# √MATH in my World

## Second Grade

*California Common Core math problems featuring*
*Santa Monica stories and the ways we move around our community.*

GoSaMo

**For complete details visit:**
**santamonicasaferoutes.org**

Safe Routes to SCHOOL santa monica

# Math in My World

The City of Santa Monica has created a series of Kindergarten through 5th grade math problem sets that meet California Common Core Standards and teach critical skills while incorporating stories about life in Santa Monica.

The ways in which we move around the city greatly impact our own wellbeing as well as the quality of our environment. Santa Monica believes healthy communites thrive on clean air and active lifestyles, so it is creating a network of transportation choices for all people to get to where they're going and back, without needing to sit in traffic or produce greenhouse gas emissions.

## My Common Core State Standards

### Operations and Algebraic Thinking (Pages 4-12)

**Represent and solve problems involving addition and subtraction.**

**2.OA.A.1** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

**Work with equal groups of objects to gain foundations for multiplication**

**2.OA.C.3** Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

**2.OA.C.4** Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

## Numbers and Operations in Base Ten (Pages 13-19)

**Use place value understanding and properties of operations to add and subtract.**

***2.NBT.B.6*** Add up to four two-digit numbers using strategies based on place value and properties of operations.

***2.NBT.B.7*** Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

## Measurement and Data (Pages 20-34)

**Measure and estimate lengths in standard units.**

***2.MD.A.1*** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

***2.MD.A.2*** Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

**Relate addition and subtraction to length.**

***2.MD.B.5*** Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

**Work with time and money.**

***2.MD.C.8*** Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

**Represent and interpret data.**

***2.MD.D.10*** Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

## Geometry (Pages 35-39)

**Reason with shapes and their attributes**

***2.G.A.1*** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces1 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

***2.G.A.2*** Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

NAME: _____

# Grade 2 2.OA.A.1

*Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.*

## Problem 1: Traveling on the Expo Line

Solve the following problems by drawing a picture or writing an equation in the box.

**1)** It takes 38 minutes to get from downtown Santa Monica to University of Southern California on the Expo Line. It takes 27 minutes less than that to go from University of Southern California to downtown L.A. on the Expo Line. How long do both trips take together?

**2)** Aida got on the Expo Line at 17th Street in Santa Monica and took the train all the way to downtown L.A., where she got off and went shopping. Her trip home, from downtown L.A. to the Expo/Bundy station took 40 minutes, and was 5 minutes less time than her first trip into downtown L.A. How long was her entire time on the Expo Line?

**3)** Traveling from Pico Station to the 26th Street/Bergamot station in Santa Monica takes 22 more minutes than going from 26th Street/Bergamot to the Expo/La Brea station, which takes 17 minutes. How long do both trips take?

NAME: _____

# Grade 2 2.OA.A.1

*Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.*

## Problem 2: Santa Monica Bike Share Costs

Use the chart below and your knowledge of addition and subtraction to write a story about what each of the people listed below did with the amount of money they spent.

| Service | Cost |
|---|---|
| 1 hour of Biking | $7 |
| 2 hours of Biking | $14 |
| 3 hours of Biking | $21 |
| 4 hours of Biking | $28 |
| Leaving bike out-of-system area | $20 |
| Parked bike out of station | $2 |

**Paul spent $23 using the Santa Monica Bike Share.**

**Story:** _____

_____

_____

**Sandra spent $37 using the Santa Monica Bike Share.**

**Story:** _____

_____

_____

**Janis spent $27 using the Santa Monica Bike Share.**

**Story:** _____

_____

_____

NAME: _____

# Grade 2 2.OA.A.1

*Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.*

## Problem 3: Who was traveling the longest?

Find out how long each person below was using their form of transportation, and then, at the bottom of the page, write the name of the person who used their form of transportation the longest.

**1) Katherine** left her house to skateboard around Malibu for a while. She was gone for 78 minutes from her house, but spent 15 minutes of that time watching her friends at the skate park. How long did Katherine use her skateboard?

**2) Dean** rode the #9 bus for 17 minutes from Potrero Canyon Park to Tongva Park in downtown Santa Monica. Then, he took the #8 bus from Tongva Park to Mar Vista Recreation Center, which took 25 minutes. How long did Dean spend on the bus?

**3) Aurora** was meeting one of her dads at UCLA and decided to use her bicycle to get there. It took her 94 minutes to get there, but she took a break to drink some water and rest in the shade on the way there for 19 minutes. How long did Aurora spend on her bike?

_____ used their form of transportation for the longest amount of time.

NAME: _____

# Grade 2 2.OA.A.1

*Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.*

## Problem 4: Traveling Around Santa Monica

Use your knowledge of Santa Monica and addition and subtraction to solve the following problems.

1) Juan decided to use the Santa Monica Bike Share, Breeze, with his mother one Saturday afternoon. That day, the Breeze Bike cost Juan and his mother $10. They had so much fun though, that the next day (on Sunday), they took the bikes out again. They paid $14 total for the whole weekend. How much did they pay for their bikes on Sunday?

2) Topanga State Park is 19 kilometers from downtown Santa Monica. The Getty Villa is 6 kilometers closer to downtown Santa Monica than Topanga State Park. What is the total distance in kilometers from Topanga State Park to downtown Santa Monica, and then to the Getty Villa? Use a picture or a map to show your work.

3) The distance from the Santa Monica Pier to the walking path at Will Rogers Beach is 4 miles. You decide that you are going to bike every day from the Pier to the Will Rogers walking path and back. If you do this trip every day for one week (Sunday through Saturday), how many miles did you bike in total?

4) The new Expo Line helps people get from Santa Monica to downtown Los Angeles. Once it is built, it will only take 46 minutes to get from Santa Monica to downtown Los Angeles.

- How long should it take to go from Santa Monica to downtown Los Angeles and back?

- If there is a stop on the Expo Line every 3 minutes from Santa Monica to downtown Los Angeles, approximately how many stops are there in between Santa Monica and downtown Los Angeles?

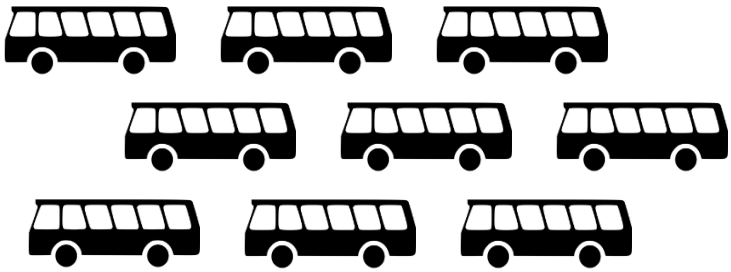
NAME: _____

# Grade 2 2.OA.C.3

*Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.*

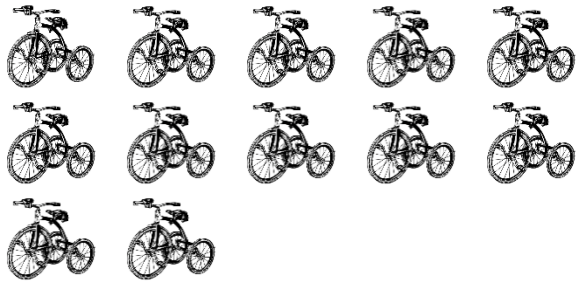
## Problem 1: Circling Twos

For the following problems, circle groups of two (pairs) in each set of objects to determine whether the set has an even or odd number of objects. Next, circle "Even" or "Odd". Then, write an equation that shows how an even number is the sum of two equal numbers, but an odd number is not.



**EVEN** **ODD**

Equation: _____



**EVEN** **ODD**

Equation: _____

**EVEN** **ODD**

Equation: _____

**EVEN** **ODD**

Equation: _____

NAME: _____

# Grade 2 2.OA.C.3

*Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.*

## Problem 2: Tandem Bicycle

A tandem bicycle is a bicycle that has two riders. McKinley Elementary School has decided to teach students about even and odd numbers by going on a tandem bicycle field trip. On the field trip, each tandem bicycle must have **one adult rider** and **one student rider.**

For each of the boxes below, determine whether the group of riders uses **all tandem bicycles** *or* if the group has to use **mostly tandem bicycles and one single bicycle** to make sure everyone can ride. Then write an equation that demonstrates the total number of riders and the number of pairs.

☐ **ALL TANDEM bicycles**

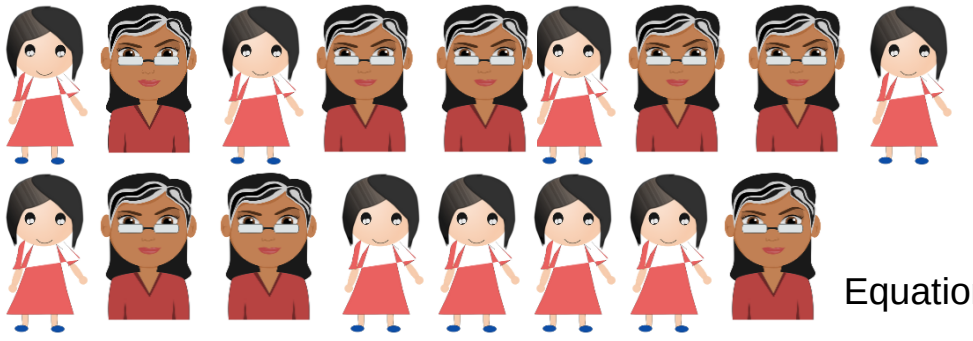
☐ **MOSTLY TANDEM bicycles and ONE SINGLE bicycle**

Equation:

☐ **ALL TANDEM bicycles**

☐ **MOSTLY TANDEM bicycles and ONE SINGLE bicycle**

Equation:



☐ **ALL TANDEM bicycles**

☐ **MOSTLY TANDEM bicycles and ONE SINGLE bicycle**

Equation:

NAME: _____

# Grade 2 2.OA.C.3

*Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.*

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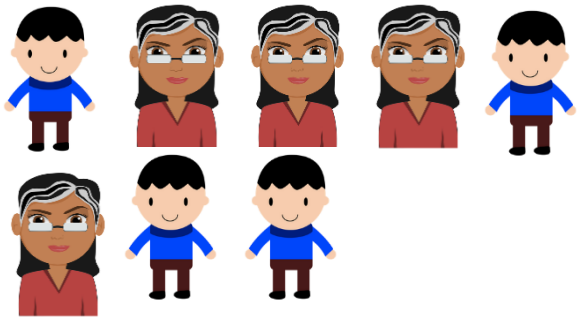
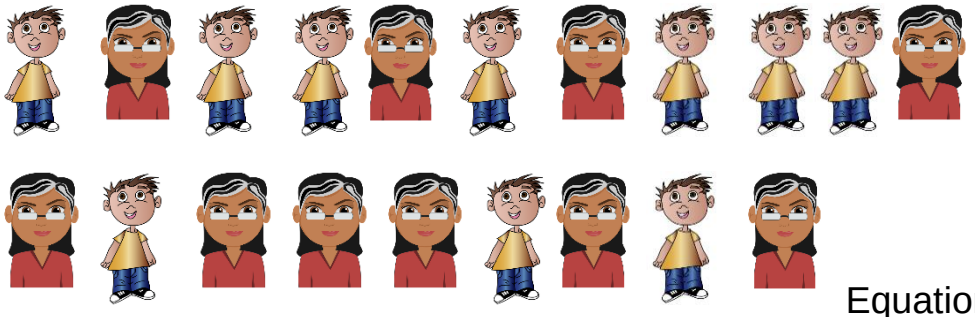


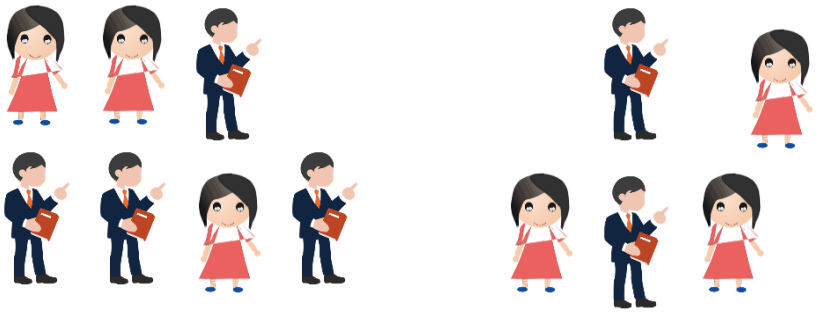
☐ **ALL TANDEM bicycles**
☐ **MOSTLY TANDEM bicycles and ONE SINGLE bicycle**

Equation:



☐ **ALL TANDEM bicycles**
☐ **MOSTLY TANDEM bicycles and ONE SINGLE bicycle**

Equation:



☐ **ALL TANDEM bicycles**
☐ **MOSTLY TANDEM bicycles and ONE SINGLE bicycle**

Equation:

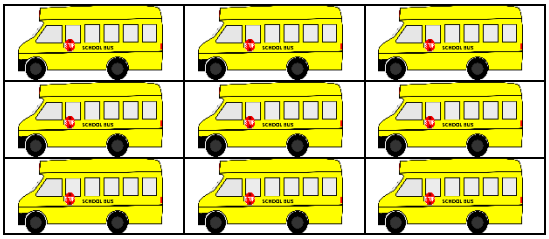
NAME: _____

# Grade 2 2.OA.C.4

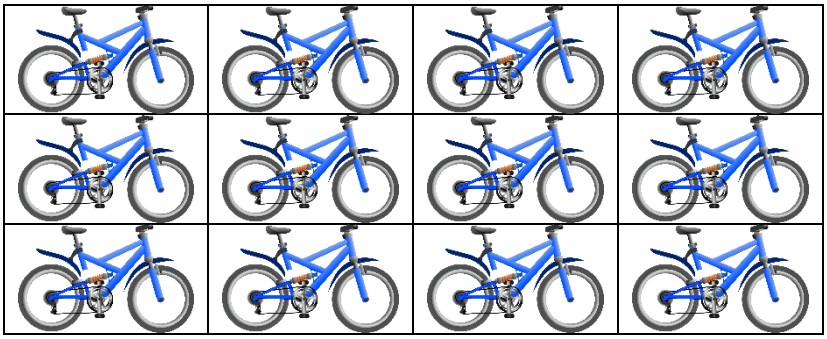
*Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.*

## Problem 2: Transportation Arrays Matching

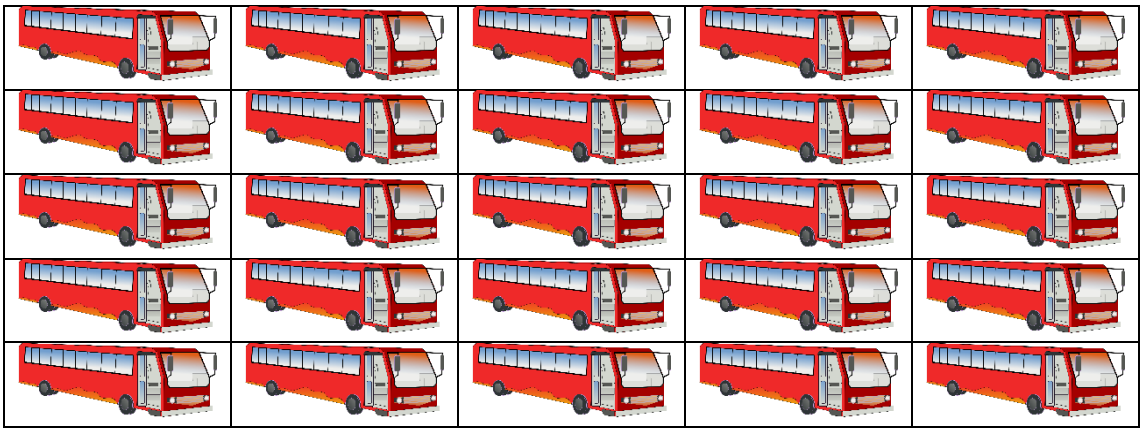
Draw a line between the following rectangular arrays of transportation objects and the equation that matches it.



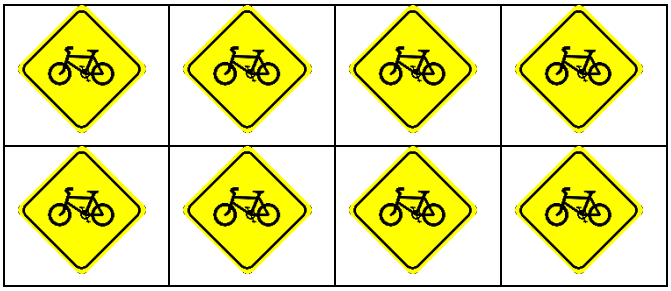
$5 + 5 + 5 + 5 + 5 = 25$



$2 + 2 + 2 + 2 = 8$



$4 + 4 + 4 = 12$



$3 + 3 + 3 = 9$

NAME: _____

## Grade 2 2.OA.C.4

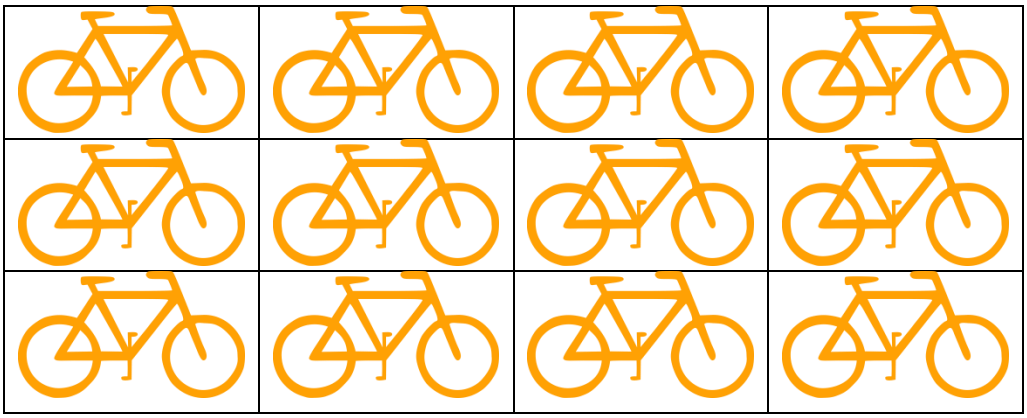
*Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.*

### Problem 2: Transportation Arrays

Joanna and Remon are having an argument about the transportation array below.

**Joanna** says that the equation that matches the array is 4 + 4 + 4 = 12 because there are 4 bicycles in each row, so the number 4 has to be used.

**Remon** says the equation that matches the array is 3 + 3 + 3 + 3 = 12 because there are 3 bicycles in each column, so the number 3 has to be used.



Whose equation is correct? Explain your thinking.

_____

_____

_____

_____

_____

_____

NAME: _____

# Grade 2 2.NBT.B.6

*Add up to four two-digit numbers using strategies based on place value and properties of operations.*

## Problem 1: Family of Four

Jan, her brother Jason, and her moms, Erin and Mackenzie, are going to rent bicycles on Saturday afternoon. The prices at the bike store are below.

| Adult Bikes | Cost |
|---|---|
| **Blue** *Road Bike* | $20 |
| **Green** *Mountain Bike* | $17 |
| **Red** *Cruiser* | $15 |

| Kid Bikes | Cost |
|---|---|
| **Purple** *BMX* | $15 |
| **Orange** *Trainer* | $10 |
| **Yellow** *Tricycle* | $8 |

1) If Jan rents the orange trainer bike, Jason rents the purple BMX bike, and both of their moms rent the green mountain bike, how much will the bike ride cost?

2) If Jan and her brother both rent the yellow tricycle, and Erin rents the blue road bike and Mackenzie rents the green mountain bike, how much will the bike ride cost?

3) If Erin rents the red cruiser, Mackenzie rents the blue road bike, Jan rents the purple BMX, and Jason rents the yellow tricycle, how much will the ride cost?

4) If Mackenzie rents the red cruiser, Erin rents the green mountain bike, and Jason and Jan both rent the orange trainer, how much will the ride cost?

NAME: _____

# Grade 2 2.NBT.B.6

*Add up to four two-digit numbers using strategies based on place value and properties of operations.*

## Problem 2: Family of Four with a Budget

The Anderson family, consisting of 2 adults and 2 kids, are going on a bike ride this weekend and need to rent bikes. The prices of bike rentals at the store are below.

| Adult Bikes | Cost |
|---|---|
| **Blue** *Road Bike* | $20 |
| **Green** *Mountain Bike* | $17 |
| **Red** *Cruiser* | $15 |

| Kid Bikes | Cost |
|---|---|
| **Purple** *BMX* | $15 |
| **Orange** *Trainer* | $10 |
| **Yellow** *Tricycle* | $8 |

1) If the Andersons have $48 to spend on bike rentals, what are their options for the 2 adults and 2 children if everyone needs a bike? *Write the colors and costs for each different option below.*

   Option 1: _____, _____, _____, _____

   Option 2: _____, _____, _____, _____

2) If the Andersons want to spend exactly $60 on bike rentals, what are their options for the 2 adults and 2 children if everyone needs a bike? *Write the colors and costs for each different option below.*

   Option 1: _____, _____, _____, _____

   Option 2: _____, _____, _____, _____

*3)* If the Andersons want to spend somewhere between $61 and $66 dollars on bike rentals, what are their 4 options? *Write the colors and costs for each different option below.*

   Option 1: _____, _____, _____, _____

   Option 2: _____, _____, _____, _____

   Option 3: _____, _____, _____, _____

   Option 4: _____, _____, _____, _____

NAME: _____

# Grade 2 2.NBT.B.6

*Add up to four two-digit numbers using strategies based on place value and properties of operations.*

## Problem 3: Four Friends on a Bike Ride

Four friends are going on a bike ride after school and need to rent bikes. The prices of bike rentals at the store are below.

| Kid Bikes | Cost |
|---|---|
| **Purple** *Wizzmaster* | $33 |
| **Orange** *Speedster* | $25 |
| **Green** *ZoomZap* | $19 |
| **Yellow** *Tricycle* | $7 |

1) If the friends collectively have $85 and each friend wants a different bike, do they have enough money to get all the different color bikes? *Show your work.*

2) If the group of 4 friends needs to spend exactly $58, what bikes should they rent?

3) The friends want to spend somewhere between $70 and $80 dollars on bike rentals. List two or more options they could choose from.

   Option 1: _____, _____, _____, _____

   Option 2: _____, _____, _____, _____

   Option 3: _____, _____, _____, _____

   Option 4: _____, _____, _____, _____

   Option 5: _____, _____, _____, _____

NAME: _____

# Grade 2 2.NBT.B.7

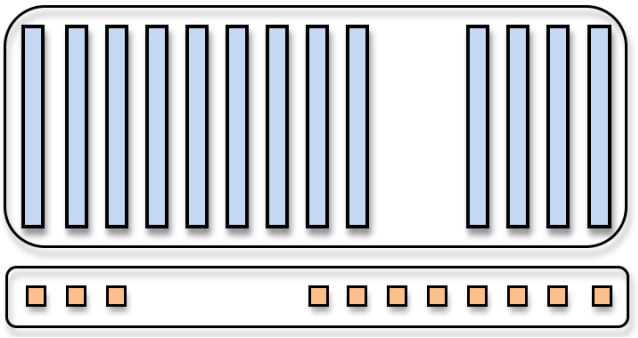
*Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds*

## Problem 1: Time in Ten Blocks

Draw a line from the following problems to the correct ten-block pictures and then solve.

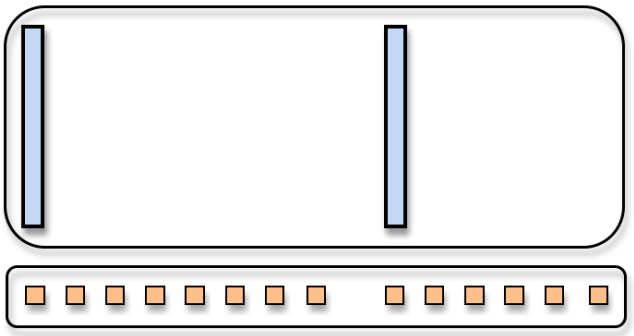
1) The total time that Ockemia spent walking to and from school in January was 73 minutes. In February, Ockemia spent 64 minutes walking to and from school. How many minutes did she walk in all?

____ minutes



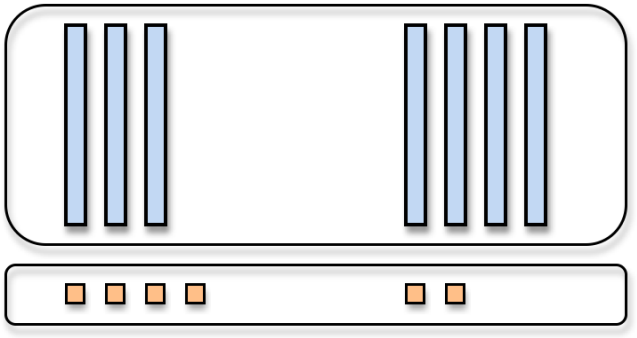
2) Dante and Amanda take the bus for 34 minutes every day on the way to school, and then another 42 minutes on the way home. How many minutes do they spend on the bus in one day?

____ minutes



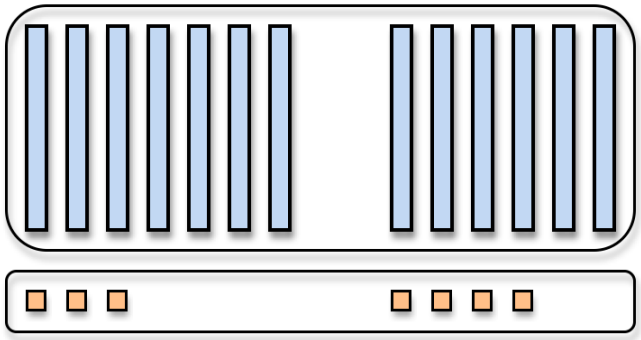
3) Quinn picks up his little sister at elementary school every day when he gets out of high school. He walks 17 minutes to catch the bus and then waits 17 minutes for her to get out of class. How long does it take for Quinn to get his sister?

____ minutes



4) Joseph biked from downtown Santa Monica to the beach in 93 minutes. Then, he sat at the beach for about 48 minutes. How long did he spend biking and at the beach?

____ minutes



NAME: _____

# Grade 2 2.NBT.B.7

*Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds*

## Problem 2: Transportation in Santa Monica

As part of a class project, John Muir Elementary School 2nd graders decided to ask residents of Santa Monica what forms of transportation they used. They asked 1000 people if they used a car, bicycle, the big blue bus, or another form of public transportation. Use the following boxes on the right hand side and one color for each number you are adding or subtracting to help you answer the following questions.

1) 258 residents said they had only used their bicycle and 451 said they had only used a car that day to get around. How many residents used bicycles or cars on that particular day?

_____ residents

Hundreds: | | | | | | | | | | |
Tens: | | | | | | | | | | |
Ones: | | | | | | | | | | |

2) 689 residents said they rode the big blue bus only one time in the last year. 21 residents said they had never used the big blue bus within the last year. How many residents rode the big blue bus only once, or not at all in the last year?

_____ residents

Hundreds: | | | | | | | | | | |
Tens: | | | | | | | | | | |
Ones: | | | | | | | | | | |

3) 770 residents said they enjoyed biking next to the beach, while 139 residents said they enjoyed biking in the mountains. How many residents enjoyed biking near the beach or the mountains?

_____ residents

Hundreds: | | | | | | | | | | |
Tens: | | | | | | | | | | |
Ones: | | | | | | | | | | |

4) 355 residents said they only use their car on the weekdays to get to work, while 214 residents said they only use their car on the weekends. How many residents use their car exclusively on the weekdays or exclusively on the weekends?

_____ residents

Hundreds: | | | | | | | | | | |
Tens: | | | | | | | | | | |
Ones: | | | | | | | | | | |

NAME: _____

# Grade 2 2.NBT.B.7

*Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds*

## Problem 3: Who is right?

Caitlin and Brittany are wondering who solved the following problem correctly.

**Problem:** The distance from the Wiseburn Library next to Juan Cabrillo Elementary School to the corner of West 135th St. and Glascow Place is 467 feet. From that same corner to Holly Glen Park is another 495 feet. What is the distance in feet from Wiseburn Library to Holly Glen Park?

### Caitlin's Work:

467 + 495

400 + 60 + 7 + 400 + 90 + 5

400 + 400 + 60 + 90 + 7 + 5

800 + 150 + 12

950 + 12

962

**Answer:** It takes 962 feet to walk from Wiseburn Library to Holly Glen Park.

**Explanation:** First, I broke up each number into hundreds, tens, and ones. Next, I rearranged the numbers so it was easy to add hundreds to hundreds, tens to tens, and ones to ones. After I added those together, I added the three different sums to get my final answer.

### Brittany's Work:

467 + 495

400 + 60 + 7 + 400 + 90 + 5

400 + 400 + 60 + 90 + 7 + 5

400 + 460 + 97 + 5

860 + 97 + 5

937 + 5

942

**Answer:** It takes 942 feet to walk from Wiseburn Library to Holly Glen Park.

**Explanation:** First, I broke up each number into hundreds, tens, and ones. Then, I rearranged the numbers so hundreds were next to each other, as well as tens and ones. Next, I added the numbers in the middle together and got 860 + 97 + 5. I knew it took 40 more for 860 to reach 900, so I added 40 + 97 and got 137, which I added to 800, and got 937. Then, I added 5, which makes 942.

Who is correct? How do you know? _____

_____

_____

_____

NAME: _____

# Grade 2 2.NBT.B.7

*Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds*

## Problem 3: Who is right?

Caitlin and Brittany are wondering who solved the following problem correctly.

**Problem:** The distance from the Wiseburn Library next to Juan Cabrillo Elementary School to the corner of West 135th St. and Glascow Place is 467 feet. From that same corner to Holly Glen Park is another 495 feet. What is the distance in feet, from Wiseburn Library to Holly Glen Park?

### Caitlin's Work:

467 + 495

400 + 60 + 7 + 400 + 90 + 5

400 + 400 + 60 + 90 + 7 + 5

800 + 150 + 12

950 + 12

962

**Answer:** The distance from Wiseburn Library to Holly Glen Park is 962 feet.

**Explanation:** First, I broke up each number into hundreds, tens, and ones. Next, I rearranged the numbers so it was easy to add hundreds to hundreds, tens to tens, and ones to ones. After I added those together, I added the three different sums to get my final answer.

### Brittany's Work:

467 + 495

400 + 60 + 7 + 400 + 90 + 5

400 + 400 + 60 + 90 + 7 + 5

400 + 460 + 97 + 5

860 + 97 + 5

937 + 5

942

**Answer:** The distance from Wiseburn Library to Holly Glen Park is 942 feet.

**Explanation:** First, I broke up each number into hundreds, tens, and ones. Then, I rearranged the numbers so hundreds were next to each other, as well as tens and ones. Next, I added the numbers in the middle together and got 860 + 97 + 5. I knew it took 40 more for 860 to reach 900, so I added 40 + 97 and got 137, which I added to 800, and got 937. Then, I added 5, which makes 942.

Who is correct? How do you know?

Students should recognize that Caitlin's work is correct. While some students may not be able to explain why Brittany's work is not correct (it references a mistake from composing 100s), they should explain that Caitlin's work added the hundreds to hundreds, tens to tens, and ones to ones while Brittany's work did not, emphasizing the importance and reasoning behind decomposing three digit numbers.

NAME: _____

# Grade 2 2.MD.A.1

*Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.*

## Problem 1: Measuring My Transportation

Think about your means of transportation (feet, car, bus, bicycle, tricycle, skateboard, etc.) and how you get around. Use the following tables to measure at least 3 forms of transportation with 3 different measuring tools such as a ruler, yardstick, meter stick, or measuring tape. Then, answer the questions at the bottom of the page.

Measurement Tool: _____

| Form of Transportation | Length |
|---|---|
| | |
| | |
| | |

Measurement Tool: _____

| Form of Transportation | Length |
|---|---|
| | |
| | |
| | |

Measurement Tool: _____

| Form of Transportation | Length |
|---|---|
| | |
| | |
| | |

1) What form of transportation had the longest length? _____

2) Which measurement tool was the easiest to use? Why? _____

_____

_____

3) Which measurement tool was the hardest to use? Why? _____

_____

_____

NAME: _____

# Grade 2 2.MD.A.1

*Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.*

## Problem 2: Walking Shoes

Use a blank sheet of paper to trace an outline of a partner's shoe that they wore to school today. Then, use a ruler to measure the length of your partner's shoe and answer the questions below.

1) How long is your partner's shoe? _____

2) How did you decide where to begin your measurement and end your measurement? _____

   _____

3) Do you think there may be another way to measure your partner's shoe with the same ruler? Is it possible that someone measuring the same shoe would arrive at a different length? Why, or why not? _____

   _____

   _____

4) What is the *difference* in shoe lengths between your and your partner's shoes? How did you find your answer? _____

   _____

   _____

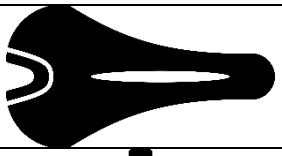
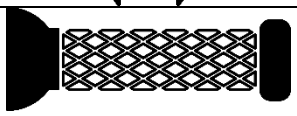
NAME: _____

# Grade 2 2.MD.A.1

*Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.*

## Problem 3: Measuring Parts of the Bicycle

**Materials**: Bicycle, measuring tape.
**Directions**: As a class, measure the following parts of a bicycle by using the table below and pictures. Discuss as a class what the best method of using a measuring tape is and model how to measure. Then, have 3 different partner groups measure the same part of the bicycle and record each measurement. At the end of the activity, talk about why or why not different partner pairs arrived at the same or different measurements for the same part of the bicycle.

| Bicycle Part | Picture | Measurement 1 | Measurement 2 | Measurement 3 |
|---|---|---|---|---|
| Bicycle Saddle |  | | | |
| Bicycle Fork |  | | | |
| Bicycle Handlebar |  | | | |
| Bicycle Wheel |  | | | |
| Whole Bicycle |  | | | |

NAME: _____

# Grade 2 2.MD.A.2

*Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen*

## Problem 1: Walking Shoes in Inches and Centimeters

Use a blank sheet of paper to trace an outline of a partner's shoe that they wore to school today. Then, use a ruler and a meter stick to measure the length of your partner's shoe and answer the questions below.

1) How long is your partner's shoe in inches? _____

2) How long is your partner's shoe in centimeters? _____

3) Which measurement of the shoe is bigger, the centimeters or inches? Why is that measurement greater? _____

_____

_____

4) Do you think one of the measurements is more accurate than the other? Why, or why not?

_____

_____

_____

5) What do each of the measurements mean about the length of your partner's shoe? For example, if your partner's shoe is 40 cm long, what is the significance of 40? What does it mean?

_____

_____

6) Do you have a preference for measuring in centimeters or inches? Which one, and why?

_____

_____

_____

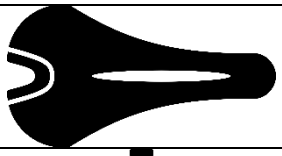
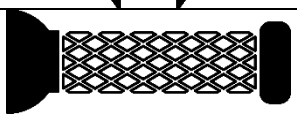
NAME: _____

# Grade 2 2.MD.A.2

*Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen*

## Problem 2: Measuring Parts of the Bicycle in Cm and In

**Materials**: Bicycle, measuring tape.
**Directions**: As a class, measure the following parts of a bicycle by using the table below and pictures. Discuss as a class what the best method of using a ruler and a meter stick is and model how to measure. Then, have 2 different partner groups measure the same part of the bicycle and record each measurement. Use a timer to time how long it takes for each group to measure the bicycle in inches and in centimeters. At the end of the activity, talk about how measuring in centimeters is similar and different to measuring in inches.

| Bicycle Part | Picture | Inches Measurement | Centimeters Measurement |
|---|---|---|---|
| Bicycle Saddle |  | | |
| Bicycle Fork |  | | |
| Bicycle Handlebar |  | | |
| Bicycle Wheel |  | | |
| Whole Bicycle |  | | |

Class Questions:
1) Who prefers measuring in centimeters? Who prefers measuring in inches? Why?
2) If we measure the same object in centimeters and inches, which one will have a larger number? Why? Does this always happen? Why or why not?
3) What is difficult about measuring in inches? What is difficult about measuring in centimeters?
4) Is measuring in centimeters, or inches, more accurate? Why?

NAME: _____

## Grade 2 2.MD.A.2

*Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen*

## Problem 3: Our Sidewalks

**Materials: Meter Sticks, Rulers, or other measuring tools in centimeters and inches.**
**Directions:** Go outside of the classroom to the nearest sidewalk and have students measure the length of 5 different sidewalk blocks in both centimeters and inches as pairs. Then, students can fill out the following table based on their measurements and answer the questions underneath.

| Sidewalk # | Measurement in Centimeters | Measurement in Inches |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

**Questions:**

1) Which sidewalk had the longest length?

_____

2) Are centimeters or inches better to measure sidewalk length? Why? _____

_____

_____

3) Pick any one of the sidewalks. Do the numbered measurements you recorded in inches and in centimeters for that sidewalk mean the same thing? If so, what is the meaning? If not, how are they different in meaning? _____

_____

4) Did you learn any new strategies today for measuring in inches or centimeters? If so, what are they? _____

_____

NAME: _____

# Grade 2 2.MD.B.5

*Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.*

## Problem 1: Big Blue Busses

Use your knowledge of addition and subtraction and your experience of the Big Blue Bus to answer the following questions.

> The 2016 model of the Big Blue Busses had a length of 29 feet. The 2015 model of the Big Blue Busses had a length of 40 feet.

1) If a 2015 model and a 2016 model were put end to end, how long would the total length be?

2) How many more feet is the 2015 model than the 2016 model?

3) Draw a picture below of the 2015 and 2016 Big Blue Busses that shows their difference in length.

> The first model (made in 2002) of the Big Blue Bus had a length of 40 feet and the fifth model (made in 2010) had a length of 32 feet.

4) How many fewer feet was the fifth model than the first model?

5) How long would three of the fifth model busses be, if they were put end to end?

6) Draw a picture below of the first and fifth model of Big Blue Busses that shows their difference in length.

NAME: _____

# Grade 2 2.MD.B.5

*Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.*

## Problem 2: Measurements and Bicycles

Use your knowledge of addition and subtraction to answer the following questions. Write an equation or draw a picture in the box for every problem.

1) A bicycle lane on the street is always at least 48 inches, although some lanes can be up to 82 inches. How many fewer inches is the smallest bike lane compared to the largest?

2) A typical bicycle is about 68 inches. A typical tricycle is 25 inches long. How much longer is a bicycle compared to a tricycle?

3) An adult bicycle has wheels that are 62 cm long. A child's bike has a wheel that is 30 cm long. How long are both wheels together on a child's bike? How much longer are both wheels on an adult bike compared to both on a child's bike?

4) A road bicycle has handlebars that are 38 centimeters long. A mountain bicycle has handlebars that are 61 centimeters long. Are two road bicycle handlebars next to each other shorter or longer than one mountain bicycle handlebar?

NAME: _____

## Grade 2 2.MD.B.5

*Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.*

### Problem 3: Riding the Light Rail and Streetcars

Use your knowledge of addition and subtraction to answer the following questions. Write an equation or draw a picture in the box for every problem.

1) A light rail car is around 9 feet wide and 92 feet long. How much longer is the length compared to the width of the car?

2) Streetcars are traditionally smaller than light rail cars. While a light rail can be 91 feet long, a streetcar is usually 49 feet long. How much shorter is a streetcar compared to the light rail?

3) If a streetcar is 49 feet long, how long are two streetcars right next to each other?

4) The Los Angeles County Metro Rail system has cars that are 75 feet long. However, the Blue, Green, Gold and Expo lines use an 87-foot long car. How much longer are the Blue, Green, Gold and Expo line cars?

NAME: _____

# Grade 2 2.MD.C.8

*Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

## Problem 1: Big Blue Bus Fares

Use your knowledge of the Big Blue Bus to answer the following questions about different fares to use the Big Blue Bus.

1) Josie and her grandmother are riding the Big Blue Bus. Josie spent 1 dollar, 2 dimes, and 1 nickel on her ticket, and her grandmother spent 5 dimes on her ticket. How many cents did they spend all together?

2) Ivy and Oliver are riding the bus. Ivy used 7 dimes, 7 nickels, and 20 pennies on her ticket. Oliver used 9 dimes, 5 nickels, and 10 pennies on his ticket. How much did each of their tickets cost?

3) A transfer ticket allows passengers to switch from a Big Blue Bus to the Expo Line and costs 7 nickels and 15 pennies. Ms. Hutchinson first spent 3 dimes and 4 nickels on her Big Blue Bus ticket, and then bought a transfer ticket. How much did she spend?

4) Jonathon and his father Michael each spent two dollars, 3 nickels, 5 pennies, and 3 dimes to buy their Big Blue Bus tickets. How much did they spend all together?

NAME: _____

# Grade 2 2.MD.C.8

*Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

## Problem 2: Determining Equal Amounts on the Big Blue Bus

Use your knowledge of the Big Blue Bus to determine whether Bassam or Curley is correct about the amount they spent on their Big Blue Bus tickets.

Bart and Curley are going on a bus adventure. They are going to ride the #7 bus as far as they can.
Bart spent 1 dollar, 10 pennies, and 3 nickels to buy his bus ticket.

Curley spent 11 nickels, 20 pennies, and 5 dimes to buy his ticket.

**Bart** says that he and Curley did not spend the same amount of money. When Bart counted how many coins and dollars he and Curley spent, he got the following answer:

**My ticket:** 1 dollar + 10 pennies+ 3 nickels= 14 cents
**Curley's ticket**: 11 nickels + 20 pennies + 5 dimes = 36 cents

Therefore, Bart says he and Curley did not spend the same amount of money.

**Curley** says that he and Bart did spend the same amount of money. When Curley counted how many coins and dollars he and Bart spent, he got the following answer:

**Bart's Ticket:** 1 dollar + 10 pennies+ 3 nickels = 100 cents + 10 cents + 15 cents = 125 cents
**My Ticket:** 11 nickels + 20 pennies + 5 dimes = 55 cents + 20 cents + 50 cents = 125 cents

Therefore, Curley says he and Bart did spend the same amount of money.

Who is correct? What mistake did the person who was incorrect make? _____

_____

_____

_____

_____

NAME: _____

# Grade 2 2.MD.C.8

*Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

## Problem 3: The Expo Line

Use your knowledge of the Expo Line and of money to answer the following questions.

1) The cost of a ticket on the Expo Line is $1.75. Write down at least three different combinations of coins that equals $1.75 below.

1: ____ dollars + ____ quarters + ____ dimes + ____ nickels + ____ pennies = $1.75

2: ____ dollars + ____ quarters + ____ dimes + ____ nickels + ____ pennies = $1.75

3: ____ dollars + ____ quarters + ____ dimes + ____ nickels + ____ pennies = $1.75

2) If you have 3 dollars, 14 dimes, 9 nickels, and 22 pennies, how many 1-way tickets can you buy on the Expo line if each costs 1 dollar and 75 cents?

3) For any 2nd grader, the cost to ride on the Expo Line is $1. If your class is planning on taking a field trip (including your teacher), how much will it cost?

4) On that same field trip, what coins would you choose to use to pay for your $1 ticket if you have to use at least 1 quarter and 1 dime? Why would you choose those coins?

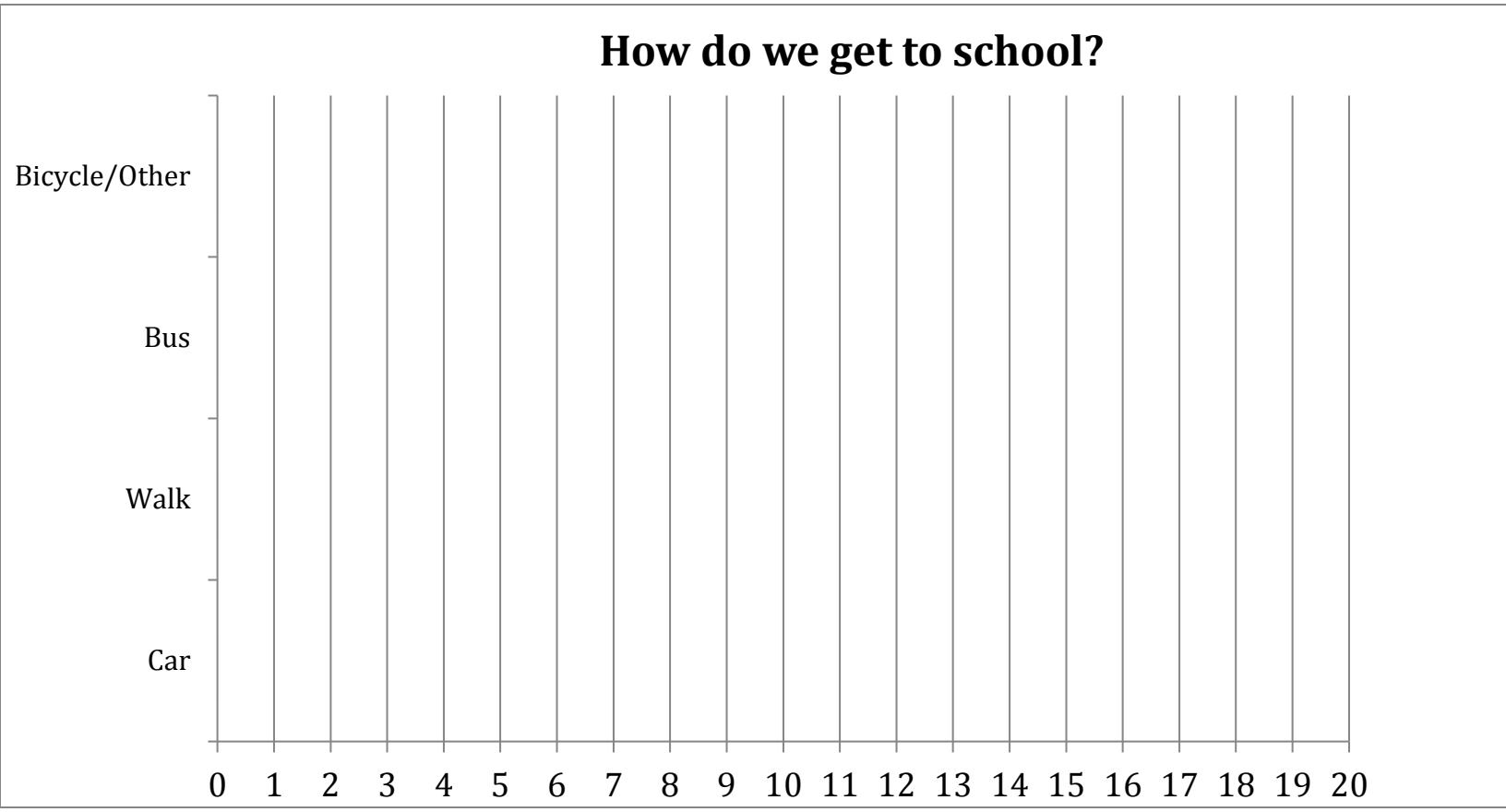
NAME: _____

# Grade 2 2.MD.D.10

*Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.*

## Problem 1: How do we get to school?

As a class, count how many students drove in a car, took the school bus, walked, or rode a bike to get to school today. Then, use the following bar graph to record the findings and answer the questions below.




1) What is the most common way of getting to school? _____

2) What is the least common way of getting to school? _____

3) Use the graph to fill in the following sentences using the words “more” or “fewer” or “the same number of”

_____ students used a bicycle than used a car to get to school.

_____ students walked than rode the bus to school.

_____ students rode the bus than used a car to get school.

NAME: _____

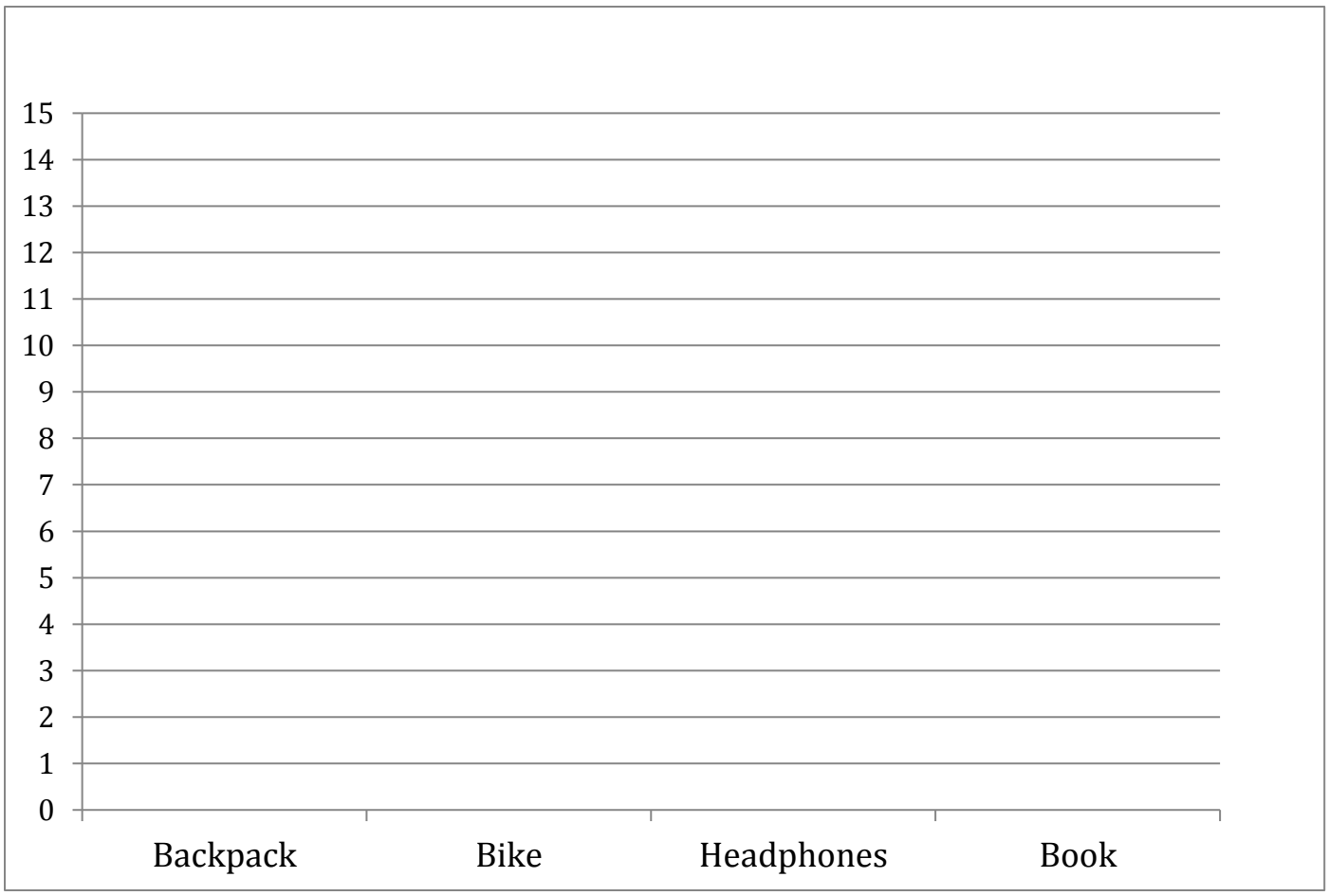
# Grade 2 2.MD.D.10

*Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.*

## Problem 2: Things People Bring onto the Bus

The following data was recorded about things people brought onto the Big Blue Bus from 9am-10am one day. Use the following chart to create a bar graph that represents the data. **Also be sure to title your graph.**

*10 people brought a backpack onto the bus.*
*3 people brought a bike onto the bus (by attaching it to the front of the bus).*
*12 people brought headphones onto the bus.*
*9 people brought a book onto the bus.*




1) How many people brought things that start with the letter “B”? _____

2) How many total things were brought onto the bus, based on this chart? _____

3) How many more people brought on a backpack than a bike? _____

NAME: _____

# Grade 2 2.MD.D.10

*Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.*

## Problem 3: Favorite Places to bike in Santa Monica

The following data was recorded about bicyclists' favorite places to bike in Santa Monica. People were asked "What is your favorite place to bike in Santa Monica?" Use the following data to create a bar graph, then label your graph with a title that represents the data.

*15 people said around the Santa Monica Pier*
*14 people said along Montana Avenue*
*9 people said along San Vicente Boulevard*
*18 people said the Expo Line Bike Path*


1) Where do the most people like to bike? _____

2) How many more people like to bicycle along the Expo Line than San Vicente? _____

3) How many fewer people like to bike on Montana Ave. compared to the Santa Monica Pier?

_____

NAME: _____

# Grade 2 2.G.A.1

*Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.*

## Problem 1: Bicycle Shapes

For each bicycle picture below, write down the number of triangles, circles, and quadrilaterals that you see in the picture.

There are ____ triangles in this bicycle picture.

There are ____ circles in this bicycle picture.

There are ____ quadrilaterals in this bicycle picture.

There are ____ triangles in this bicycle picture.

There are ____ circles in this bicycle picture.

There are ____ quadrilaterals in this bicycle picture.

There are ____ triangles in this bicycle picture.

There are ____ circles in this bicycle picture.

There are ____ quadrilaterals in this bicycle picture.

There are ____ triangles in this bicycle picture.

There are ____ circles in this bicycle picture.

There are ____ quadrilaterals in this bicycle picture.

NAME: _____

# Grade 2 2.G.A.1

*Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.*

## Problem 2: Drawing Challenge – Bicycles

Draw bicycles using the following challenges listed below.

**Challenge 1**

*Your bicycle must have…*

At least 5 angles 3 circles 1 triangle with equal side lengths

**Challenge 2**

*Your bicycle must have…*

*2 quadrilaterals* 1 pentagon 7 angles

**Challenge 3**

*Your bicycle must have…*

At least 3 quadrilaterals 1 hexagon 2 triangles

NAME: _____

# Grade 2 2.G.A.1

*Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.*

## Problem 3: I Spy…On My Way Home

On your way home from school today, see if you can find shapes with any of the following attributes. If you do, write down what you found that matches the attribute. For the blank lines at the bottom of the page, create your own category!

Has 5 angles (corners)

Has a Triangle

*Is the shape of a circle*

Has Equal Side Lengths

*Is in the shape of a quadrilateral*

*Has sides with all different lengths*

_____

_____

_____

NAME: _____

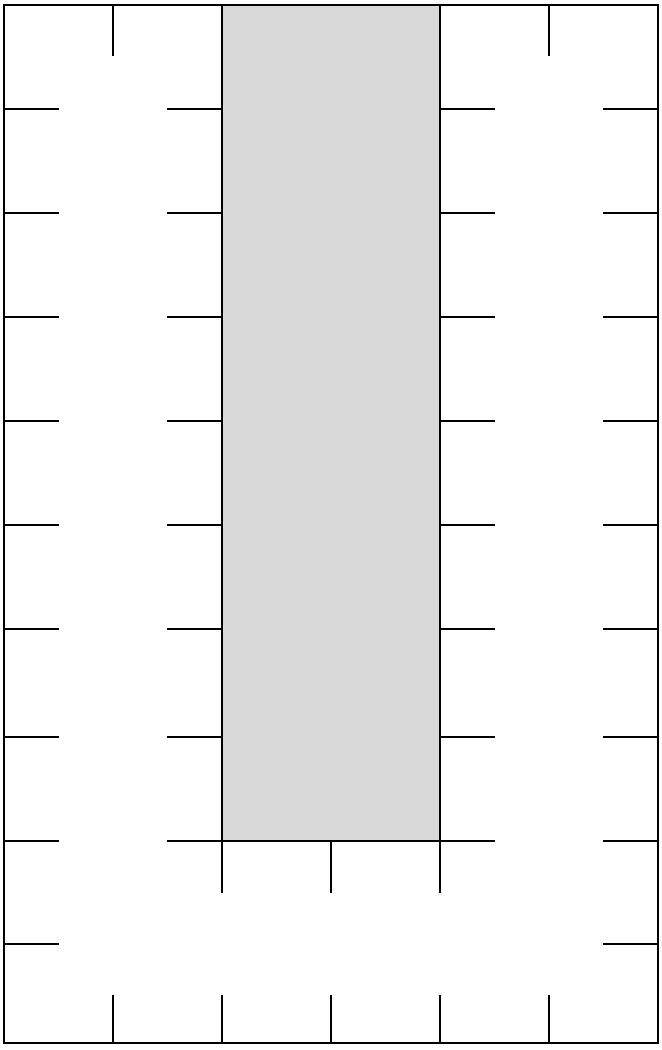
# Grade 2 2.G.A.2

*Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.*

## Problem 1: How many passengers on the bus?

*Below is a rough sketch of the interior of a bus, where each mark separates one seat from another. Connect each mark to the one across from it below to create a grid, where each square represents a seat on the bus. Then, answer the questions below.*

**The gray area represents the middle of the bus, where there are no seats.*



1) How many seats are on the bus? _____

2) Number each square that represents a seat to prove that your answer is correct.

3) What might be a faster way of finding the number of seats that can fit in the bus, instead of counting them one by one?

_____

_____

_____

_____

_____

4) Write a number sentence that shows the total number of seats using the method you described in #3

5) How many seats could fit in the middle of the bus (the gray area)? How do you know?

NAME: _____

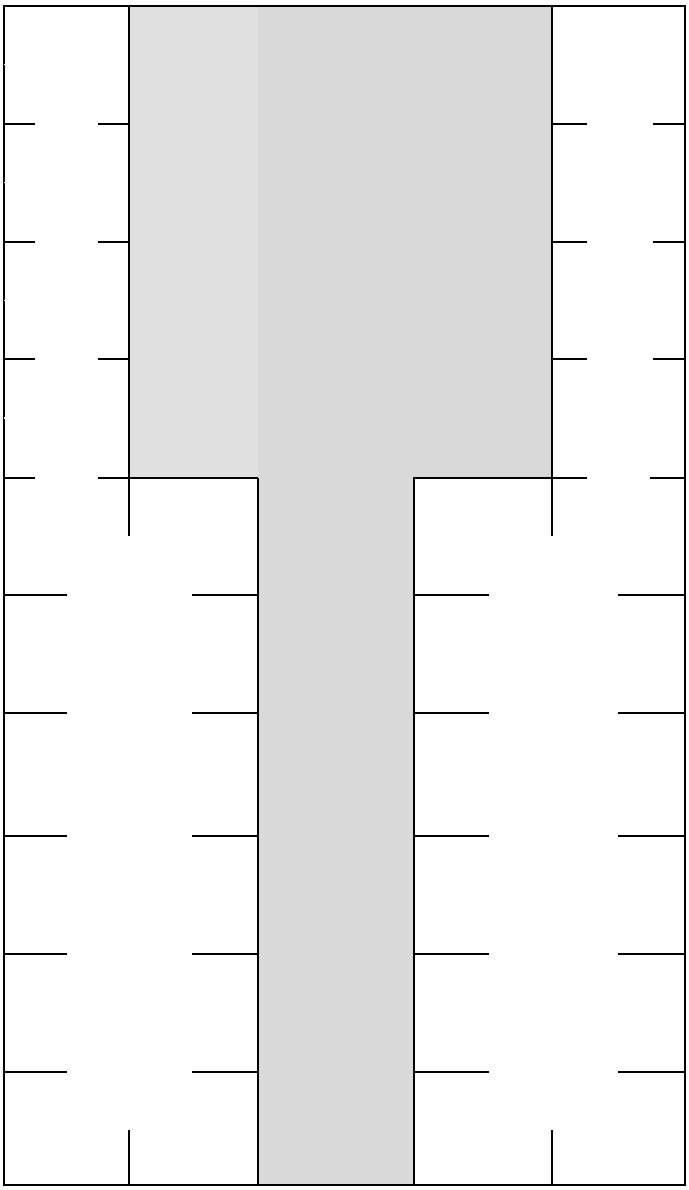
# Grade 2 2.G.A.2

*Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.*

## Problem 2: How many passengers on the Expo Line?

*Below is a rough sketch of the interior of a bus, where each mark separates one seat from another. Connect each mark to the one across from it below to create a grid, where each square represents a seat on the bus. Then, answer the questions below.*

**The gray area represents the middle of the car, where there are no seats.*



1) How many seats are on an Expo Line Car?

_____

2) Number each square that represents a seat to prove that your answer is correct.

3) What might be a faster way of finding the number of seats on an Expo Line car, instead of counting them one by one?

_____

_____

_____

_____

_____

4) Write a number sentence that shows the total number of seats using the method you described in #3

5) How many seats could fit in the middle of the bus (the gray area)? How do you know?

# NOTES

# NOTES

# NOTES

# GoSaMo

*This project is funded in partnership between Metro and the City of Santa Monica.*