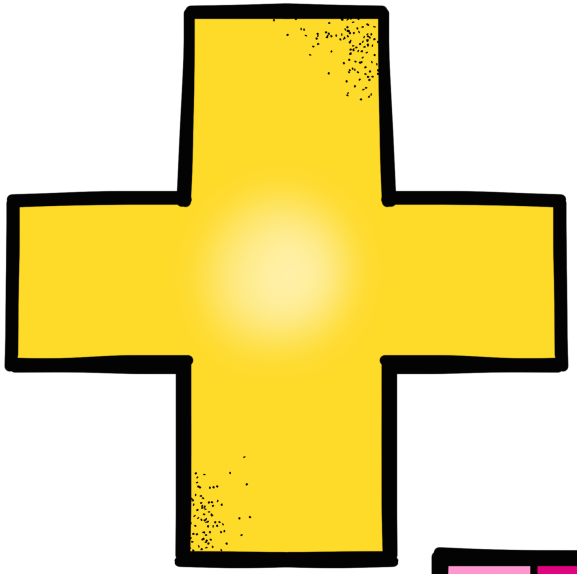


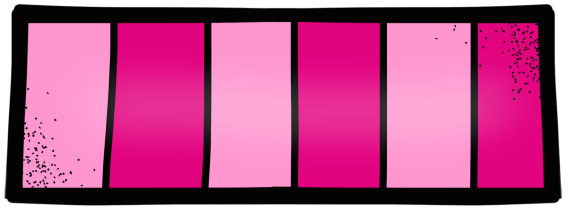
EDM Version 4

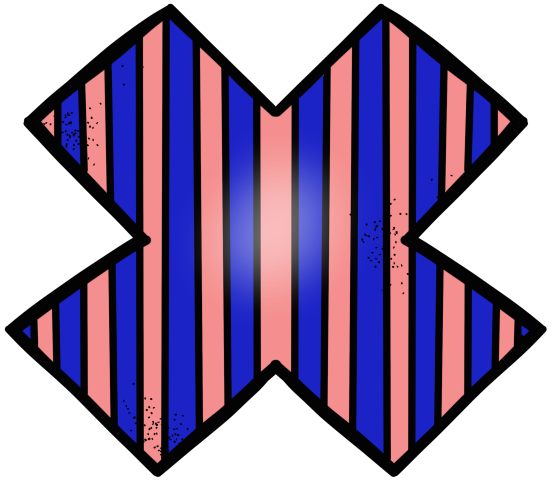
Grade 3

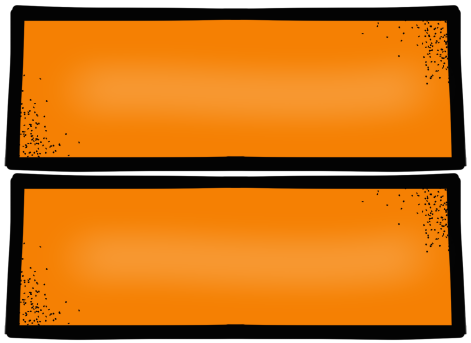
Everyday Math:

Unit 3

Operations







Study Guide

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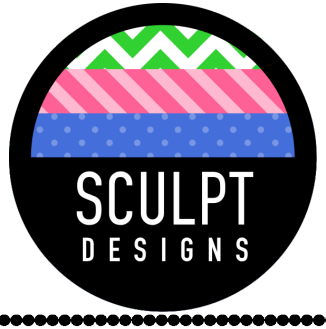

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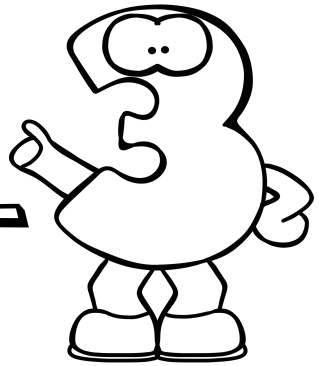
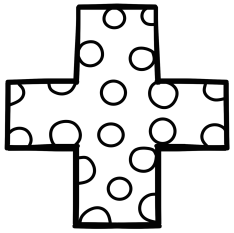
Grade 3

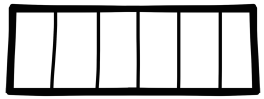
Everyday Math: Unit

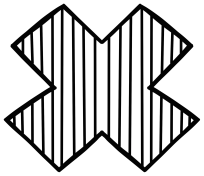


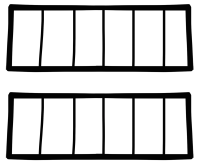
Operations

Study Guide







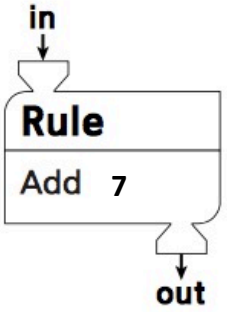


Unit Vocabulary:

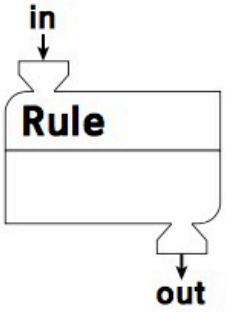
adding a group, area, close-but-easier numbers, column addition, counting up, equivalent, estimate, expand-and-trade subtraction, expanded form, expression, factors, facts table, function machine, helper fact, input, key, Multiplication/Division Facts Table, multiplication squares, name-collection box, open number line, output, partial-sums addition, partition, picture graph, precisely, reasonable, rubric, rule, scaled bar graph, scaled picture graph, square product, square units, subtracting a group, tile, turn-around rule, "What's My Rule?"

Lesson 3.1:

How do you find missing numbers and rules in "What's My Rule?" tables?



in	out
7	
	7
2	
16	
	35



in	out
10	2
12	4
20	
	52
	37

Lesson 3.2:

How do you use mental math to make reasonable estimates?

Use rounding to estimate and then solve. Then, use your estimates to check if your answers make sense. Show your work.

1. Estimate: _____

$$\begin{array}{r} 174 \\ +\ 37 \\ \hline \end{array}$$

Does your answer make sense? Explain below.

2. Estimate: _____

$$\begin{array}{r} 282 \\ -\ 75 \\ \hline \end{array}$$

Does your answer make sense? Explain below.

Lesson 3.3:

How do you use the partial-sums addition algorithm to add 2-digit and 3-digit numbers?

Solve both addition problems using partial sums. Use your estimates to make sure your answers make sense.

1. Estimate: _____

$$\begin{array}{r} 237 \\ +\ 91 \\ \hline \end{array}$$

2. Estimate: _____

$$\begin{array}{r} 277 \\ +\ 304 \\ \hline \end{array}$$

Lesson 3.4:

How do you use the column addition algorithm to find sums?

Solve using column addition. Use your estimate to make sure your answer makes sense.

Estimate: _____

98 + 36 = _____

Lesson 3.5:

How do you solve subtraction problems using the counting-up strategy?

Solve the problem. Use an open number line or a number sentence to show your work. Use your estimate to check your work.

742 – 537 = ?

Estimate: _____

742- 537 = _____

Lesson 3.6:

How do you use the expand-and-trade subtraction algorithm to subtract 2- and 3- digit numbers?

The expand-and-trade subtraction algorithm was used to find the exact answer; however, the exact answer doesn't match up with the estimate! Explain why.

116 - 37 = ?

Estimate: 120 – 40 = 80

$$\begin{array}{r} 116 \\ -\ \ 37 \\ \hline \end{array} \qquad \begin{array}{rrrr} & 100 & & \\ & \cancel{0} & & 16 \\ 100 & +\cancel{10} & + & \cancel{6} \\ & 30 & + & 7 \\ \hline 100 & +70 & + & 9 \end{array} = 179$$

Explain: _____

_____

_____

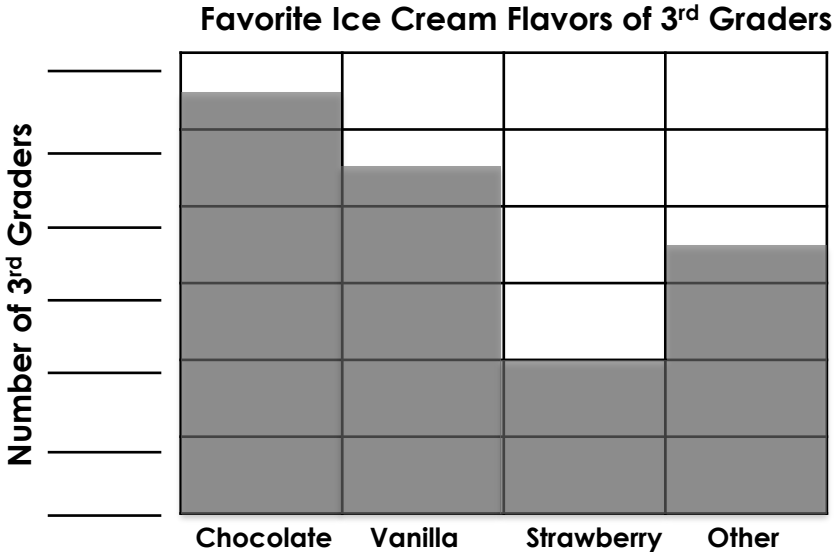
Lesson 3.7:

Exploration A: How do you create a scaled bar graph?

Favorite Ice Cream Flavors of 3rd Graders

Chocolate	Vanilla	Strawberry	Other
55	**45**	**20**	**35**

Use the chart to fill in the scale of the bar graph.



Exploration B: How do you measure area?

Fill in the blanks:

The amount of surface inside a 2-dimensional shape is called the _____.

The number of squares that cover the surface is a measurement of the area in

_____ _____

Exploration C: How do you partition rectangles into equal parts to find the area?

Partition the rectangle into 2 rows with 3 same sized squares in each row.

Lesson 3.8:

How do you create a scaled picture graph?

Use the tally chart and the key to complete the picture graph.

Ways 3rd Graders Get to School

Ways to School	Number of Children
Car	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸
Bus	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸
Walk	𝍸 𝍸 𝍸

Ways 3rd Graders Get to School

Car ☐ ☐ ☐ ☐ ☐ ☐

Bus

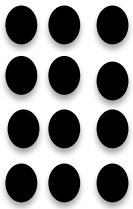
Walk

Key ☐ **= 5 children**

Lesson 3.9:

How do you find the products of multiplication squares?

Write a number sentence to match the array.



Number sentence: _____

Does the problem show a multiplication square? _____ Why or why not? _____

_____

Lesson 3.10:

How does knowing one multiplication fact help with knowing its turn-around fact?

1. Use the turn-around rule to solve and draw arrays for each fact.

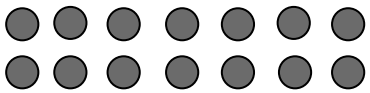
4 X 7 = _____ 7 X 4 = _____ _____ True or False?

The number of dots are the same in each array. So, the array just turned but the product is the same.

Lesson 3.11:

How does the adding-a-group strategy help to solve unknown multiplication facts?

Fred does not know the answer to 3 X 7.
He does know that 2 X 7 = 14, so he uses it as a helper fact.
Fred starts by drawing this array for 2 X 7 = 14.



Show on the array **and** explain how Fred can use the array to help him figure out 3 X 7.

_____

_____

_____

Lesson 3.12:

How do you use the subtracting-a-group strategy to help solve unknown multiplication facts?

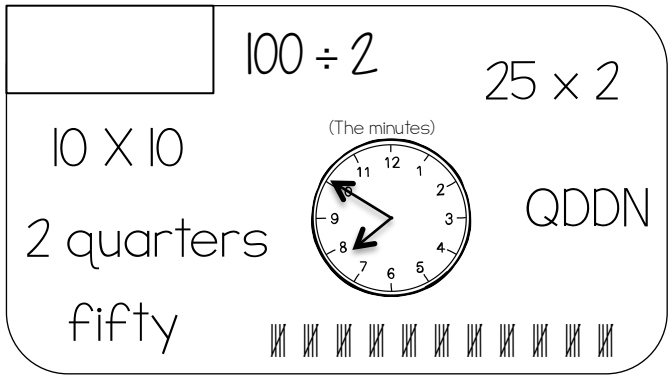
Tina uses the subtracting-a-group strategy with 10 X 4 to help her figure out 8 X 4. Use numbers, pictures, or words to explain what Tina did.

8 X 4 = _____

Lesson 3.13: (CC.2.1.3.B.1, CC.2.2.3.A.3)

How do you generate equivalent names for numbers using all four operations?

Two of the names do not belong in this box. Cross them out. Then write the name of the box on the tag.



ANSWER KEY

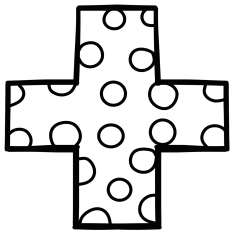
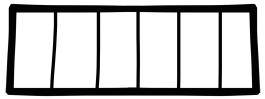
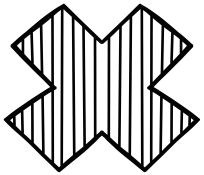
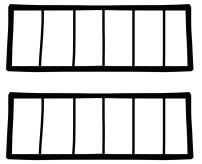
Name: Answer Key Test Date: ___ - ___ - ___

Grade 3

Everyday Math: Unit 3

Operations

Study Guide

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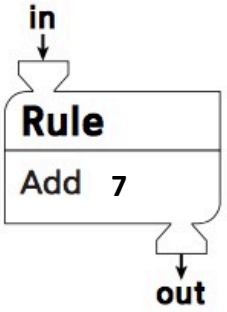
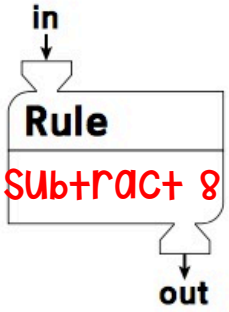
Lesson 3.1:

How do you find missing numbers and rules in "What's My Rule?" tables?



in	out
7	14
0	7
2	9
16	23
28	35

Answers will vary



in	out
10	2
12	4
20	12
60	52
45	37

Answers will vary

Lesson 3.2:

How do you use mental math to make reasonable estimates?

Use rounding to estimate and then solve. Then, use your estimates to check if your answers make sense. Show your work.

1. Estimate: Sample answer: 170 + 40 = 210

$$\begin{array}{r} 174 \\ +\ 37 \\ \hline 211 \end{array}$$

Does your answer make sense? Explain below.

Sample answer: yes, because my estimate is 170 + 40 = 210, which is close to 211.

2. Estimate: Sample answer: 280 - 75 = 205

$$\begin{array}{r} 282 \\ -\ 75 \\ \hline 207 \end{array}$$

Does your answer make sense? Explain below.

Sample answer: yes, because my estimate is 280 - 75 = 205, which is close to 207.

Lesson 3.3:

How do you use the partial-sums addition algorithm to add 2-digit and 3-digit numbers?

Solve both addition problems using partial sums. Use your estimates to make sure your answers make sense. Sample answers:

1. Estimate: 240 + 90 = 330

$$\begin{array}{r} 237 \\ +\ 91 \\ \hline 200 \\ +\ 120 \\ \quad\ 8 \\ \hline 328 \end{array}$$

2. Estimate: 280 + 305 = 585

$$\begin{array}{r} 277 \\ +\ 304 \\ \hline 500 \\ +\ 70 \\ \quad 11 \\ \hline 588 \end{array}$$

Lesson 3.4:

How do you use the column addition algorithm to find sums?

Solve using column addition. Use your estimate to make sure your answer makes sense.

Estimate: Sample answer: 100 + 35 = 135

98 + 36 = 134

$$\begin{array}{r|r|r} & 9 & 8 \\ + & 3 & 6 \\ \hline & 12 & 14 \\ & 13 & 4 \\ 1 & 3 & 4 \end{array}$$

Lesson 3.5:

How do you solve subtraction problems using the counting-up strategy?

Solve the problem. Use an open number line or a number sentence to show your work. Use your estimate to check your work.

742 – 537 = ?

Estimate: sample answer: 740 - 540 = 200

742- 537 = 205

Lesson 3.6:

How do you use the expand-and-trade subtraction algorithm to subtract 2- and 3- digit numbers?

The expand-and-trade subtraction algorithm was used to find the exact answer; however, the exact answer doesn't match up with the estimate! Explain why.

116 - 37 = ?

Estimate: 120 – 40 = 80

$$\begin{array}{r} 116 \\ -\ \ 37 \\ \hline \end{array} \qquad \begin{array}{rrrr} & 100 & & \\ & \cancel{0} & & 16 \\ 100 & +\cancel{10} & + & \cancel{6} \\ & 30 & + & 7 \\ \hline 100 & +70 & + & 9 \end{array} = 179$$

Explain: sample answer: The kid needed to cross off 100 and write 0 because she/he took away a hundred and put it in the tens spot to change 0 to 100.

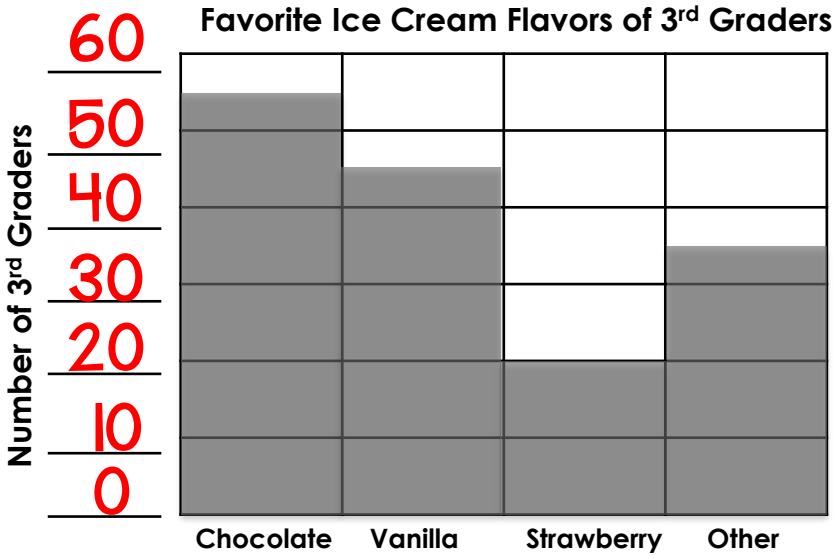
Lesson 3.7:

Exploration A: How do you create a scaled bar graph?

Favorite Ice Cream Flavors of 3rd Graders

Chocolate	Vanilla	Strawberry	Other
55	**45**	**20**	**35**

Use the chart to fill in the scale of the bar graph.



Exploration B: How do you measure area?

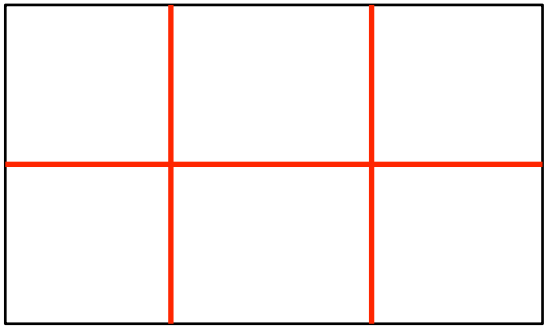
Fill in the blanks:

The amount of surface inside a 2-dimensional shape is called the area.

The number of squares that cover the surface is a measurement of the area in square units

Exploration C: How do you partition rectangles into equal parts to find the area?

Partition the rectangle into 2 rows with 3 same sized squares in each row.



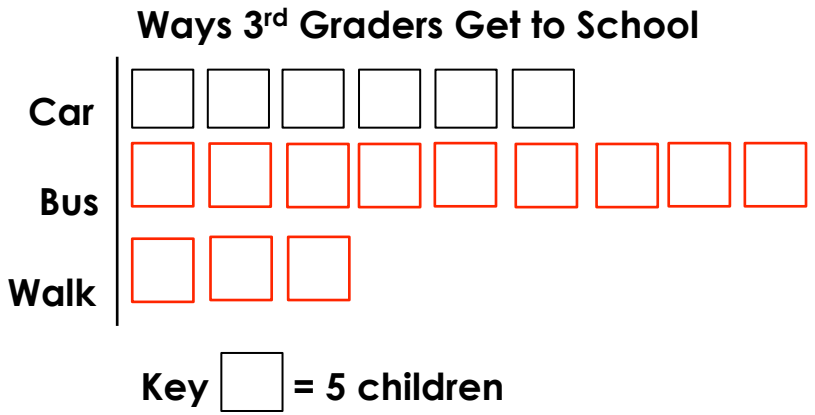
Lesson 3.8:

How do you create a scaled picture graph?

Use the tally chart and the key to complete the picture graph.

Ways 3rd Graders Get to School

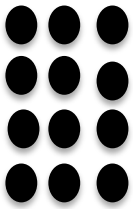
Ways to School	Number of Children
Car	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸
Bus	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸
Walk	𝍸 𝍸 𝍸



Lesson 3.9:

How do you find the products of multiplication squares?

Write a number sentence to match the array.



Number sentence: 4 X 3 = 12

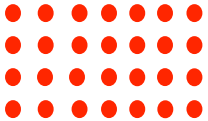
Does the problem show a multiplication square? No Why or why not? The two factors are not the same.

Lesson 3.10:

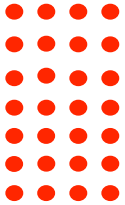
How does knowing one multiplication fact help with knowing its turn-around fact?

1. Use the turn-around rule to solve and draw arrays for each fact.

4 X 7 = 28



7 X 4 = 28



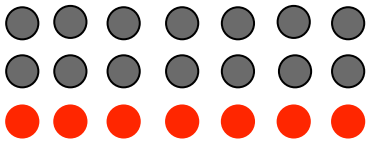
True True or False?

The number of dots are the same in each array. So, the array just turned but the product is the same.

Lesson 3.11:

How does the adding-a-group strategy help to solve unknown multiplication facts?

Fred does not know the answer to 3 X 7.
He does know that 2 X 7 = 14, so he uses it as a helper fact.
Fred starts by drawing this array for 2 X 7 = 14.



Show on the array **and** explain how Fred can use the array to help him figure out 3 X 7.

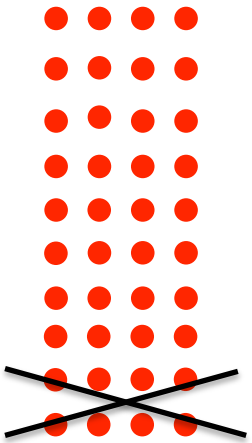
Sample answer: He drew an array for 2 X 7 and knew it was 14. To figure out 3 X 7, he can add one more row of 7 dots. 14 + 7 = 21.

Lesson 3.12:

How do you use the subtracting-a-group strategy to help solve unknown multiplication facts?

Tina uses the subtracting-a-group strategy with 10 X 4 to help her figure out 8 X 4. Use numbers, pictures, or words to explain what Tina did.

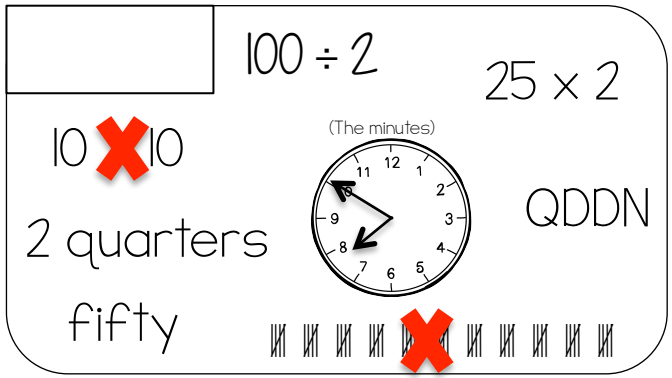
Sample answers:



Since 8 groups of 4 is two fewer than 10 groups of 4, Tina can start from 40 and take away 2 groups of 4. 40-8= 32.

8 X 4 = 32

Lesson 3.13:

How do you generate equivalent names for numbers using all four operations?

Two of the names do not belong in this box. Cross them out. Then write the name of the box on the tag.