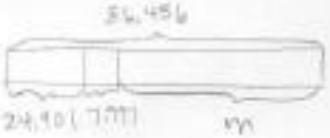
   86,456 ≈ 86,000
   24,901 ≈ 25,000
   7,997 ≈ 8,000

   $\begin{array}{r} 25,000 \\ +8,000 \\ \hline 33,000 \end{array}$

   $\begin{array}{r} 86,000 \\ -33,000 \\ \hline 53,000 \end{array}$

   Martin drove about 53,000 miles.

   b. Exactly how many miles did Martin drive?

   $\begin{array}{r} 24,901 \\ +7997 \\ \hline 32,898 \end{array}$

   $\begin{array}{r} 86,456 \\ -32,898 \\ \hline 53,558 \end{array}$

   Martin drove 53,558 miles.

   c. Assess the reasonableness of your answer in (b). Use your estimate from (a) to explain.

   My answer of 53,558 miles is reasonable because it is close to my estimate of 53,000.

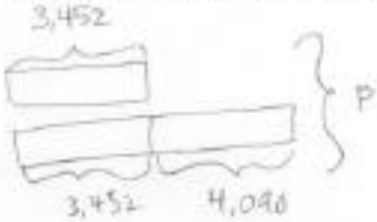
4. A class read 3,452 pages the first week and 4,090 more pages in the second week than in the first week. How many pages had they read by the end of the second week? Is your answer reasonable? Explain how you know using estimation.

$3,452 \approx 3,000$
$4,090 \approx 4,000$

$3,000 + 4,000 = 7,000$ (2nd week)

$3,000 + 7,000 = 10,000$

The class read about 10,000 pages by the end of the second week.



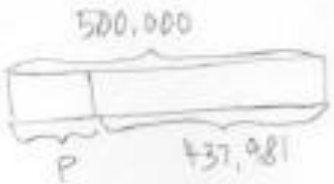
$3,452 + 4,090 = 7,542$

$3,452 + 7,542 = 10,994$

The class read 10,994 pages by the end of the second week.

My answer is reasonable because my estimate was 10,000 which is very close to 10,994.

5. A cargo plane weighed 500,000 pounds. After the first load was taken off, the airplane weighed 437,981 pounds. Then 16,478 more pounds were taken off. What was the total number of pounds of cargo removed from the plane? Is your answer reasonable? Explain.



$500,000 - 437,981 = 62,019$ P = 62,019

$437,981 \approx 440,000$

$500,000 - 440,000 = 60,000$

$16,478 \approx 16,000$

$60,000 + 16,000 = 76,000$

Above 76,000 pounds were removed from the plane.

$62,019 + 16,478 = 78,497$

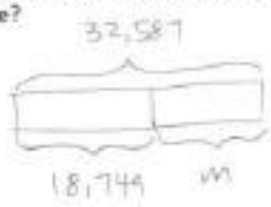
78,497 pounds of cargo were removed from the plane. My answer is reasonable because it is very close to my estimate of 76,000

4th Grade Module 1 Lesson 17

Name Jack Date

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

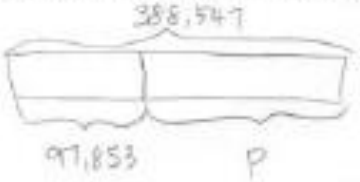
1. Sean's school raised $32,587. Leslie's school raised $18,749. How much more money did Sean's school raise?



$$\begin{array}{r} 32,587 \\ -\ 18,749 \\ \hline 13,838 \end{array}$$

Sean's school raised $13,838 more money than Leslie's school.

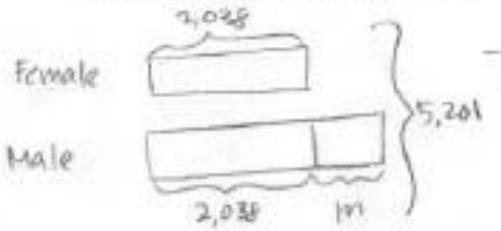
2. At a parade, 97,853 people sat in bleachers. 388,547 people stood along the street. How many fewer people were in the bleachers than standing on the street?



$$\begin{array}{r} 388,547 \\ -\ 97,853 \\ \hline 290,694 \end{array}$$

There were 290,694 fewer people in the bleachers.

3. A pair of hippos weighed 5,201 kilogram together. The female weighed 2,038 kilogram. How much more did the male weigh than the female?

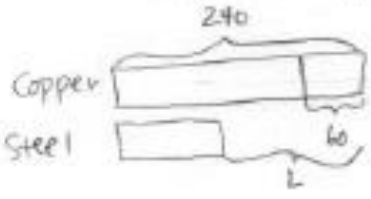


$$\begin{array}{r} 5,201 \\ -\ 2,038 \\ \hline 3,163 \end{array}$$

$$\begin{array}{r} 3,163 \\ -\ 2,038 \\ \hline 1,125 \end{array}$$

The male weighs 1,125 kg more than the female.

4. A copper wire was 240 meters long. After 60 meters was cut off, it was double the length of a steel wire. How much longer was the copper wire than the steel wire at first?



$$\begin{array}{r} 240 \\ -\ 60 \\ \hline 180 \end{array}$$

$180 \div 2 = 90$

$$\begin{array}{r} 240 \\ -\ 90 \\ \hline 150 \end{array}$$

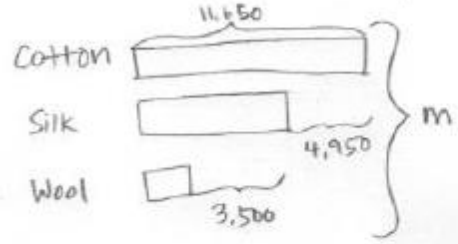
The copper wire was 150 meters longer than the steel wire.

4th Grade Module 1 Lesson 18

Name Jack Date

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

1. In one year the factory used 11,650 meters of cotton, 4,950 fewer meters of silk than cotton, and 3,500 fewer meters of wool than silk. How many meters in all were used of the three fabrics?



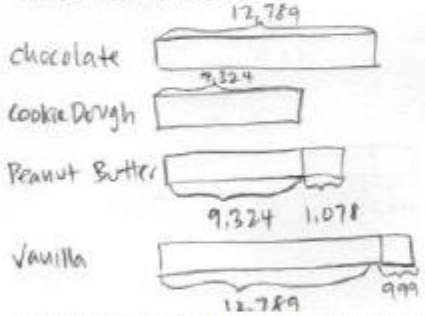
11,650 − 4,950 = 6,700 (silk)

6,700 − 3,500 = 3,200 (wool)

11,650 + 6,700 + 3,200 = 21,550

21,550 m of fabric was used.

2. The shop sold 12,789 chocolate and 9,324 cookie dough cones. It sold 1,078 more peanut butter cones than cookie dough cones and 999 more vanilla cones than chocolate cones. What was the total number of ice cream cones sold?



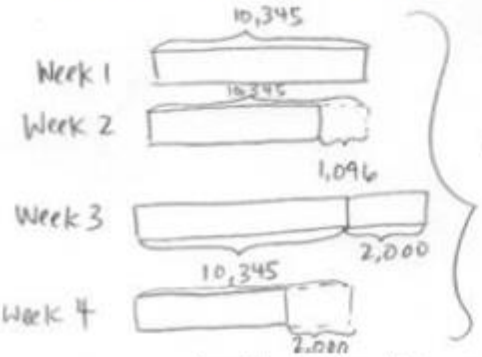
9,324 + 1,078 = 10,402 (peanut butter)

12,789 + 999 = 13,788 (vanilla)

12,789 + 9,324 + 10,402 + 13,788 = 46,303

They sold 46,303 ice cream cones.

3. In the first week of June, a restaurant sold 10,345 omelets. In the second week, 1,096 fewer omelets were sold than in the first week. In the third week, 2 thousand more omelets were sold than in the first week. In the fourth week, 2 thousand fewer omelets were sold than in the first week. How many omelets were sold in all in June?



10,345 − 1,096 = 9,249 (week 2)

10,345 + 2,000 = 12,345 (week 3)

10,345 − 2,000 = 8,345 (week 4)

10,345 + 9,249 + 12,345 + 8,345 = 40,284

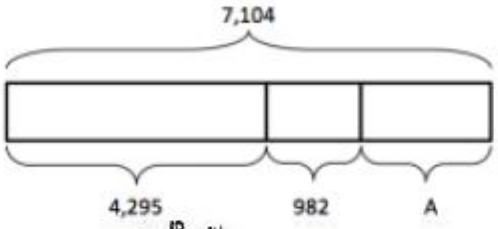
The restaurant sold 40,284 omelets in June.

4th Grade Module 1 Lesson 19

Name Jack Date

Directions: Using the diagrams below, create your own word problem. Solve for the value of the variable.

1.



There were 7,104 people who attended a football game. 4,295 were men, 982 were children, and the rest were women. How many women attended the football game?

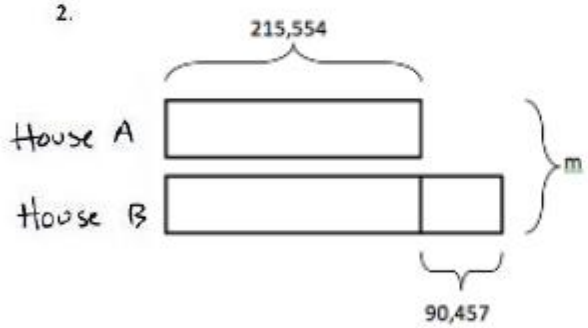
4,295 + 982 = 5,277

7,104 − 5,277 = 1,827

A = 1,827

1,829 women attended the game.

2.



House A costs $215,554. House B costs $90,457 more than House A. How much do both houses cost together?

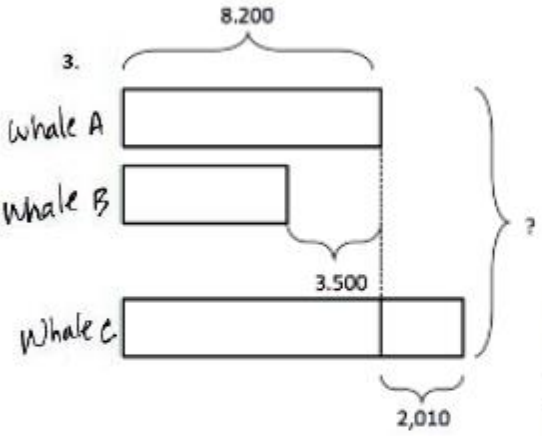
$215,554 + $90,457 = $306,011

$306,011 + $215,554 = $521,565

Both houses cost $521,565.

m = $521,565

3.



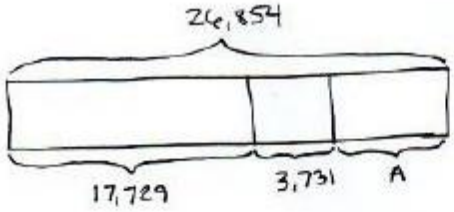
Whale A weighs 8,200 Kilograms. Whale B weighs 3,500 ~~more~~ less kilograms than Whale A. Whale C weighs 2,010 more kilograms than Whale A. How many kilograms do all 3 whales weigh together?

$$\begin{array}{r} {}^{7}{}^{12} \\ 8200 \\ -\ 3500 \\ \hline 4700 \end{array} \qquad \begin{array}{r} 8200 \\ +\ 2010 \\ \hline 10,210 \end{array} \qquad \begin{array}{r} {}^{1}0,{}^{2}{}^{1}0 \\ 8,200 \\ +\ 4,700 \\ \hline 23,110 = ? \end{array}$$

All 3 whales weigh 23,110 kilograms.

Draw a tape diagram to model the following equation. Create a word problem. Solve for the value of the variable.

4. $26{,}854 = 17{,}729 + 3{,}731 + A$



A survey of 26,954 people showed 17,729 prefer orange juice, 3,731 prefer grape juice, and the rest prefer apple juice in the morning. How many people prefer apple juice?

$$\begin{array}{r} 17{,}729 \\ +\ 3{,}731 \\ \hline 21{,}460 \end{array} \qquad \begin{array}{r} {}^{7}{}^{15} \\ 26{,}8\cancel{5}4 \\ -\ 21{,}460 \\ \hline 5{,}394 = A \end{array}$$

5,394 people prefer apple juice in the morning.