√MATH in my World

Fourth Grade

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

GoSaMo

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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)

Use the four operations with whole numbers to solve problems.

4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Numbers and Operations - Fractions (Pages 13-27)

Extend understanding of fraction equivalence and ordering.

4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Build fractions from unit fractions.

4.NF.B.3d Understand a fraction a/b with a > 1 as a sum of fractions 1/b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.

4.NF.B.4c A Understand a fraction a/b with a > 1 as a sum of fractions 1/b. dd and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

Understand decimal notation for fractions, and compare decimal fractions.

4.NF.C.6 Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.

Measurement and Data (Pages 28-35)

Solve problems involving measurement and conversion of measurements.

4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...

4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

Geometry (Pages 36-38)

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

NAME: _____

Grade 4 4.OA.A.1

Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

Problem 1: The Expo Line

Write a multiplication equation in each box that matches the scenario described. You can either use all real numbers or use a ? for the number that is not given.

1) The Santa Monica Transportation Department conducted a survey with 600 people and found out that each person rode the Big Blue Bus for 30 minutes a week.

2) Breeze Bikes conducted a survey with 1,200 people and found out that the number of people they surveyed was six times the number of people that had yearly membership to Breeze Bikes.

3) After the Expo Line extension to Santa Monica was completed, around 34,000 people rode the train on Sundays, which was twice as many people compared to before the line opened.

4) Using public transportation can save someone $450 a month, which is approximately 9 times as much as a person would pay driving their cars.

5) 840 people can fit into the Santa Monica buses at one time, with each bus holding 40 people.

NAME: _____

Grade 4 4.OA.A.1

Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

Problem 2: The Expo Line

For the following problems, answer the question and then fill in the sentence blanks below.

1) In the Santa Monica area, there are 30 streets with bike lanes and 3 times as many streets without bike lanes. How many streets do not have bike lanes? Use an equation to find out.

____ is ____ times as many as 30.

____ is ____ times as many as 3.

2) There are 76 bus routes in Los Angeles, which is 4 times as many as in Santa Monica. How many bus routes are in Santa Monica?

____ is ____ times as many as 4.

4 times _____ is _____.

3) There are 5 times as many elementary schools as middle schools in Santa Monica-Malibu Unified School District. If there are 2 middle schools, how many elementary schools are there?

____ is ____ times as many as 2.

____ is ____ times as many as 5.

4) There are 21 times as many Breeze Bike stations compared to the first month of Breeze Bikes, when there were 3 stations.

____ is ____ times as many as 21.

____ is ____ times as many as 3.

NAME: _____

Grade 4 4.OA.A.1

Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

Problem 3: 12 Bicycles

There are 12 bicycles at a new Breeze Bikes station and you are trying to figure out how to arrange them. Answer the following questions below and use equations when you can.

1) If you'd like there to be 4 rows of bicycles, how many bikes will be in each row?

2) If you'd like there to be 6 rows of bicycles, how many bikes are in each row?

3) What is the difference between Question 1 and Question 2? Draw a picture to show the difference below.

4) If you'd like there to be 3 rows of bicycles, how many bikes will be in each row?

5) If you'd like there to be 2 rows of bicycles, how many bikes are in each row?

6) What is the difference between Question 4 and Question 5? Draw a picture to show the difference below.

NAME: _____

Grade 4 4.OA.A.2

Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

Problem 1: Biking Contest

Ulysses and Luis are having a biking contest to see who will bike farther by the end of the week. Each day, Ulysses looks at the number day of the week it is (Monday is 1, Tuesday is 2, Wednesday is 3…etc.) and decides to bike a number of miles equal to 2 more than the number day of the week. Each day, Luis, like Ulysses, looks at the number day of the week, but decides to bike a number of miles equal to twice the number day of the week.

1) Fill in the following table with the number of miles each boy will bike.

	Monday (Day 1)	Tuesday (Day 2)	Wednesday (Day 3)	Thursday (Day 4)	Friday (Day 5)
Ulysses					
Luis					

2) Who biked more on each day?

Day 1 _____ Day 3 _____ Day 5 _____

Day 2 _____ Day 4 _____

3) How is the calculation of the number of miles that Ulysses and Luis biked on Day 2 different? *Show your work below with an equation or drawing.*

3) Who ended up biking more for the whole week? Why did that happen? Show your work with an equation or a drawing below for each day of the week.

NAME: _____

Grade 4 4.OA.A.2

Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

Problem 2: Two Different Amounts

Use your knowledge of addition and multiplication to match the following problems to their correct equation on the right hand side of the sheet.

1) The Ali family is buying 1-day passes on the Expo Line, which cost $7 each. If there are 6 members in the family, how much will they spend on all of the tickets?

120 + 6 = 126

2) The Hussein family live 3 miles from the beach and bike there every weekend. They bike straight to the beach and then 5 miles home because they stop for lunch in downtown Santa Monica. How far do they bike?

7 + 6 = 13

3) The Bailey family likes to go on a walk every evening after dinner. They walk 6 times the length of their block, which is 120 meters long.

3 x 5 = 15

4) The Lannister family used to live 3 miles from McKinley Elementary, and now they live 5 times as far away. How far away do they live?

3 + 5 = 8

5) The Dandurand family go on bike rides every Sunday morning. They usually pedal their bike for 120 minutes, and take a 6 minute break in the middle of the ride. How long do they spend out on their bikes?

120 x 6 = 720

6) The Grey family bought 7 Expo Line tickets for their kids, which cost $1 each ticket. Then, they bought a day pass on the Big Blue Bus and 2 senior citizen tickets for $6 total. How much did they spend?

7 x 6 = 42

NAME: _____

Grade 4 4.OA.A.2

Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

Problem 3: 10 Times the Distance

Solve the following problems using your knowledge of the number 10 and multiplication and division.

1) The distance from the Santa Monica Pier to Malibu is 10 times the distance from Lincoln Middle School to the Santa Monica Pier, which is 2 miles. How far is the Santa Monica Pier from Malibu?

2) The distance from Santa Monica to San Francisco is 380 miles, which is 10 times the distance from Santa Monica to the Santa Fe Dam Recreation area. How far apart are the Santa Fe Dam Recreation Area and Santa Monica?

3) The distance from Santa Monica to Pfeiffer Big Sur State Park is 267 miles. The distance from Santa Monica to the United States Capitol, Washington D.C., is 10 times that distance. How far is it from Santa Monica to Washington D.C.?

4) The distance from Lake Ontario to Santa Monica is 2,640 miles, which is ten times the distance from Santa Monica to Death Valley National Park. How far away are Santa Monica and Death Valley National Park?

5) The distance from Anchorage, Alaska, and Santa Monica is 10 times the distance from Santa Monica to the Parque Nacional Sierra de San Pedro Martir in Baja California. The Parque Nacional Sierra is 339 miles away from Santa Monica. How far away is Anchorage from Santa Monica?

NAME: _____

Grade 4 4.OA.A.3

Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Problem 1: Buying Big Blue Bus Tickets

You are buying Big Blue Bus tickets for your family who is coming in town to visit you next week!

Ticket	Cost
Day Pass	$4.00
Senior 13-Day Pass	$6.00
Rapid Bus	$2.00

1) If you have $22, how many day passes can you buy? If you have money left over, how much?

2) If you need 2 Senior 13-Day Passes for two grandparents and 8 Rapid Bus tickets, will $30 be enough? Why, or why not?

3) You need to buy 7 Day Passes, 4 Senior 13-Day Passes and 2 Rapid Bus Passes. You have $60. Do you have enough money? If you have leftover money, could you buy any more tickets?

4) If you have $25, how many Day Passes can you buy? How many Senior 13-Day Passes? Rapid Bus Passes? Is it possible to get at least one of each? If so, how much will you have leftover?

NAME: _____

Grade 4 4.OA.A.3

Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Problem 2: The Bike Store

The Kinsington family is going on a bike ride this weekend and they need your help with their budget. For each problem, estimate first, and then answer the question.

Adult Bikes	Cost
Blue *Road Bike*	$22
Green *Mountain Bike*	$17
Red *Cruiser*	$15

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

1) The Kinsington family wants to rent 2 Blue Road Bikes and 2 Purple BMX Bikes. If they have $70, will that be enough to rent all four bicycles?

Estimated Cost? $_____

Will $70 be enough? Yes No

How much will all of the bikes cost together? *Show your work below.* $_____

2) The Kinsington family wants to rent 4 Orange Trainer Bikes. If they have $45, will they be able to rent all 4 bikes?

Estimated Cost? $_____

Will $45 be enough? Yes No

How much will all of the bikes cost together? *Show your work below.* $_____

3) The Kinsington family has $30 to spend on 2 Green Mountain Bikes and $60 to spend on 4 Purple BMX Bikes. Will they be able to rent the Green Mountain Bikes and the Purple BMX Bikes?

Estimated Cost for Mountain Bikes? $_____ Estimated Cost for Purple BMX Bikes? $_____

Will $30 be enough? Yes No Will $60 be enough? Yes No

How much will all of the bikes cost together? *Show your work below.* $_____

NAME: _____

Grade 4 4.OA.A.3

Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Problem 3: Going the Distance

Below is a list of how far away the following locations are from Keenan's house.

Santa Monica Pier – 4 miles

Franklin Canyon Park – 10 Miles

Temescal Canyon Park – 5 miles

Hermosa Beach – 6 miles

Keenan bikes at a pace of 1 mile every 8 minutes.

For the following problems, try to find the answer two different ways, one using division and the other multiplication. If there is leftover time, or more time needed, write down the amount.

1) Keenan would like to bike to Hermosa Beach and then back to his house. Will 100 minutes be enough time to complete his bike ride?

Multiplication Solution ***Division Solution***

2) Keenan would like to bike to Temescal Canyon Park and then back to his house, and then to Santa Monica Pier where he will meet his family. Will 110 minutes be enough time for this bike ride?

Multiplication Solution ***Division Solution***

3) Keenan would like to bike to Franklin Canyon Park and back. Then, he is going to bike to Hermosa Beach. Will 200 minutes be enough time to complete his bike ride?

Multiplication Solution ***Division Solution***

NAME: _____

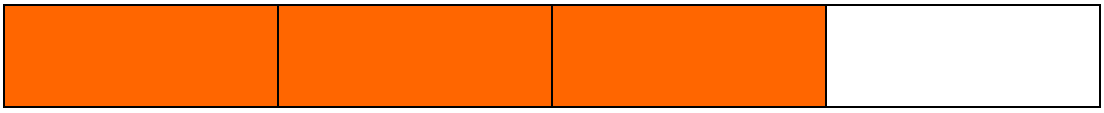
Grade 4 4.NF.A.1

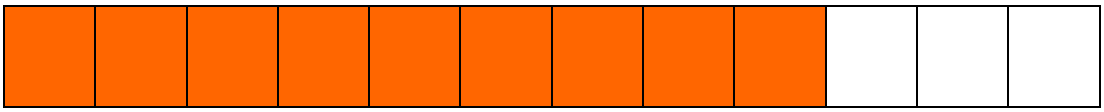
Explain why a fraction a/b *is equivalent to a fraction* (n x a)/(n x b) *by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.*

Problem 1: Sidewalk Cracks

Use your knowledge of fractions to figure out how the sidewalks below have cracked.

1) Here are the Before and After diagrams of a sidewalk during an Earthquake in Santa Monica. The sidewalks areas that are covered red are the sidewalk areas in front of a school.

Before  ____

After  ____

a) Write the fraction that represents the red area of the sidewalk next to each diagram.

b) Explain how both fractions are equivalent, even though the After Diagram uses larger numbers for the numerator and denominator.

_____

_____

_____

2) Here are the Before and After diagrams of another sidewalk during an Earthquake in Santa Monica. The sidewalks areas that are covered red are the sidewalk areas in front of the road.

Before  ____

After  ____

a) Write the fraction that represents the red area of the sidewalk next to each diagram.

b) Explain how both fractions are equivalent, even though the After Diagram uses larger numbers on the numerator and denominator.

_____

_____

_____

NAME: _____

Grade 4 4.NF.A.1

Explain why a fraction a/b *is equivalent to a fraction* (n x a)/(n x b) *by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.*

Problem 2: Splitting Lanes

The City of Malibu is redesigning its streets! Use your knowledge of fractions to answer the questions below.

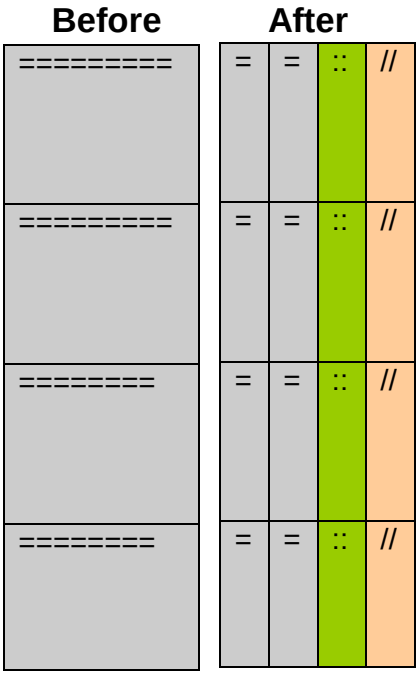
1) To the right is a diagram of a street in Malibu before it was renovated and after it was renovated. The renovation included adding a bike lane and a sidewalk to the street.

Bike Lane	::::
Sidewalk	////
Car Lane	==

a) What fraction of the "After" street is used for a bike lane?

b) What fraction of the "After" street is used for the sidewalk?'

c) What fraction of the "After" street is used for the car lane?



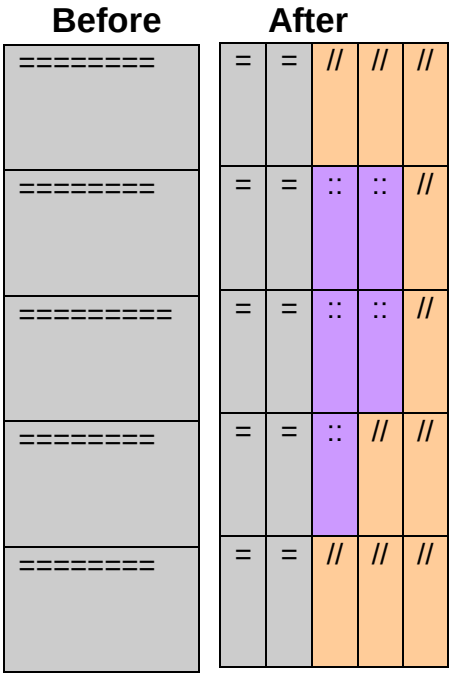
2) To the right is a diagram of a street in Santa Monica before it was renovated and after it was renovated. The renovation included adding some parking and a sidewalk.

Parking	::::
Sidewalk	////
Car Lane	==

a) What fraction of the "After" street is used for the sidewalk?

b) What fraction of the "After" street is used for the parking?

c) What fraction of the "After" street is used for the car lane?



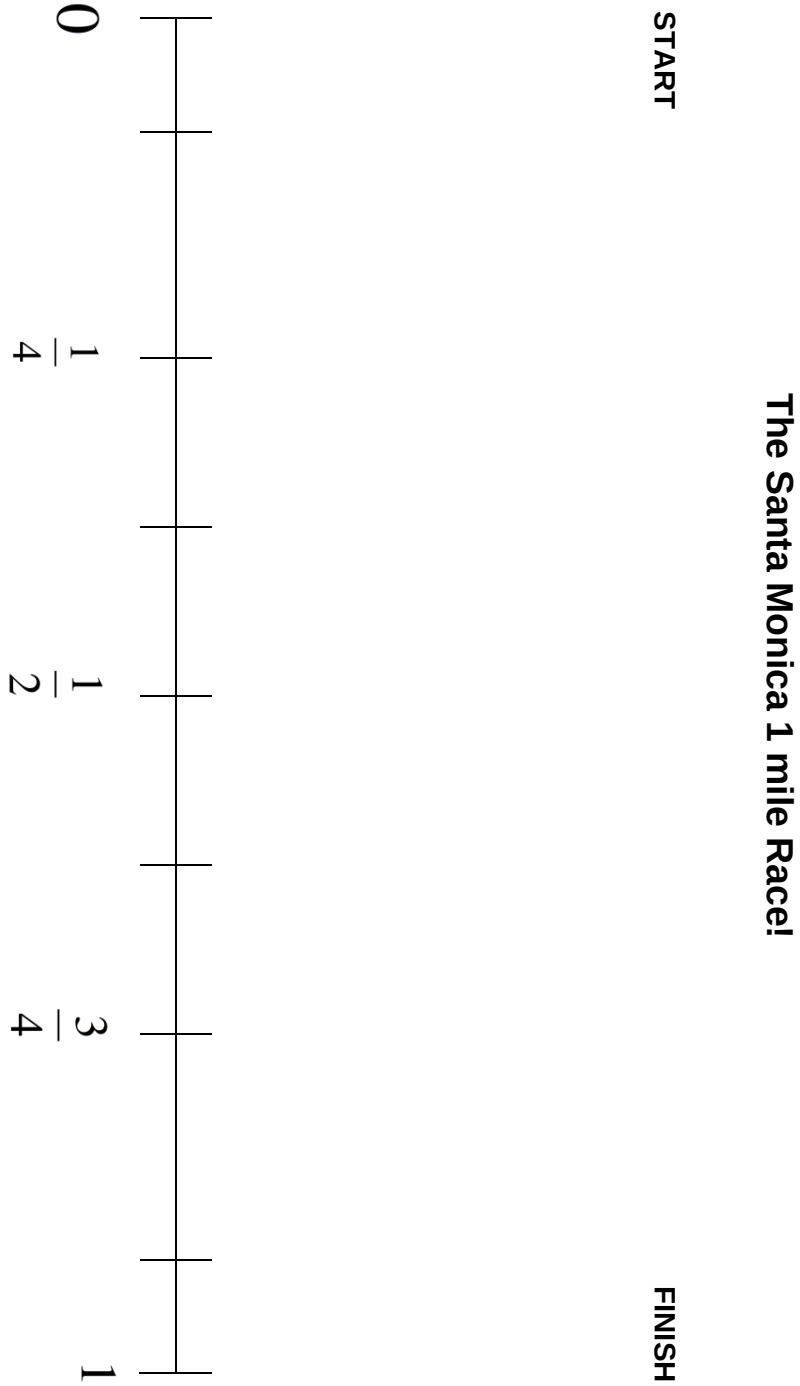
NAME: _____

Grade 4 4.NF.A.2

Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Problem 1: Who won the race?

A Santa Monica 1-mile race is happening along Ocean Avenue in Santa Monica. Use the following race map below to place the runners in Appendix 4A in their correct running spots!



NAME: _____

Grade 4 — 4.NF.A.2

Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Problem 2: Sentence Matching Equivalent Fractions

Match the following sentences to the correct equivalent fraction (either visual or in number form) on the right side of the page that matches the scenario by writing the correct letter in the blank space. The answer must be in simplified form.

1. _____ Eli took the bus to school 10 out of every 12 days this year.

2. _____ Gordon left his house for 27 minutes. He rode his bike for 15 minutes of that time.

3. _____ John takes public transportation to work every 11 out of 22 days.

4. _____ $\frac{2}{8}$ of the roads in Santa Monica have bike lanes.

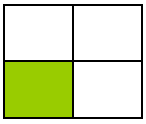
5. _____ Meghan walks her dog around her neighborhood. Her neighborhood has 24 blocks and she walks 14 of them.

6. _____ Ariana is a bus driver and when she started work, the gas tank in the bus was $\frac{4}{10}$ full.

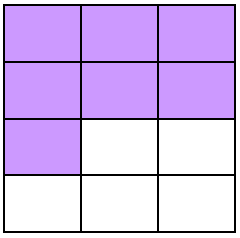
A. $\frac{1}{2}$

B. 

C. $\frac{2}{5}$

D. 

E. $\frac{5}{9}$

F. 

NAME: _____

Grade 4 4.NF.A.2

Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Problem 2: Comparing Fractions – Who went farther?

Who went farther? Teri and Carlos are having a debate about who skateboarded further on each day of the week. They measured their distances out of the 1-mile from their school.

Day	Teri	<, >, =	Carlos
Monday	$\frac{4}{7}$		$\frac{3}{10}$
Tuesday	$\frac{1}{6}$		$\frac{1}{5}$
Wednesday	$\frac{2}{3}$		$\frac{3}{4}$
Thursday	$\frac{5}{8}$		$\frac{10}{16}$
Friday	$\frac{5}{6}$		$\frac{9}{12}$
Saturday	$\frac{8}{10}$		$\frac{16}{20}$
Sunday	$\frac{2}{5}$		$\frac{6}{11}$

Who biked farther for more days of the week? _____

NAME: _____

Grade 4 4.NF.B.3d

Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Problem 1: Bus Extension

The city of Los Angeles has decided to extend its bus system by adding 24 more miles of bus service. Use your knowledge of addition and subtraction of fractions to solve the problems below.

1) The #3 Bus Line is going to cover $\frac{3}{24}$ of the miles, and the City would like the #5 Bus Line to cover the rest until $\frac{12}{24}$ of the miles are covered. What fraction of the new bus miles will the #5 bus have to cover?

2) $\frac{11}{24}$ of the roads for the new bus service have enough space to add a bus lane. What fraction of roads for the new bus service does not have enough room for a bus lane?

3) *Use colored pencils, crayons, or markers to show how you got your answer to the question below using the fraction rectangle below.*

The #5 Bus will take $\frac{6}{24}$ of the new miles, the #8 bus will take $\frac{7}{24}$ of the new miles, and the #15 bus will take $\frac{9}{24}$ of the new miles. What fraction of the new bus service will the #5, #8, and #15 bus take all together? What fraction of the new bus service will other busses have to cover?

NAME: _____

Grade 4 4.NF.B.3d

Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Problem 2: Bike Inventory

Paola Elsrod owns a bike store in Santa Monica with the following inventory of bikes.

Adult Bikes	#
Blue *Road Bike*	3
Green *Mountain Bike*	10
Red *Cruiser*	8
TOTAL	____

Kid Bikes	#
Purple *BMX*	15
Orange *Trainer Bike*	6
Yellow *Tricycle*	10
TOTAL	____

TOTAL NUMBER OF BIKES IN SHOP: _____

1) Find the correct totals for the adult bikes and kid bikes. Then, write the total number of bikes in the entire shop above.

2) What fraction of bikes in the entire shop are adult bikes? _____

3) What fraction of bikes in the entire shop are kid bikes? _____

4) What fraction of the *adult bikes* do the Blue Road Bikes and the Red Cruisers make up?

5) What fraction of the kids bikes do the Purple BMX Bikes and the Yellow Tricycles make up?

6) A customer in Ms. Elsrod's shop want to buy only blue, orange, or yellow bikes. What fraction of the store should he look at?

7) A customer in Ms. Elsrod's shop want to buy only green, blue, or purple Bikes. What fraction of the store should she look at?

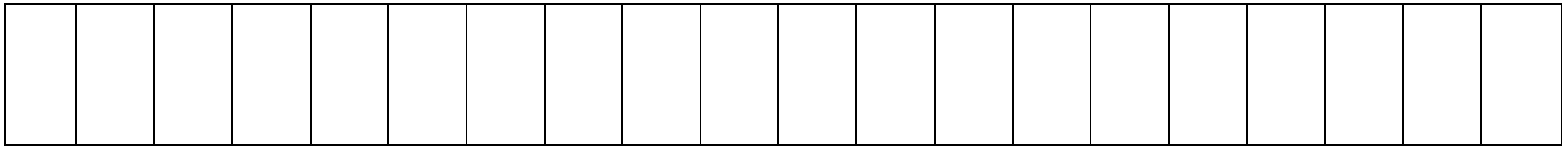
Grade 4 4.NF.B.3d

Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Problem 3: Sidewalk Murals

You are painting the sidewalk in front of your school and need to paint the base colors for each sidewalk square. You are painting them red, orange, yellow, green, blue, and purple. Use the fractions below to color in the sidewalk.

Red = $\frac{4}{20}$ **Orange =** $\frac{1}{20}$ **Yellow =** $\frac{7}{20}$ **Green =** $\frac{2}{20}$ **Blue =** $\frac{6}{20}$



1) What fraction of the sidewalk squares are red or orange? _____

2) What fraction of the sidewalk do the Yellow and Green squares take up? _____

3) What fraction of the sidewalk do the Blue and Red squares take up? _____

4) What fraction of the sidewalk do the Orange and Green squares take up? _____

5) What fraction of the squares do the Red, Yellow, and Blue squares take up? _____

3) Draw a unique symbol in 1 square of each color. What fraction of the sidewalk squares have that unique number?

4) What fraction of the red ad orange squares have the unique symbol? _____

5) What fraction of the blue, green, and yellow squares have the unique symbol? _____

NAME: _____

NAME: _____

Grade 4

4.NF.B.3d

Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Problem 3: Sidewalk Murals

You are painting the sidewalk in front of your school and need to paint the base colors for each sidewalk square. You are painting them red, orange, yellow, green, blue, and purple. Use the fractions below to color in the sidewalk.

Red = $\frac{4}{20}$ **Orange =** $\frac{1}{20}$ **Yellow =** $\frac{7}{20}$ **Green =** $\frac{2}{20}$ **Blue =** $\frac{6}{20}$

1) What fraction of the sidewalk squares are red or orange? 5/20

2) What fraction of the sidewalk do the Yellow and Green squares take up? 9/20

3) What fraction of the sidewalk do the Blue and Red squares take up? 10/20

4) What fraction of the sidewalk do the Orange and Green squares take up? 3/20

5) What fraction of the squares do the Red, Yellow, and Blue squares take up? 17/20

3) Draw a unique symbol in 1 square of each color. What fraction of the sidewalk squares have that unique symbol? 5/20

4) What fraction of the red ad orange squares have the unique symbol? 2/5

5) What fraction of the blue, green, and yellow squares have the unique symbol? 3/15

NAME: _____

Grade 4 4.NF.B.4c

Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

Problem 1: Beach Relay

Students from all of the Santa Monica and Malibu schools are seeing if they can reach the beach by doing a bicycle relay from their school locations. Each student will bike one portion of the entire trip on their own, but together they will bike the entire distance from their school to the beach.

1) The Edison Language Academy is $\frac{20}{8}$ miles away from the beach. If 9 students are biking in the relay and each student can bike $\frac{3}{8}$ of a mile, how far can they bike together? Will they make it to the beach?

2) Franklin Elementary School is $\frac{29}{10}$ miles away from the beach. If 6 students are biking in the relay and each student can bike $\frac{4}{10}$ of a mile, how far can they bike together? Will they make it to the beach?

3) Grant Elementary School is $\frac{13}{5}$ miles away from the beach. If 7 students are biking in the relay and each student can bike $\frac{2}{5}$ of a mile, how far can they bike together? Will they make it to the beach?

NAME: _____

Grade 4 4.NF.B.4c

Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

Problem 2: Bussing Home from Work

Pretend you are a bus driver for Los Angeles. You work the night shift where a lot of the passengers on the bus are coming home from work.

1) A ticket on the Expo Line costs $\frac{7}{4}$ dollars. If 13 people get on the bus, how many dollars will it cost all together?

2) The cost of a bus ticket for passengers that are 62 years or older is $\frac{3}{4}$ dollar. If 16 people are 62 years or older, how many dollars will it cost all together?

3) The cost of a Big Blue Bus ticket for passengers is $\frac{5}{4}$ dollars. If 11 people get on the bus, how many dollars will it cost all together?

4) The cost of a Rapid (Fast) Big Blue Bus ticket costs $\frac{10}{4}$ dollars. If 18 people get on the bus, how many dollars will it cost all together?

NAME: _____

Grade 4 4.NF.B.4c

Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

Problem 3: Biking the Distance

Lori's family is trying to bike every day for 1 week. Below is a chart of how far each family member will bike for each day of the week. Lori's family has 6 people in it, including her. Fill out the table below with the total distance that her family members will bike together when they each bike the given distance individually. Write their total distance as an improper fraction, and then as a mixed fraction.

Day	Distance in Miles (1 Family Member)	Total Distance in Miles (All 6 Family Members)
Monday	$\frac{3}{5}$	
Tuesday	$\frac{1}{6}$	
Wednesday	$\frac{4}{7}$	
Thursday	$\frac{2}{3}$	
Friday	$\frac{1}{2}$	

1) On which day of the week did Lori's family bike the farthest? _____

2) On which day of the week did Lori's family bike the least far? _____

3) On which day(s) did they bike a collective distance that was between 3 and 4 miles?

_____

4) On which day(s) did they bike a distance that did not have a remainder, or was a whole number?

_____

CHALLENGE How far did Lori's family bike in all?

_____

NAME: _____

Grade 4 4.NF.C.6

Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; located 0.62 on a number line diagram.

Problem 1: Who lives closest?

For the following problems, rewrite the sentence using decimals instead of fractions. Then, figure out who lives the closest to school.

1) Dean lives $\frac{3}{10}$ miles away from school.

_____.

2) Janet lives $\frac{5}{100}$ miles away from school.

_____.

3) Belois lives $\frac{49}{100}$ miles away from school.

_____.

4) Xena lives $\frac{9}{10}$ miles away from school.

_____.

5) Princess lives $\frac{22}{100}$ miles away from school.

_____.

6) Lexus lives $\frac{31}{100}$ miles away from school.

_____.

7) Kayla lives $\frac{89}{100}$ miles away from school.

_____.

Who lives the closest to school? _____

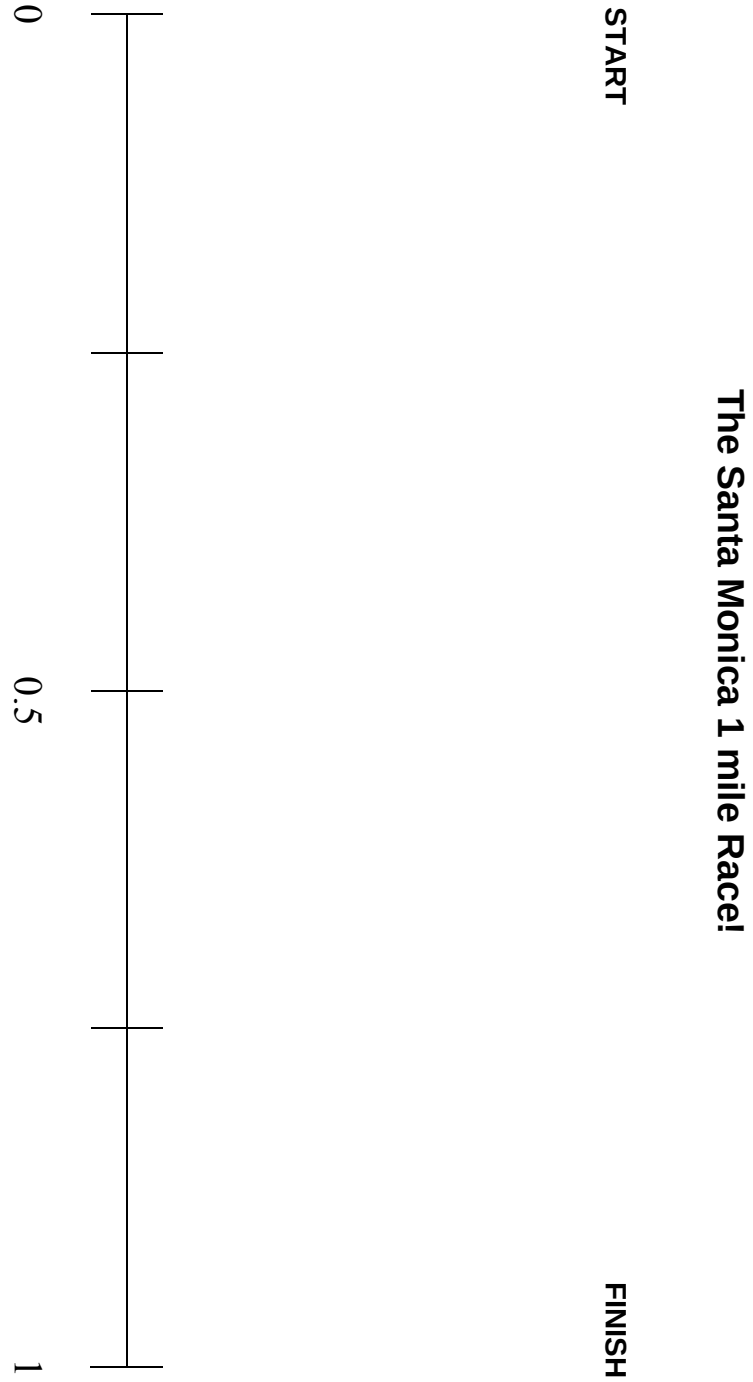
NAME: _____

Grade 4 4.NF.C.6

Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; located 0.62 on a number line diagram.

Problem 2: Who won the race? (In Decimals)

A Santa Monica 1-mile race is happening along Ocean Avenue in Santa Monica. Use the following race map below to place the runners in Appendix 4B in their correct running spots!



NAME: ____

Grade 4 4.NF.C.6

Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; located 0.62 on a number line diagram.

Problem 3: Who is right?

Keisha and Jamesha are having a discussion about decimals while they help their bus driver measure his gas. The bus driver knows he needs $\frac{58}{100}$ of a tank to finish the rest of the bus route, but the tank says he only has $\frac{6}{10}$ left.

Jamesha says that the bus driver has enough gas in his tank because $\frac{6}{10}$ is more than $\frac{58}{100}$ when you convert the fractions to decimals.

Keisha says that the bus driver does not have enough gas in his tank because 10 is less than 100, so $\frac{6}{10}$ is less than $\frac{58}{100}$.

- -

Using your knowledge of decimals and fractions, use equations and/or a drawing to figure out who is right. Does the bus driver have enough gas? How do you know?

WORK:

EXPLANATION:

____

____

____

____

NAME: _____

Grade 4 4.MD.A.1

Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in.

Problem 1: Which Bike Size?

4th Grade Students are preparing for a field trip where they will be biking to and from the Los Angeles County of Museum Art. To figure out which bike size to order for each student, they are using the chart below. For each student below, write in the box which size bike they should get and show your work.

☐ Tania is 4 feet and 3 inches tall.

☐ Romeo is 4 feet and 10 inches tall.

☐ Boris is 3 feet and 10 inches tall.

☐ Esmerelda is 4 feet and 1 inch tall.

☐ Francisco is 5 feet and 3 inches tall

Bike Sizes	
Size	Inch Range
XS	0-46
S	47-52
M	53-59
L	60+

NAME: _____

Grade 4 4.MD.A.1

Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in.

Problem 2: How many chapters?

Shayna likes to read on the bus and is wondering how many chapters she can read on the bus rides she'll be taking this week. Help her convert hours to minutes below so she can finish the book she is reading, which is 22 chapters long.

Shayna can read 1 chapter in 25 minutes.

1) On Monday, Shayna is going to take the #18 Bus for 2 hours and 10 minutes total.
   a) How many minutes will she be on the bus?

   b) How many chapters can she read on Monday?

2) On Tuesday, Shayna is going to take the #8 Bus for 1 hour and 45 minutes total.
   a) How many minutes will she be on the bus?

   b) How many chapters can she read on Tuesday?

3) On Wednesday, Shayna is going to take the #18 Bus for 3 hours and 5 minutes total.
   a) How many minutes will she be on the bus?

   b) How many chapters can she read on Wednesday?

4) On Thursday, Shayna is going to take the #18 Bus for 2 hours and 52 minutes total.
   a) How many minutes will she be on the bus?

   b) How many chapters can she read on Thursday?

Will Shayna finish her book by the end of the week? _____

NAME: _____

Grade 4 4.MD.A.1

Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in.

Problem 3: Filling the Gas Tank

A Big Blue Bus gas tank can hold 302 liters of gas. One bus driver, Mr. Latoyne, likes to be exact in his measurements when he fills the tank. Help him answer some questions below.

1) Mr. Latoyne sees that he needs to fill his gas tank with another 4 liters of fuel. If he adds 332 milliliters of fuel, how many more milliliters does he need until the gas tank is full?

2) Mr. Latoyne would like to fill his gas tank with 123 liters of fuel. If he already has 119 liters and 450 milliliters of fuel, how many more milliliters of fuel does he need until he reaches 123 liters?

3) Mr. Latoyne sees a number that reads 144 liters and 223 milliliters full. If a gas tank holds 302 liters of gas exactly, how many more milliliters of fuel does Mr. Latoyne need to fill up the tank to its **halfway** mark?

4) Mr. Latoyne sees his fuel tank level is 294 liters and 45 milliliters full. He knows he'll need an additional 955 milliliters and 8 liters to fill up the tank, since 45 + 955 = 1,000ml and 294 + 8 = 302 liters. Is he correct? Why or why not?

_____

_____

_____

_____

NAME: _____

Grade 4 4.MD.A.2

Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Problem 1: Buying Tickets

Charlene is buying some tickets for the Expo Line while she learns about getting change. Help her find the correct change by answering the questions below.

1) A 1-way ticket on the Expo line costs 1 dollar and 75 cents. Charlene buys 4 tickets so she and her sister can go to downtown L.A. and back. If she paid with a 10-dollar bill, how much change will she have?

2) Disabled persons pay 75 cents for a 1-way ticket on the Expo Line. Charlene is traveling with her disabled Aunt Malika to go to the museum. She buys 2 one-way tickets for herself, at the cost of 1 dollar and 75 each, and then 2 one-way tickets for her aunt, at the cost of 75 cents each. If she pays with a 20-dollar bill, how much change will she have?

3) People who are 62 years or older pay 35 cents during the off-peak hours, or hours where there are fewer riders on the train. Charlene is traveling with her two grandparents, who are both older than 62, and needs to get each person, including herself, 2 one-way tickets. She buys herself 2 one-way tickets for 1 dollar and 75 cents each, and her grandparents 4 one-way tickets for 35 cents each. If she pays with a 5-dollar bill, how much change will she have?

NAME: _____

Grade 4

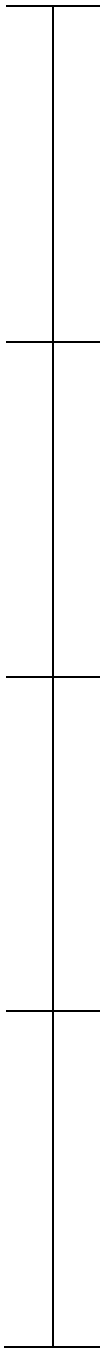
4.MD.A.2

Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Problem 2: How Long Does it Take?

Some students are trying to figure out how much time it takes to get from Franklin Elementary to different areas around Santa Monica by bicycle. Use Appendix 4C to place each location in the chart below based on how long it takes to get there. Then, answer the questions below.

*Measurement of Time (In **Hours**)*



Questions

1) Which location takes the longest amount of time to get to? _____

2) How much more time does it take to get to the Griffith Observatory from Franklin Elementary than to the Santa Monica Pier?

3) What is the difference in time between biking to the Los Angeles County Museum of Art and biking to the Mar Vista Recreation Center?

4) Which location would you have time to bike to and from after school? Why?

NAME: _____

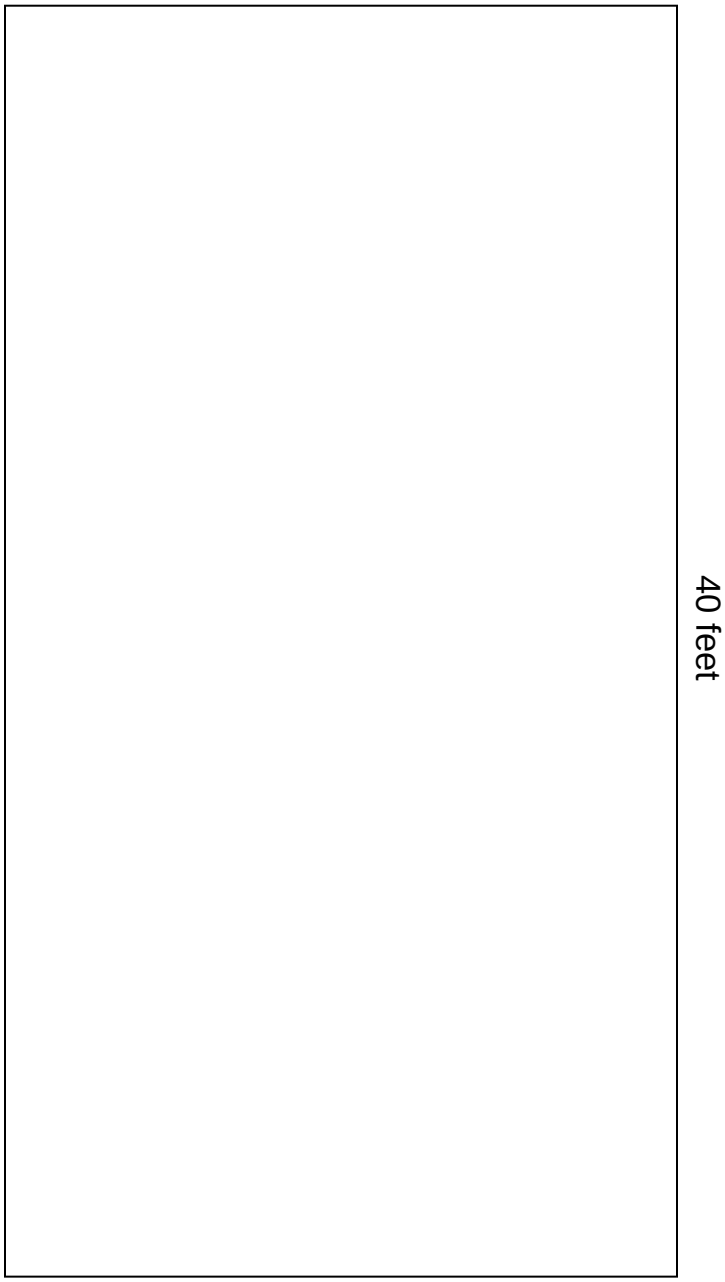
Grade 4 4.MD.A.3

Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the floor and the length, by viewing the area formula as a multiplication equation with an unknown factor.

Problem 1: Area of the Big Blue Bus

Find the area of The Big Blue Bus by looking at the diagram below. Then, draw your own bus on the right hand side of the page with dimensions that create a larger area of a bus.

Big Blue Bus



My Bus

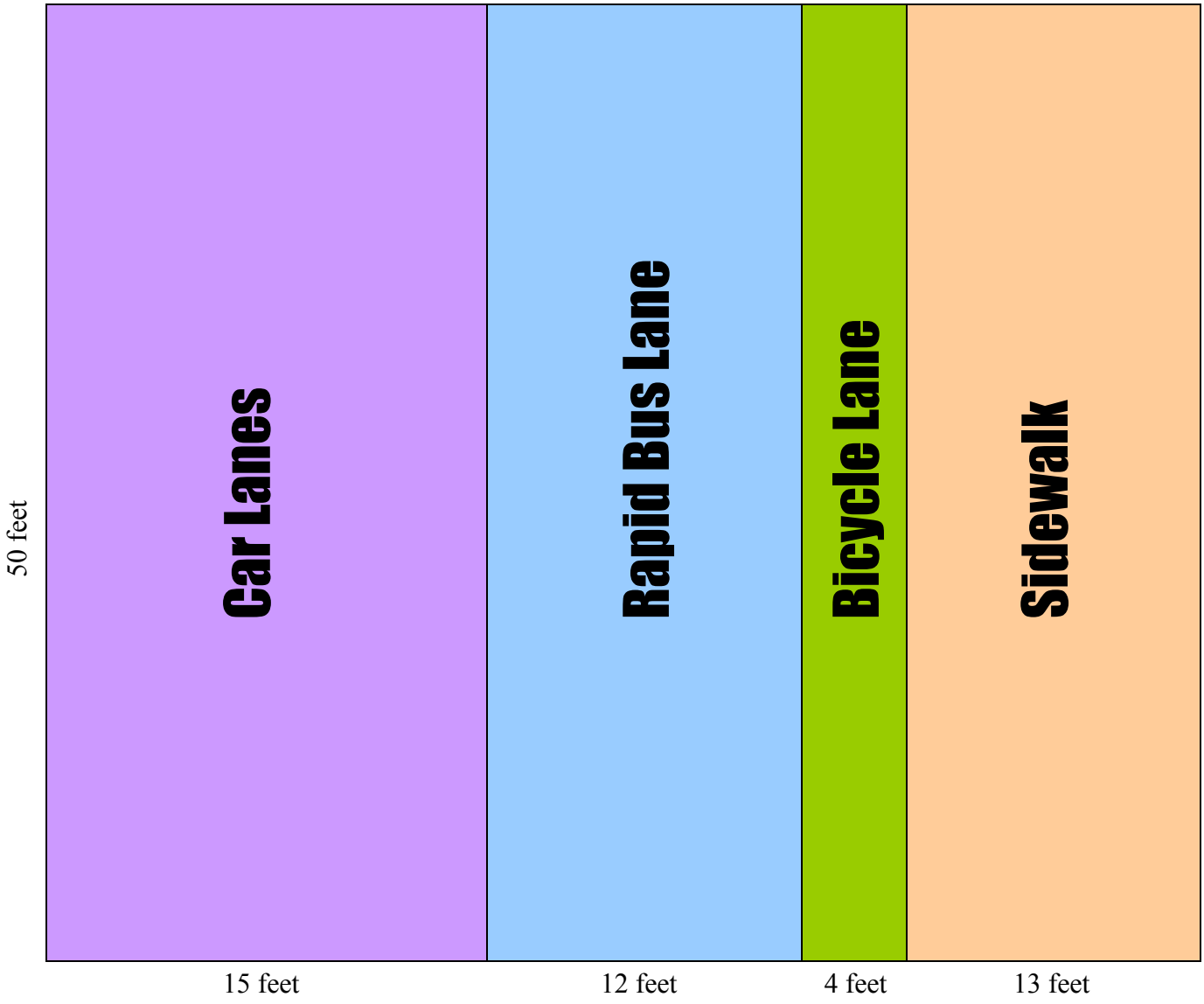
NAME: _____

Grade 4 4.MD.A.3

Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the floor and the length, by viewing the area formula as a multiplication equation with an unknown factor.

Problem 2: Areas in the Street Block

Look at the street below and then answer the questions about the area that each space takes up on the street.



1) What is the area of…
   a. The Car Lanes? _____
   b. The Rapid Bus Lane? _____
   c. The Bicycle Lane? _____
   d. The Sidewalk? _____
2) What is the perimeter of the entire street block? _____

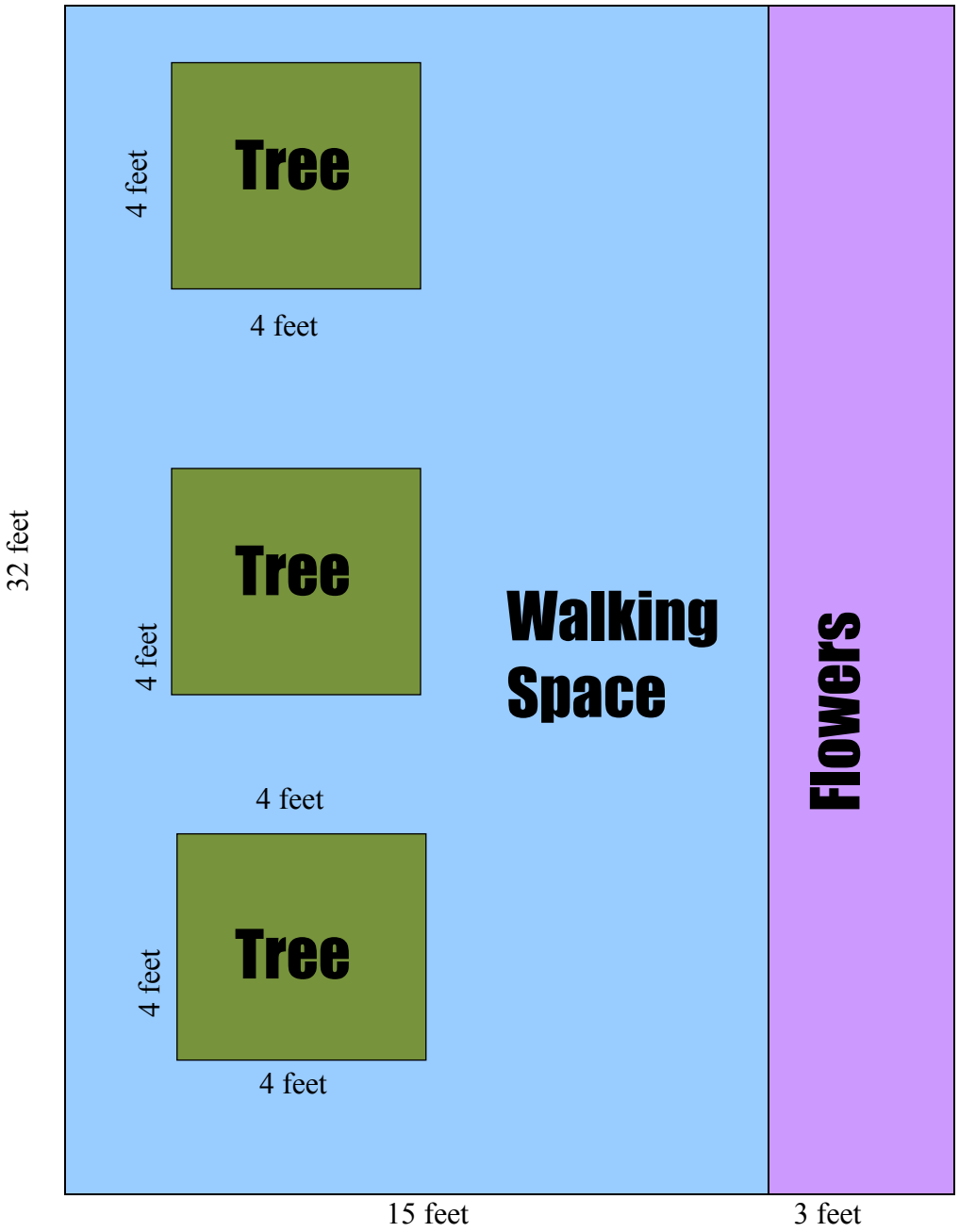
NAME: _____

Grade 4 4.MD.A.3

Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the floor and the length, by viewing the area formula as a multiplication equation with an unknown factor.

Problem 3: Areas on the Sidewalk

Look at the sidewalk below and then answer the questions about the area that each space takes up on the sidewalk.



1) What is the area of each tree individually?

2) What is the area of all 3 trees together?

3) What is the area of the flowers?

4) What is the area of the walking space? (*Consider the space of the trees)*

5) What is the perimeter of the entire sidewalk?

NAME: _____

Grade 4 4.G.A.1

Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

Problem 1: Designing One Section of My City

Use your knowledge of geometry and your vision for the best city to draw a map of one section of your city below. Include all of the categories below in your city map by checking off each item. Will your city area have parks? Gyms? Candy? What are the things you enjoy that you'd like to be in your city section? Will your city area have streets? What are the street names?

☐ 4 acute angles	☐ 5 sets of parallel lines	☐ 2 obtuse angles
☐ 10 points	☐ 3 sets of perpendicular lines	☐ 5 right angles

NAME: _____

Grade 4 4.G.A.1

Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

Problem 2: Designing My Own Park

Use your knowledge of geometry and your vision for the best park to draw a map of your park below. Include all of the categories below in your park map by checking off each item. Will your park have benches? Swings? Soccer fields or basketball courts? What are the things you enjoy that you'd like to be in your park? Will your park have paths? What are the names of the paths?

☐ 7 acute angles	☐ 3 sets of parallel lines	☐ 4 obtuse angles
☐ 6 points	☐ 5 sets of perpendicular lines	☐ 2 right angles

NAME: _____

Grade 4 4.G.A.1

Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

Problem 3: How many do you see?

Use the map of Santa Monica below to see how many of each type of geometrical category you can find below. Use a different color pencil or marker to indicate each different category.

☐ Acute angles	☐ Parallel Lines	☐ Obtuse angles
☐ Points	☐ Perpendicular Lines	☐ Right angles

APPENDIX 4A – Runners

4.NF.A.2

Luiz

$\frac{}{8}$

Isabella

$\frac{}{12}$

Marc

$\frac{}{12}$

Antonio

$\frac{}{8}$

Ava

$\frac{}{4}$

APPENDIX 4B – Runners (Decimals)

4.NF.C.6

Luiz

0.74

Isabella

0.08

Marc

0.53

Antonio

0.98

Ava

0.30

APPENDIX 4C – Runners (Decimals)

4.MD.A.2

Santa Monica Pier

13 minutes and 360 seconds

19 minutes

Mar Vista Recreation Center

½ hour and 3 minutes

33 minutes

Getty View Park

½ hour and 12 minutes and 660 seconds

53 minutes

Griffith Observatory

71 minutes and ½ hour and 240 seconds

1 hr 45

Los Angeles County Museum Of Art

1 hour and 12 minutes and 120 seconds

1 hr 14 min

GoSaMo

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