RightStart™ Mathematics

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with Tracy Mittleider, MSEd

SECOND GRADE LESSONS

Second Edition

Activities for Learning, Inc.

A special thank you to Kathleen Cotter Clayton for all her work on the preparation of this manual.

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RightStart™ Mathematics Objectives for Second Grade

Name _____ Year _____

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Numeration				
Can skip count by 2s, by 5s, by 10s, and by 100s to 1000				
Can compare numbers up to 1000 using <, =, and >				
Can read and construct Roman numerals to 1000				
Understands place value and can write numbers to 9999 with numerals, words, and expanded form				
Addition				
Knows addition facts				
Can add 2-digit numbers mentally				
Can add 4-digit numbers				
Subtraction				
Understands subtraction	N/A			
Knows subtraction facts	N/A			
Can subtract 2-digit numbers mentally	N/A			
Can subtract 4-digit numbers	N/A			
Multiplication				
Understands multiplication as arrays	N/A			
Knows multiplication facts to 5 × 5	N/A	N/A		
Problem Solving				
Solves problems in more than one way				
Persists in solving problems				
Can solve addition and subtraction problems	N/A			
Can solve compare problems	N/A	N/A		
Time and Money				
Can tell time to the minute	N/A	N/A		
Can find the value of up to five coins and make change	N/A	N/A	N/A	
Measurement				
Can measure in inches, feet, centimeters, and meters	N/A	N/A	N/A	
Can find perimeter and area in customary and metric	N/A	N/A	N/A	
Can read a ruler to halves	N/A	N/A	N/A	
Geometry				
Can identify basic 2D and 3D shapes	N/A	N/A	N/A	
Can determine number of angles, sides, and faces in shapes	N/A	N/A		
Fractions				
Understands fractions as a type of division	N/A	N/A	N/A	
Knows unit fractions up to 1/10	N/A	N/A	N/A	
Data				
Gathers and shows data with line plots and intreprets results	N/A	N/A	N/A	
Calculator				
Can add, subtract, and multiply whole numbers	N/A	N/A	N/A	
Can solve two-step problems	N/A	N/A	N/A	

Second Grade: Table of Contents

Second Grade: Table of Contents

Second Grade: Table of Contents

Second Grade: Table of Contents

Lesson 26: Comparing Numbers

OBJECTIVES:

1. To compare numbers using =, <, and > symbols

MATERIALS:

1. Dry erase boards
2. Worksheet 9, Comparing Numbers

ACTIVITIES FOR TEACHING:

Warm-up. Ask: What is 34 plus 10? [44] What is 36 plus 10? [46] What is 72 plus 10? [82] What is 89 plus 10? [99]

Write for all to see 1000 + 800 + 30 + 1. Ask the children to write their answer on their dry erase board. [1831] Repeat for 8000 + 100 + 40 + 5. [8145]

Ask: Which is more, ten hundreds or one thousand? [same] Which is more, one hundred or one thousand? [one thousand]

Comparing numbers. Write for the children to see:

9 ___ 6 + 3

Ask: Is 9 equal to 6 plus 3? [yes] What do we write on the line? [an equal sign] Tell a child to write an equal sign.

Below the first equation, write:

10 ___ 6 + 3

Ask: Is 10 equal to 6 plus 3? [no] Is 10 greater than or less than 6 + 3? [greater]

The > symbol. Show them how to write the greater than symbol by starting at the top of the larger number, draw a line to the middle of the smaller number, and finish by drawing to the bottom of the larger number. See below.

10 > 6 + 3 10 > 6 + 3

The < symbol. Tell the children suppose the equation is changed and written as:

6 + 3 ___ 10

Write the equation below the first two equations. Ask: What symbol do we need now? [less than] Tell them we can write it the same way by starting at the larger number. See below.

6 + 3 < 10 6 + 3 < 10

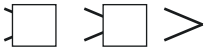
EXPLANATIONS:

The > and < symbols were taught in first grade by drawing two dots at the greater number and one dot at the lesser number, and then connecting the dots.

10 > 6 + 3

ACTIVITIES FOR TEACHING:

Reading the > and < symbols. Show the children how to tell the difference when reading the greater than and less than symbols. Write >, cover it, and slowly uncover it from left to right as shown below on the left. Ask: How many points do you see? [2] Say: Two points mean greater than. Repeat for the < symbol, uncovering it from left to right as shown below on the right. Ask: How many points do you see? [1] Say: One point means less than.



Reading the > symbol.

Reading the < symbol.

Write the three equations and ask the children to read them aloud.

9 = 6 + 3 [Nine equals six plus three.]
10 > 6 + 3 [Ten is greater than six plus three.]
6 + 3 < 10 [Six plus three is less than ten.]

More comparisons. Write the following:

48 ___ 40 + 7

Ask: Which symbol do we need? [>] Ask a child to explain their answer. [48 is 40 plus 8, which is more than 40 plus 7.]

Write another example:

201 + 10 ___ 211

Ask: Which symbol do we need? [=] Ask a child to explain their answer. [1 plus 10 = 11; 200 plus 11 does equal 211.]

Write a third example:

863 + 1 ___ 861 + 10

Ask: Which symbol do we need? [<] Ask a child to explain their answer. [863 plus 1 equals 864; 861 plus 10 equals 871, which is more than 864.]

Worksheet 9. Give the children the worksheets and have them complete the equations. The solutions are below.

38 + 6 **>** 30 + 6	99 + 64 **<** 100 + 64
506 **<** 560	211 **>** 200 + 10
99 + 10 **=** 109	99 + 100 **>** 190
250 + 10 **=** 251 + 9	89 + 63 **<** 100 + 73
700 + 80 **>** 708	38 **=** 30 + 8
1000 **=** 300 + 700	461 **>** 400 + 60

611 + 100 **>** 611 + 10
95 + 10 + 5 **=** 110
455 + 10 + 1 **>** 100 + 365

In conclusion. Ask: What is the mathematical word for more? [greater] What is the opposite of greater? [less] Name all numbers greater than 5 and less than 9. [6, 7, and 8]

EXPLANATIONS:

2.NBT.4

Name: _____

Date: _____

Write >, <, or = on the lines to make the equations true.

38 + 6 _____ 30 + 6

99 + 64 _____ 100 + 64

506 _____ 560

211 _____ 200 + 10

99 + 10 _____ 109

99 + 100 _____ 190

250 + 10 _____ 251 + 9

89 + 63 _____ 100 + 73

700 + 80 _____ 708

38 _____ 30 + 8

1000 _____ 300 + 700

461 _____ 400 + 60

Write >, <, or = and explain your answer.

611 + 100 _____ 611 + 10

_____

_____

95 + 10 + 5 _____ 110

_____

_____

455 + 10 + 1 _____ 100 + 365

_____

_____

Lesson 38: Area and Perimeter

OBJECTIVES:

1. To introduce the term *perimeter*
2. To learn about square inches
3. To learn about square cm

MATERIALS:

1. AL Abacuses
2. Tiles
3. Centimeter cubes
4. Worksheet 17, Area and Perimeter

ACTIVITIES FOR TEACHING:

Warm-up. Ask: What is area? [the space that something takes up]

Ask the children to say the multiples of 4 as a child moves over groups of 4s on the abacus to 40. [4, 8, 12, . . . , 40] Ask the children to say the multiples of 3 to 30. [3, 6, 9, . . . , 30]

Play the Comes Before game for counting by 2s. Ask: What comes before 8, [6] 12, [10] 40, [38] 20, [18] and 38? [36] Repeat using 5s.

Ask the children to say the months of the year. Then play the Comes After game. Ask: What month comes after March? [April] After August? [September] After October? [November]

Inches. Distribute the tiles and centimeter cubes to the children. Tell them to look at one tile. See the left figure below. Remind them that the distance along one edge is 1 inch. Ask: What is the distance around the whole square? [4 inches]

1 tile **2 tiles** **3 by 2 array**

Tell them the math word for distance around a shape is *perimeter*. Ask: What is the perimeter of one tile? [4 inches] Show them how to write it:

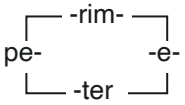
4 inches

Tell them to place another tile next to the first tile as shown above in the second figure. Ask: What is the perimeter now? [6 inches] Ask a child to write it for all to see.

6 inches

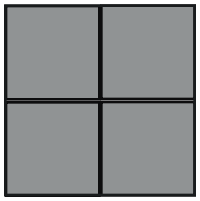
EXPLANATIONS:

To remember the basic meaning of the word *perimeter*, some children might find it helpful to point to each side of a rectangle while saying "pe-rim-e-ter" as shown below:

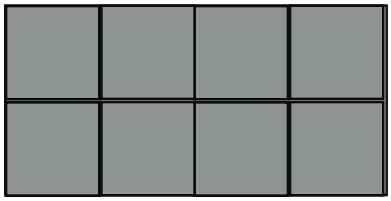


ACTIVITIES FOR TEACHING:

Worksheet 17, problems 1 and 2. Distribute the worksheets. Tell the children to solve the first two problems. Remind them to write the word inches. See the figures below.



Rectangle F.



Rectangle G.

1. **2 + 2 + 2 + 2 = 8 inches**
2. **4 + 2 + 4 + 2 = 12 inches**

Ask for explanations on how to solve the problems.

Square inches. Tell them to look again at one tile. Say: We can measure area with these tiles. The area of one tile is 1 square inch. Ask: What is the area of 2 tiles? [2 square inches]

Problems 3 and 4. Tell the children to solve problems 3 and 4. Remind them to write the words *square inches*. See the same figures above.

Ask for explanations. The areas are:

3. **2 by 2 = 4 square inches**
4. **4 by 2 = 8 square inches**

Ask: Do you think rectangle G is twice as large as rectangle F? [Yes, rectangle F is 4 square inches and rectangle G is 8 square inches, which is twice as much.]

Ask: Is the perimeter twice as much? [no] Ask for explanations.

Square centimeters. Tell them to look at one centimeter cube. Say: We measured area with these cubes in the last lesson. Ask: What do you think we call the area of one cube? [square centimeter]

Problems 5–8. Ask the children to finish the worksheet. Tell them that they do not have to fill in the whole rectangles with the cubes if they can figure out the answers without all of them. The solutions are shown below.

5. **5 + 5 + 5 + 5 = 20 cm**
6. **10 + 5 + 10 + 5 = 30 cm**
7. **5 by 5 = 25 sq cm**
8. **10 by 5 = 50 sq cm**

In conclusion. Ask: What is perimeter? [the distance around] What is area? [the amount of space something takes up]

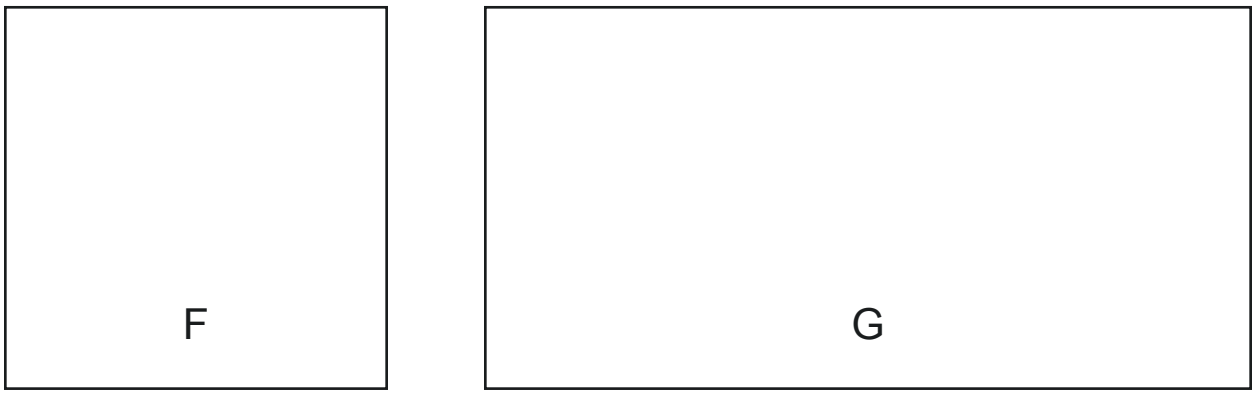
EXPLANATIONS:

The term *sq cm* is used only temporarily. The standard cm^2 will be introduced later.

2.MD.4, 2.OA.4

Name: _____

Date: _____

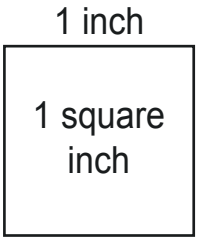


1. Find the perimeter of rectangle F with tiles.

_____

2. Find the perimeter of rectangle G with tiles.

_____



3. Find the area of rectangle F with tiles.

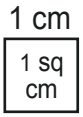
_____

4. Find the area of rectangle G with tiles.

_____

5. Find the perimeter of rectangle F with centimeter cubes.

_____



6. Find the perimeter of rectangle G with centimeter cubes.

_____

7. Find the area of rectangle F with centimeter cubes.

_____

8. Find the area of rectangle G with centimeter cubes.

_____

Lesson 86: Comparison Problems with More

OBJECTIVES:

1. To solve word problems that compare using the word more

MATERIALS:

1. Base-10 picture cards
2. Place-value cards
3. Worksheet 54, Comparison Problems with More
4. AL Abacuses

ACTIVITIES FOR TEACHING:

Warm-up. Show a 10 from the base-10 cards and say: Suppose I had 80 of these cards. Ask: How much would it show? [800] Have a child explain it. [Each group of ten cards is 100, so 8 groups of 10 would be 800.] Show the 800 place-value card and ask: Is it the same? [yes] Why? [it shows 80-ten or 8 hundred]

Ask: Which is more, 2 thousand or 6 hundred? [2 thousand] Which is greater, 1 thousand or 10 hundred? [same] Which is less, 1 hundred or 11? [11]

Ask: How much is 1000 plus 5000? [6000] How much is 6000 plus 2000? [8000] How much is 2000 plus 5000? [7000]

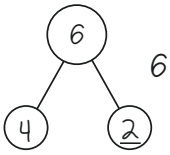
Worksheet 54. Distribute the worksheets and abacuses. Explain to the children that we have done story problems where things were put together or partitioned. The problems for today and in the next lesson are compare problems. This means we will compare two things and think about which is longer, shorter, taller, more, less, fewer, and so on.

Problem 1. Tell the children to read the first problem.

> Mr. Black is 6 feet tall. His son is 4 feet tall. How much taller is the father?

Tell them to show it on their abacuses. See the left figure below. Ask: What is the larger amount? [6] Tell the children to write the larger amount in the whole-circle. Ask: What is the smaller amount being compared? [4] Tell them to write it in the left part-circle. Ask: What is the difference? [2] Tell them to write the difference in the right part-circle. See below. Tell the children to write the equation. [6 – 4 = <u>2 feet</u>]

Showing the difference of 2.



6 – 4 = <u>2 feet</u>

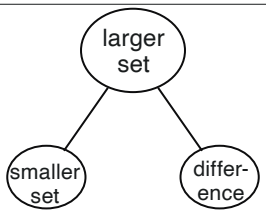
EXPLANATIONS:

This lesson is a mixture of compare problems to discourage the children from memorizing a particular procedure.

The answer is underlined so that the missing portion of the equation is quickly identified.

ACTIVITIES FOR TEACHING:

Model checking. Draw a part-whole circle set as shown on the right. Tell them it is a math model for solving compare problems.



Part-whole circle set model for compare problems.

Problem 2. Ask the children to read and solve problem 2.

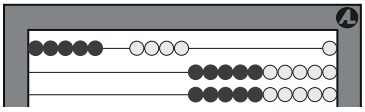
> Mrs. Jackson is 170 cm tall. Her daughter is 119 cm tall. How much taller is the mother? [170 – 119 = 51 cm]

Then ask them to compare results with their partners.

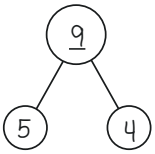
Problem 3. Tell the children to read problem 3.

> Jasmine has five pillows. Oliver has four more pillows than Jasmine. How many pillows does Oliver have?

Ask: Who has more pillows, Jasmine or Oliver? [Oliver] How do you know? [Oliver has four more than Jasmine.] Tell them to show it on the abacus. Then ask: Are the five pillows the larger or smaller set? [smaller] Ask: What is the four? [difference] Tell them to solve the problem on their worksheets. See below. Discuss their solutions.



5 pillows and 4 more for Oliver.

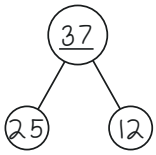


5 + 4 = 9

Ask: Does the answer make sense? [Jasmine has 5. Oliver has 9, which is 4 more than Jasmine.]

Problem 4. Tell them to solve problem 4.

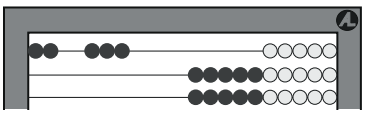
> Logan has 12 more cherries than Matt. Matt has 25 cherries. How many cherries does Logan have? [25 + 12 = 37]



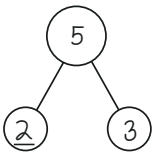
Problem 5. Tell the children to read problem 5.

> Shauna has 3 more flowers than Jacob. Shauna has 5 flowers. How many flowers does Jacob have?

Ask: Are the three flowers a difference or the number of flowers somebody has? [difference] Ask them to solve it on their abacuses and on their worksheets. See below.



5 flowers; Jacob has 3 less.



5 – 3 = 2

Problem 6. The equation for this problem is 20 – 11 = 9.

In conclusion. Ask: Is the difference a part or a whole? [part]

EXPLANATIONS:

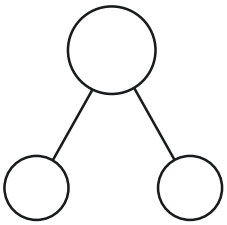
2.NBT.1, 2.NBT.5

Name: _____

Date: _____

Write the equations and solve the problems.

1. Mr. Black is 6 feet tall. His son is 4 feet tall. How much taller is the father?



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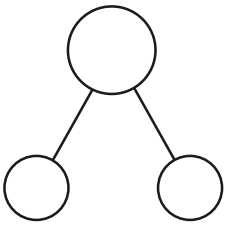
2. Mrs. Jackson is 170 cm tall. Her daughter is 119 cm tall. How much taller is the mother?



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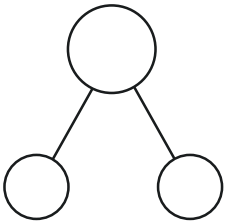
3. Jasmine has five pillows. Oliver has four more pillows than Jasmine. How many pillows does Oliver have?



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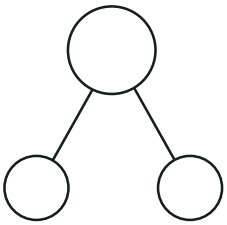
4. Logan has 12 more cherries than Matt. Matt has 25 cherries. How many cherries does Logan have?



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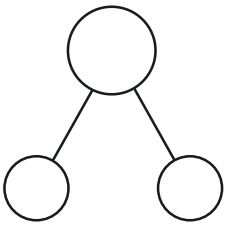
5. Shauna has 3 more flowers than Jacob. Shauna has 5 flowers. How many flowers does Jacob have?



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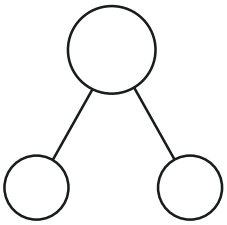
6. James has 20 grapes. James has 11 more grapes than Lily. How many grapes does Lily have?



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Lesson 126: Two Fractions Equaling One

OBJECTIVES:

1. To find pairs of fractions equaling one

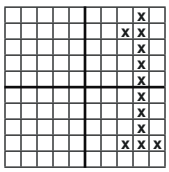
MATERIALS:

1. Warm-up Practice 7
2. Fraction pieces
3. Fraction cards, 1 set per pair of children*
4. *Math Card Games* book, F3
5. Worksheet 86, Non-Unit Fractions

ACTIVITIES FOR TEACHING:

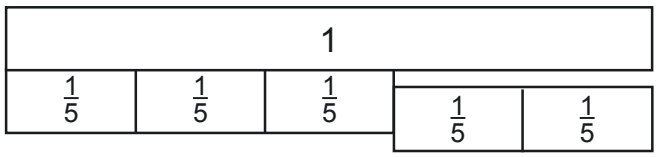
Warm-up. Ask the children to do section 3 on Warm-up Practice 7. The questions and hundred chart are shown below.

102 – 14 = **88**	$\frac{1}{2}$ of 18 = **9**
$1.00 – 41¢ = **59¢**	8 dimes + 2 nickels = **90¢**
31 less than 50 = **19**	Half hour – 1 minute = **29**
Eighty-two – three = **79**	Nine plus nine is **18**
10 × 5 + 19 = **69**	150 – 100 – 1 = **49**
40 – 2 halves = **39**	Ten tens minus eleven = **89**



Fractions equaling 1. Give the children the fraction pieces and ask them to assemble the charts. When the fraction charts are complete, ask: How many thirds are needed to equal one? [three] If you have two thirds, how much more do you need to equal one? [one third]

Next ask them to separate the one and to lay the fraction pieces for three fifths under the one. Ask: How many more fifths are needed to make one? [two fifths] See the figure below.



Three fifths and two fifths make one.

Repeat for other fractions, such as one sixth, [five sixths] seven tenths, [three tenths] and one half. [one half]

Write:

$$\frac{3}{8}$$

Ask what is needed to make one. [five eighths] Repeat for one tenth [nine tenths] and two thirds. [one third]

EXPLANATIONS:

*Remove the percentage cards before giving them to the children.

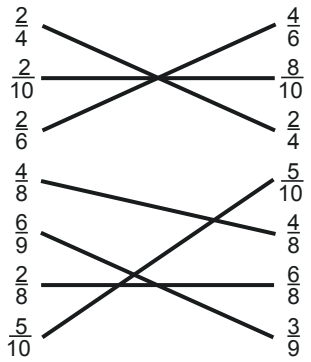
To focus the students' attention on fractions, not arithmetic, avoid teaching the algorithm that the sum of the two numerators equals the denominator.

ACTIVITIES FOR TEACHING:

Finding pairs to equal one. Distribute the fraction cards to pairs of children. Tell them to spread their cards out face up. Next they are to pick up a card and find the match so the two cards equals one. Tell them to find ten different pairs.

Concentrating on One game. Have the children play the Concentrating on One game, found in the *Math Card Games* book, F3, with the pairs of cards that they found.

Worksheet 86. Distribute the worksheets from a prior lesson and tell the children to complete the worksheet. The solutions are shown below.



In conclusion. Ask: Why does it take 10 tenths to make 1, but only 3 thirds to make 1? [tenths are smaller] How many twelfths do you need to make a whole? [twelve]

EXPLANATIONS:

By finding these matches, the children are sorting the cards they will need to play the Concentrating on One game.

If the children have duplicate pairs, they can still play the game, although it may take a bit longer.

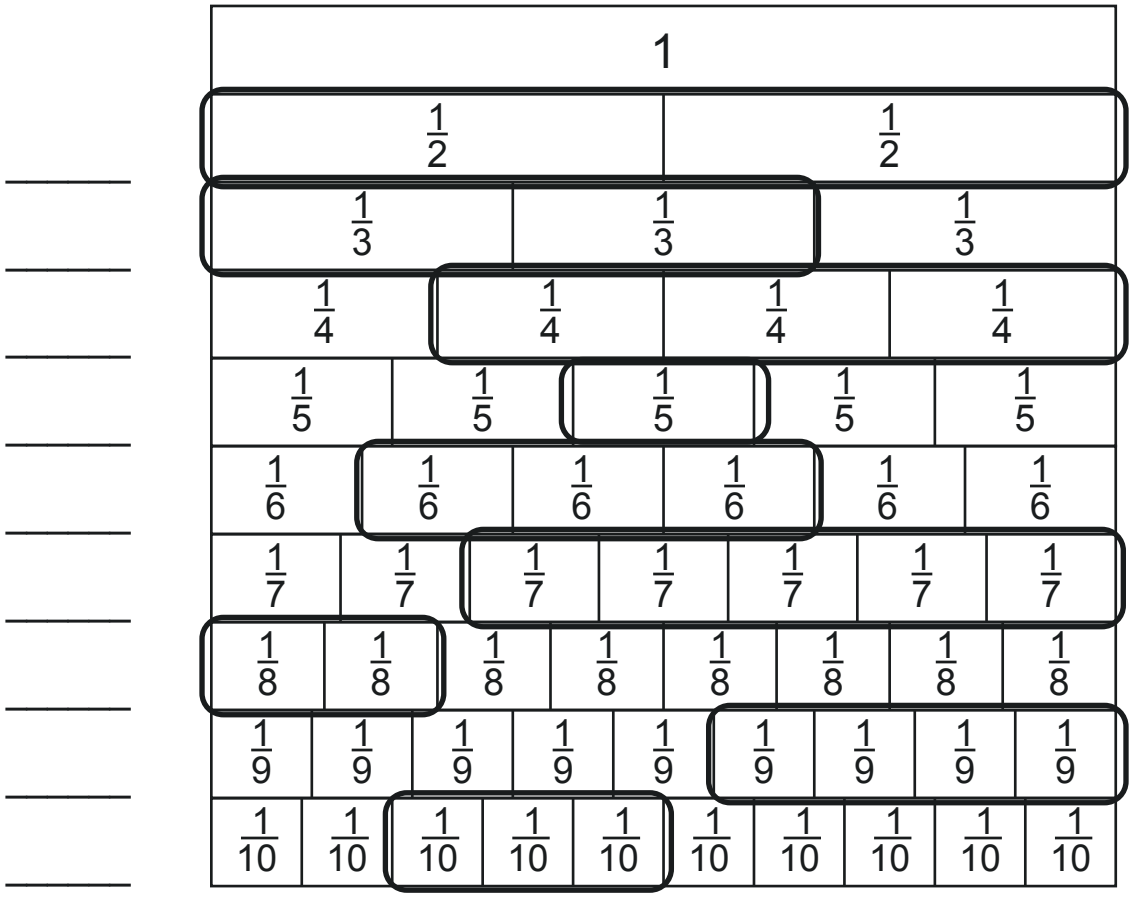
The pairs on the worksheet are fractions not found on the cards, which have only simplified fractions.

2.G.3

Name: _____

Date: _____

Write the fractions that are circled in each row.



Match the fractions that will be equal to one.

$\frac{2}{4}$	$\frac{4}{6}$
$\frac{2}{10}$	$\frac{8}{10}$
$\frac{2}{6}$	$\frac{2}{4}$
$\frac{4}{8}$	$\frac{5}{10}$
$\frac{6}{9}$	$\frac{4}{8}$
$\frac{2}{8}$	$\frac{6}{8}$
$\frac{5}{10}$	$\frac{3}{9}$