Family Letter

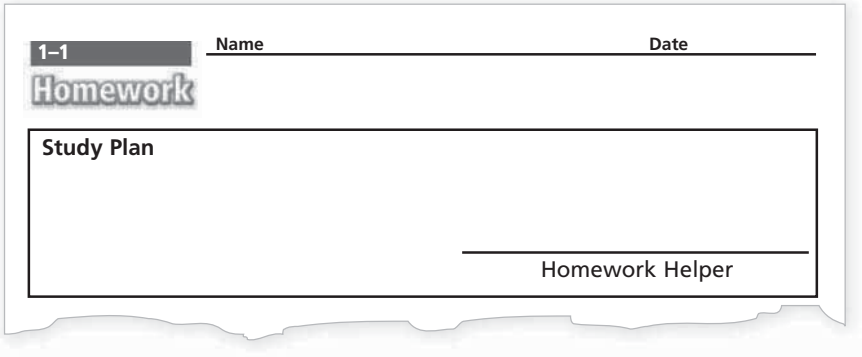
Content Overview

Dear Family,

In this unit and the next, your child will be practicing basic multiplications and divisions. *Math Expressions* incorporates studying, practicing, and testing of the basic multiplications and divisions in class. Your child is also expected to practice at home.

Homework Helper Your child will have math homework almost every day. He or she needs a Homework Helper. The helper may be anyone — you, an older brother or sister (or other family member), a neighbor, or a friend. Please decide who the main Homework Helper will be and ask your child to tell the teacher tomorrow. Make a specific time for homework and provide your child with a quiet place to work.

Study Plans Each day your child will fill out a study plan, indicating which basic multiplications and divisions he or she will study that evening. When your child has finished studying (practicing), his or her Homework Helper should sign the study plan.


1–1 Homework

Name _____ Date _____

Study Plan

_____
Homework Helper

Practice Charts Each time a new number is introduced, students' homework will include a practice chart. To practice, students can cover the products with a pencil or a strip of heavy paper. They will say the multiplications, sliding the pencil or paper down the column to see each product after saying it. Students can also start with the last problem in a column and slide up. It is important that your child studies count-bys and multiplications at least 5 minutes every night. Your child can also use these charts to practice division on the mixed up column by covering the first factor.

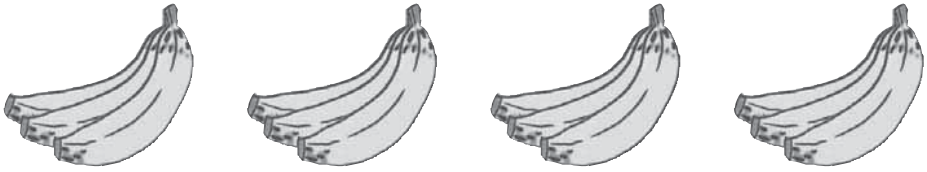
	In Order	Mixed Up
5s	1 × 5 = 5	9 × 5 = 45
	2 × 5 = 10	5 × 5 = 25
	3 × 5 = 15	2 × 5 = 10
	4 × 5 = 20	7 × 5 = 35
	5 × 5 = 25	4 × 5 = 20
	6 × 5 = 30	6 × 5 = 30
	7 × 5 = 35	10 × 5 = 50
	8 × 5 = 40	8 × 5 = 40
	9 × 5 = 45	1 × 5 = 5
	10 × 5 = 50	3 × 5 = 15

Family Letter

Content Overview

To help students understand the concept of multiplication, the *Math Expressions* program presents three ways to think about multiplication.

- **Repeated groups**: Multiplication can be used to find the total in repeated groups of the same size. In early lessons, students circle the group size in repeated-groups equations to help keep track of which factor is the group size and which is the number of groups.



4 groups of bananas

$4 \times (3) = 3 + 3 + 3 + 3 = 12$

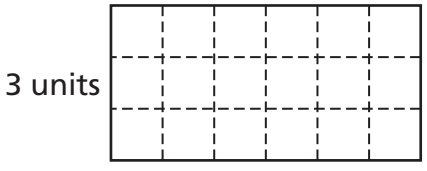
- **Arrays**: Multiplication can be used to find the total number of items in an *array*—an arrangement of objects into rows and columns.

5 columns

2 rows  2-by-5 array

2 rows of pennies $= 2 \times 5 = 10$

- **Area**: Multiplication can be used to find the area of a rectangle.



Area: 3 units × 6 units = 18 square units

Please call if you have any questions or comments.

Thank you.

Sincerely,
Your child's teacher

CA CC

Unit 1 addresses the following standards from the *Common Core State Standards for Mathematics with California Additions*: **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.5, 3.OA.6, 3.OA.7, 3.OA.9, 3.MD.5, 3.MD.5a, 3.MD.5b, 3.MD.7, 3.MD.7a, 3.MD.7b, 3.MD.7c, 3.MD.7d,** and all Mathematical Practices.

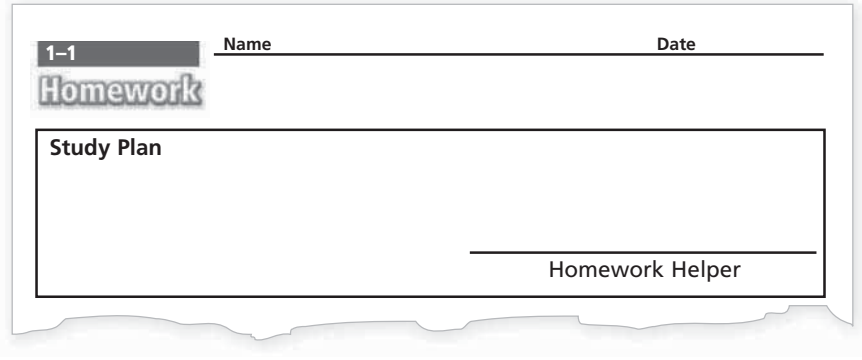
Un vistazo general al contenido

Estimada familia:

En esta unidad y en la que sigue, su niño practicará multiplicaciones y divisiones básicas. *Math Expressions* incorpora en la clase el estudio, la práctica y la evaluación de las multiplicaciones y divisiones básicas. También se espera que su niño practique en casa.

Ayudante de tareas Su niño tendrá tarea de matemáticas casi a diario y necesitará un ayudante para hacer sus tareas. Ese ayudante puede ser cualquier persona: usted, un hermano o hermana mayor, otro familiar, un vecino o un amigo. Por favor decida quién será esta persona y pida a su niño que se lo diga a su maestro mañana. Designe un tiempo específico para la tarea y un lugar para trabajar sin distracciones.

Planes de estudio Todos los días su niño va a completar un plan de estudio, que indica cuáles multiplicaciones y divisiones debe estudiar esa noche. Cuando su niño haya terminado de estudiar (practicar), la persona que lo ayude debe firmar el plan de estudio.


1–1 Homework

Name _____ Date _____

Study Plan

_____
Homework Helper

Tablas de práctica Cada vez que se presente un número nuevo, la tarea de los estudiantes incluirá una tabla de práctica. Para practicar, los estudiantes pueden cubrir los productos con un lápiz o una tira de papel grueso. Los niños dicen la multiplicación y deslizan el lápiz o el papel hacia abajo para revelar el producto después de decirlo. También pueden empezar con el último problema de la columna y deslizar el lápiz o el papel hacia arriba. Es importante que su niño practique el conteo y la multiplicación por lo menos 5 minutos cada noche. Su niño también puede usar estas tablas para practicar la división en la columna de productos desordenados cubriendo el primer factor.

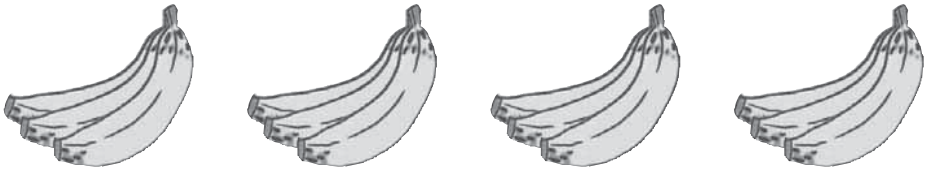
	En orden	Desordenados
5	1 × 5 = 5	9 × 5 = 45
	2 × 5 = 10	5 × 5 = 25
	3 × 5 = 15	2 × 5 = 10
	4 × 5 = 20	7 × 5 = 35
	5 × 5 = 25	4 × 5 = 20
	6 × 5 = 30	6 × 5 = 30
	7 × 5 = 35	10 × 5 = 50
	8 × 5 = 40	8 × 5 = 40
	9 × 5 = 45	1 × 5 = 5
	10 × 5 = 50	3 × 5 = 15

Carta a la familia

Un vistazo general al contenido

Para ayudar a los estudiantes a comprender el concepto de la multiplicación, el programa *Math Expressions* presenta tres maneras de pensar en la multiplicación. Éstas se describen a continuación.

- **Grupos repetidos**: La multiplicación se puede usar para hallar el total con grupos del mismo tamaño que se repiten. Cuando empiezan a trabajar con ecuaciones de grupos repetidos, los estudiantes rodean con un círculo el tamaño del grupo en las ecuaciones, para recordar cuál factor representa el tamaño del grupo y cuál representa el número de grupos.



4 grupos de bananas

$4 \times (3) = 3 + 3 + 3 + 3 = 12$

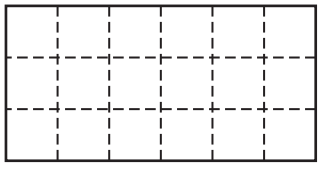
- **Matrices**: Se puede usar la multiplicación para hallar el número total de objetos en una *matriz*, es decir, una disposición de objetos en filas y columnas.

5 columnas

2 filas  matriz de 2 por 5

2 filas de monedas de un centavo $= 2 \times 5 = 10$

- **Área**: Se puede usar la multiplicación para hallar el área de un rectángulo.

3 unidades 

6 unidades

Área: 3 unidades × 6 unidades = 18 unidades cuadradas

Si tiene alguna duda o algún comentario, por favor comuníquese conmigo. Gracias.

Atentamente,
El maestro de su niño

CA CC

En la Unidad 1 se aplican los siguientes estándares auxiliares, contenidos en los *Estándares estatales comunes de matemáticas con adiciones para California*: **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.5, 3.OA.6, 3.OA.7, 3.OA.9, 3.MD.5, 3.MD.5a, 3.MD.5b, 3.MD.7, 3.MD.7a, 3.MD.7b, 3.MD.7c, 3.MD.7d,** y todos los de prácticas matemáticas.

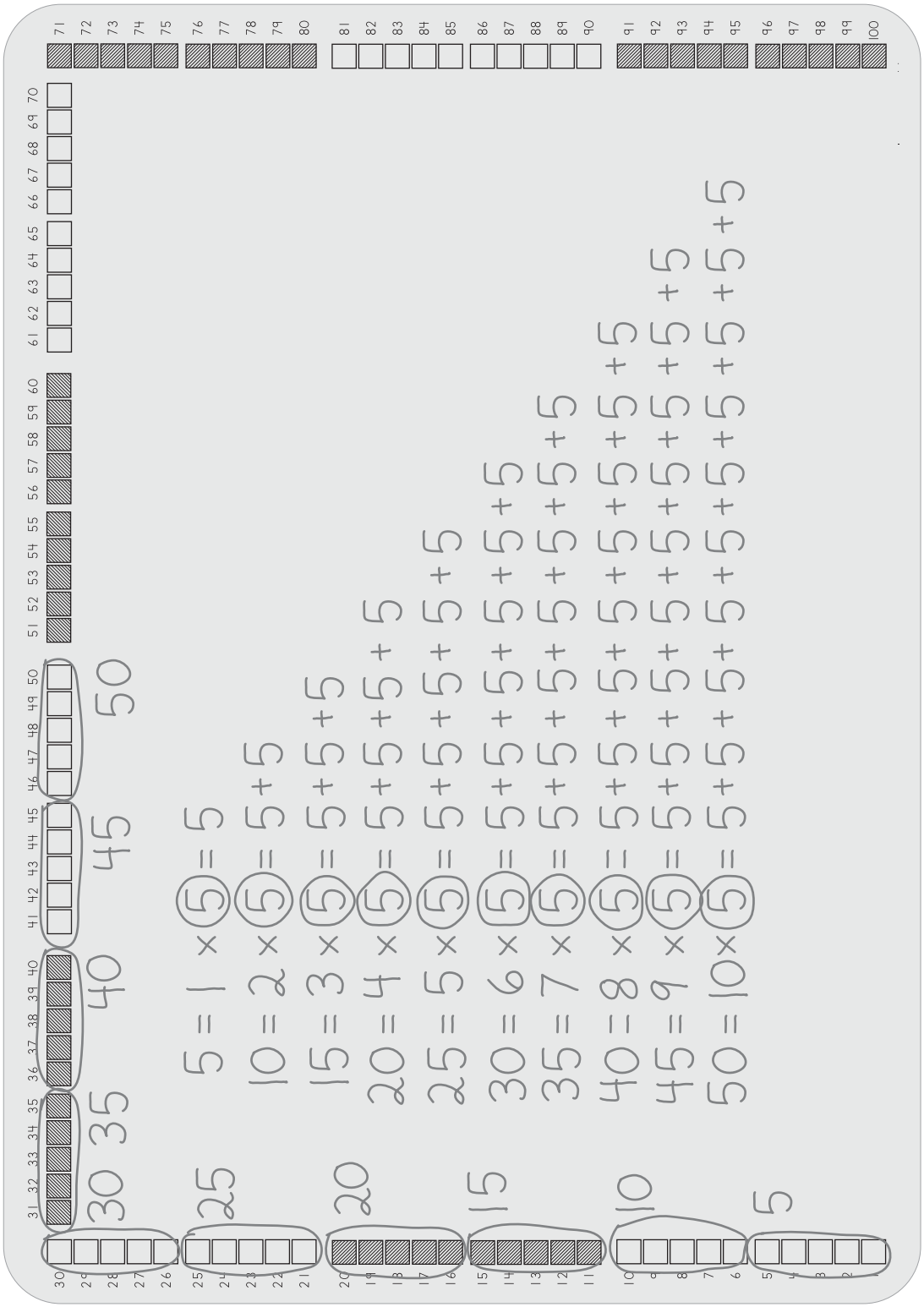
1-1
Class Activity

Name Date

CA CC Content Standards **3.OA.1, 3.OA.4, 3.OA.7, 3.OA.9**
Mathematical Practices **MP.2, MP.6, MP.7, MP.8**

► PATH to FLUENCY Explore Patterns with 5s

What patterns do you see below?



1-1 Class Activity

Name _____ Date _____

VOCABULARY
equation
multiplication
factor
product

► PATH to FLUENCY Practice Multiplications with 5

An **equation** shows that two quantities or expressions are equal. An equal sign (=) is used to show that the two sides are equal. In a **multiplication** equation, the numbers you multiply are called **factors**. The answer, or total, is the **product**.

$$3 \times 5 = 15$$

factor factor product

The symbols ×, *, and • all mean *multiply.* So these equations all mean the same thing.

$3 \times 5 = 15$ $3 * 5 = 15$ $3 \bullet 5 = 15$

Write each total.

1. $4 \times (5) = 5 + 5 + 5 + 5 =$ _____

2. $7 \bullet (5) = 5 + 5 + 5 + 5 + 5 + 5 + 5 =$ _____

Write the 5s additions that show each multiplication. Then write the total.

3. $6 \times (5) =$ _____ = _____

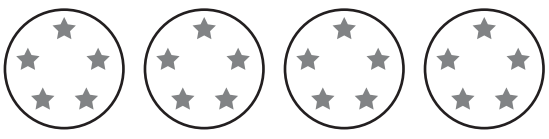
4. $9 * (5) =$ _____ = _____

Write each product.

5. $8 \times 5 =$ _____ 6. $2 \times 5 =$ _____ 7. $5 \times 5 =$ _____

8. $4 \times 5 =$ _____ 9. $10 \times 5 =$ _____ 10. $7 \times 5 =$ _____

Write a 5s multiplication equation for each picture.

11. 

_____

12. 

_____

1-2
Class Activity

Name _____ Date _____

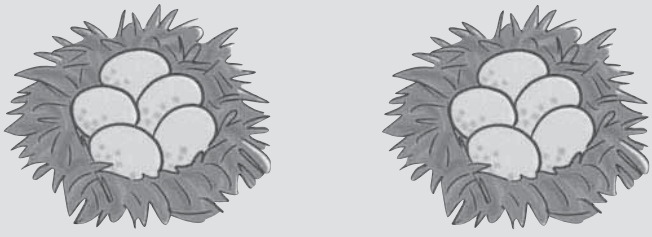
CA CC Content Standards **3.OA.1, 3.OA.3, 3.OA.7**
Mathematical Practices **MP.4, MP.6, MP.7**

VOCABULARY
equal groups

► PATH to FLUENCY Explore Equal Groups

You can use multiplication to find the total when you have equal groups.

$2 \times (5) = 5 + 5 = 10$



► PATH to FLUENCY Write Multiplication Equations

Write a multiplication equation to find the total number.

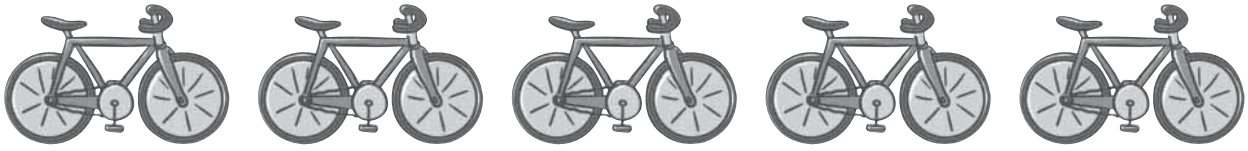
1. How many bananas?

_____

2. How many toes?

_____

3. How many wheels?



_____

Name _____ Date _____

► Make a Math Drawing to Solve Problems

Make a drawing for each problem. Label your drawing with a multiplication equation. Then write the answer to the problem.

Show your work.

4. Sandra bought 4 bags of lemons. There were 6 lemons in each bag. How many lemons did she buy in all?

_____

5. Batai baked 2 peach pies. He used 7 peaches per pie. How many peaches did he use in all?

_____

6. The Fuzzy Friends pet store has 3 rabbit cages. There are 5 rabbits in each cage. How many rabbits does the store have in all?

_____

7. The Paws Plus pet store has 5 rabbit cages. There are 3 rabbits in every cage. How many rabbits does the store have in all?

_____

1-2
Class Activity

Name Date

VOCABULARY
Equal Shares Drawing

► Explore Equal Shares Drawings

Here is a problem with repeated groups. Read the problem, and think about how you would solve it.

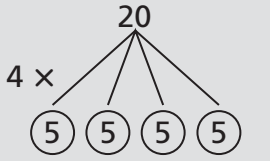
Ms. Thomas bought 4 bags of oranges. Each bag contained 5 oranges. How many oranges did she buy in all?

You could also find the answer to this problem by making an **Equal Shares Drawing.**

Think:

(5) (5) (5) (5)
bags of oranges
4 × (5) = □

Equal Shares Drawing



bags of oranges
4 × (5) = 20

Make an Equal Shares Drawing to solve each problem.

Show your work.

8. Ms. Gonzales bought 6 boxes of pencils. There were 5 pencils in each box. How many pencils did she buy in all?

_____

9. Mr. Franken made lunch for his 9 nieces and nephews. He put 5 carrot sticks on each of their plates. How many carrot sticks did he use in all?

_____

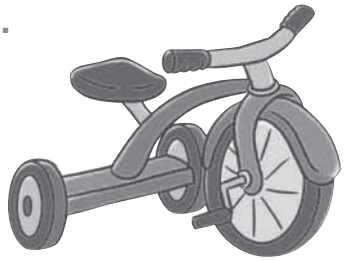
Name _____ Date _____

VOCABULARY
function table

► PATH to FLUENCY Practice with Equal Groups

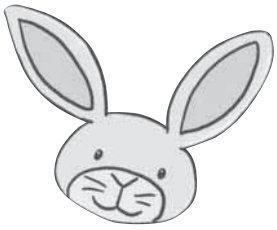
Complete each function table.

10.



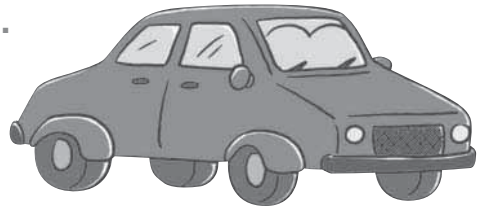
Number of Tricycles	Number of Wheels
1	
2	
3	
4	
5	

11.



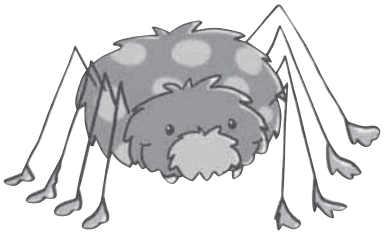
Number of Rabbits	Number of Ears
1	
2	
3	
4	
5	

12.



Number of Cars	Number of Wheels
1	
2	
3	
4	
5	

13.



Number of Spiders	Number of Legs
1	
2	
3	
4	
5	

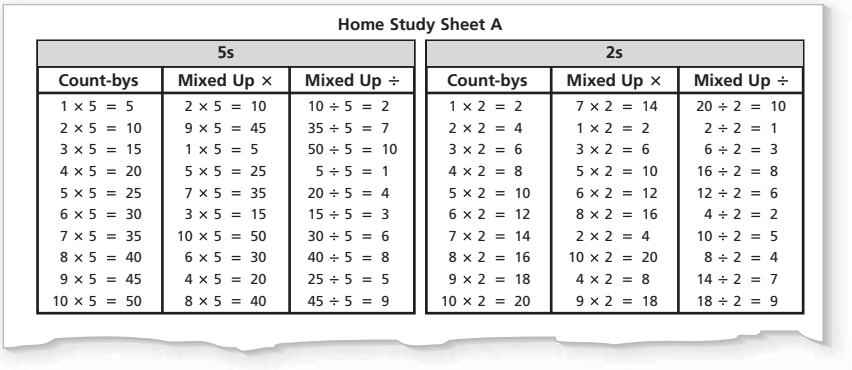
Content Overview

Dear Family,

In addition to practice charts for the basic multiplications and divisions for each of the numbers 1 through 10, your child will bring home a variety of other practice materials over the next several weeks.

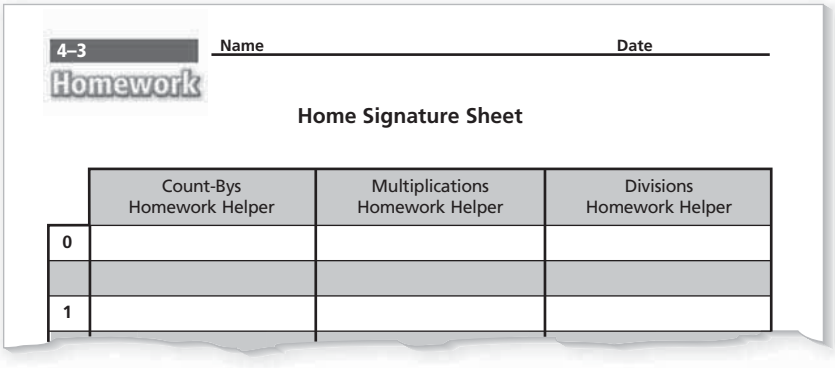
- **Home Study Sheets:** A Home Study Sheet includes 3 or 4 practice charts on one page. Your child can use the Home Study Sheets to practice all the count-bys, multiplications, and divisions for a number or to practice just the ones he or she doesn't know for that number. The Homework Helper can then use the sheet to test (or retest) your child. The Homework Helper should check with your child to see which basic multiplications or divisions he or she is ready to be tested on. The helper should mark any missed problems lightly with a pencil.

  If your child gets all the answers in a column correct, the helper should sign that column on the Home Signature Sheet. When signatures are on all the columns of the Home Signature Sheet, your child should bring the sheet to school.



Home Study Sheet A

5s			2s		
Count-bys	Mixed Up ×	Mixed Up ÷	Count-bys	Mixed Up ×	Mixed Up ÷
1 × 5 = 5	2 × 5 = 10	10 ÷ 5 = 2	1 × 2 = 2	7 × 2 = 14	20 ÷ 2 = 10
2 × 5 = 10	9 × 5 = 45	35 ÷ 5 = 7	2 × 2 = 4	1 × 2 = 2	2 ÷ 2 = 1
3 × 5 = 15	1 × 5 = 5	50 ÷ 5 = 10	3 × 2 = 6	3 × 2 = 6	6 ÷ 2 = 3
4 × 5 = 20	5 × 5 = 25	5 ÷ 5 = 1	4 × 2 = 8	5 × 2 = 10	16 ÷ 2 = 8
5 × 5 = 25	7 × 5 = 35	20 ÷ 5 = 4	5 × 2 = 10	6 × 2 = 12	12 ÷ 2 = 6
6 × 5 = 30	3 × 5 = 15	15 ÷ 5 = 3	6 × 2 = 12	8 × 2 = 16	4 ÷ 2 = 2
7 × 5 = 35	10 × 5 = 50	30 ÷ 5 = 6	7 × 2 = 14	2 × 2 = 4	10 ÷ 2 = 5
8 × 5 = 40	6 × 5 = 30	40 ÷ 5 = 8	8 × 2 = 16	10 × 2 = 20	8 ÷ 2 = 4
9 × 5 = 45	4 × 5 = 20	25 ÷ 5 = 5	9 × 2 = 18	4 × 2 = 8	14 ÷ 2 = 7
10 × 5 = 50	8 × 5 = 40	45 ÷ 5 = 9	10 × 2 = 20	9 × 2 = 18	18 ÷ 2 = 9



4–3 Homework

Name _____ Date _____

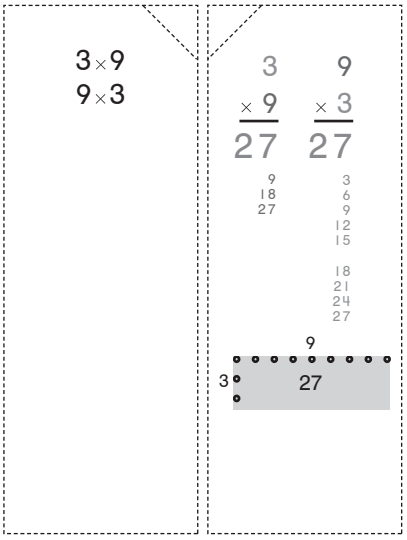
Home Signature Sheet

	Count-Bys Homework Helper	Multiplications Homework Helper	Divisions Homework Helper
0			
1			

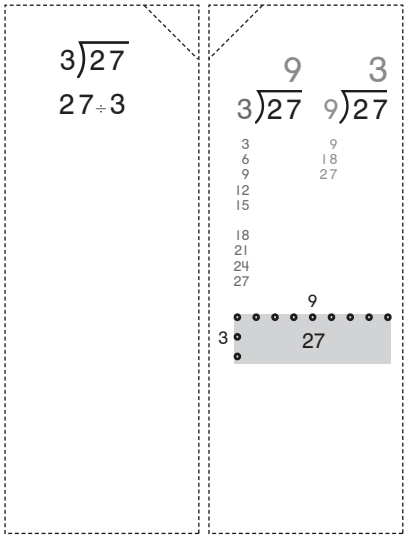
Content Overview

- **Home Check Sheets:** A Home Check Sheet includes columns of 20 multiplications and divisions in mixed order. These sheets can be used to test your student's fluency with basic facts.
- **Strategy Cards:** Students use Strategy Cards in class as flashcards, to play games, and to develop multiplication and division strategies.

Sample Multiplication Card



Sample Division Card



- **Games:** Near the end of this unit, students are introduced to games that provide multiplication and division practice.

Encourage your child to show you these materials and explain how they are used. Make sure your child spends time practicing multiplications and divisions every evening.

Please call if you have any questions or comments.

Thank you.

Sincerely,
Your child's teacher

CA CC

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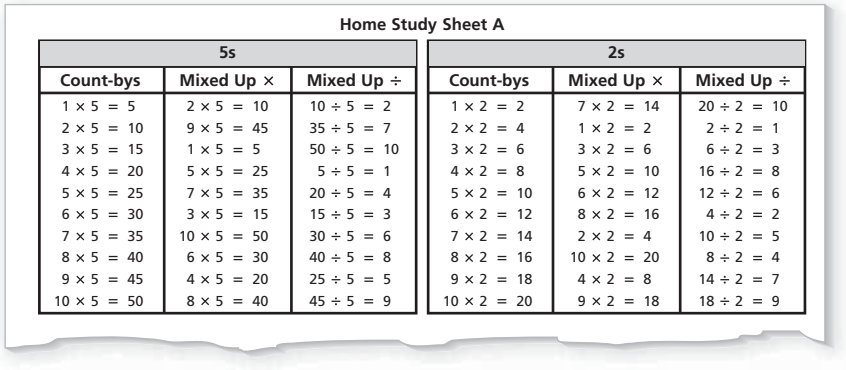
Un vistazo general al contenido

Estimada familia:

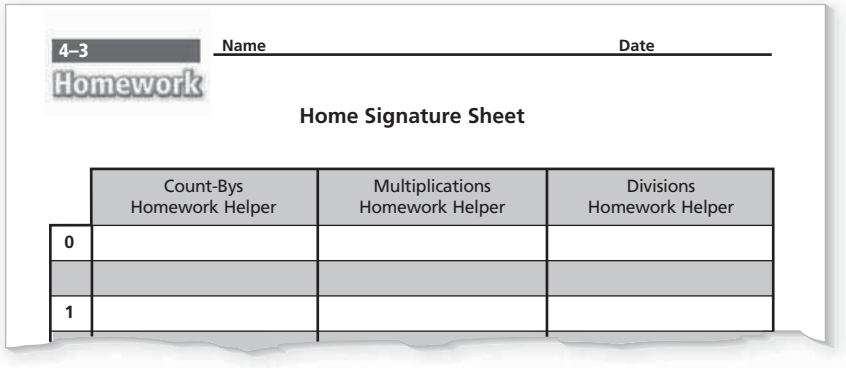
Además de las tablas de práctica para las multiplicaciones y divisiones básicas para cada número del 1 al 10, su niño llevará a casa una variedad de materiales de práctica en las semanas que vienen.

- **Hojas para estudiar en casa:** Una hoja para estudiar en casa incluye 3 ó 4 tablas de práctica en una página. Su niño puede usar las hojas para practicar todos los conteos, multiplicaciones y divisiones de un número, o para practicar sólo las operaciones para ese número que no domine. La persona que ayude a su niño con la tarea puede usar la hoja para hacerle una prueba (o repetir una prueba). Esa persona debe hablar con su niño para decidir sobre qué multiplicaciones o divisiones básicas el niño puede hacer la prueba. La persona que ayude debe marcar ligeramente con un lápiz cualquier problema que conteste mal. Si su niño contesta bien todas las operaciones de una columna, la persona que ayude debe firmar esa columna de la hoja de firmas. Cuando todas las columnas de la hoja de firmas estén firmadas, su niño debe llevar la hoja a la escuela.



Home Study Sheet A

5s			2s		
Count-bys	Mixed Up ×	Mixed Up ÷	Count-bys	Mixed Up ×	Mixed Up ÷
1 × 5 = 5	2 × 5 = 10	10 ÷ 5 = 2	1 × 2 = 2	7 × 2 = 14	20 ÷ 2 = 10
2 × 5 = 10	9 × 5 = 45	35 ÷ 5 = 7	2 × 2 = 4	1 × 2 = 2	2 ÷ 2 = 1
3 × 5 = 15	1 × 5 = 5	50 ÷ 5 = 10	3 × 2 = 6	3 × 2 = 6	6 ÷ 2 = 3
4 × 5 = 20	5 × 5 = 25	5 ÷ 5 = 1	4 × 2 = 8	5 × 2 = 10	16 ÷ 2 = 8
5 × 5 = 25	7 × 5 = 35	20 ÷ 5 = 4	5 × 2 = 10	6 × 2 = 12	12 ÷ 2 = 6
6 × 5 = 30	3 × 5 = 15	15 ÷ 5 = 3	6 × 2 = 12	8 × 2 = 16	4 ÷ 2 = 2
7 × 5 = 35	10 × 5 = 50	30 ÷ 5 = 6	7 × 2 = 14	2 × 2 = 4	10 ÷ 2 = 5
8 × 5 = 40	6 × 5 = 30	40 ÷ 5 = 8	8 × 2 = 16	10 × 2 = 20	8 ÷ 2 = 4
9 × 5 = 45	4 × 5 = 20	25 ÷ 5 = 5	9 × 2 = 18	4 × 2 = 8	14 ÷ 2 = 7
10 × 5 = 50	8 × 5 = 40	45 ÷ 5 = 9	10 × 2 = 20	9 × 2 = 18	18 ÷ 2 = 9



4–3 Homework

Name _____ Date _____

Home Signature Sheet

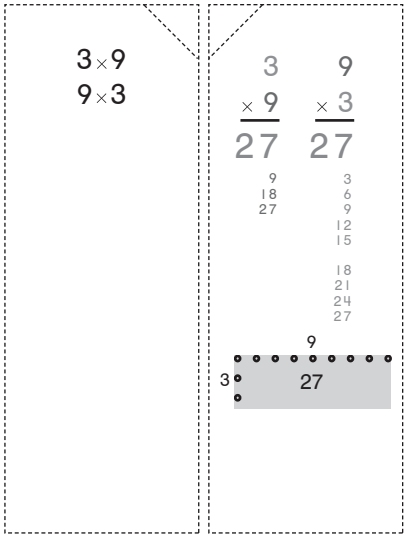
	Count-Bys Homework Helper	Multiplications Homework Helper	Divisions Homework Helper
0			
1			

Carta a la familia

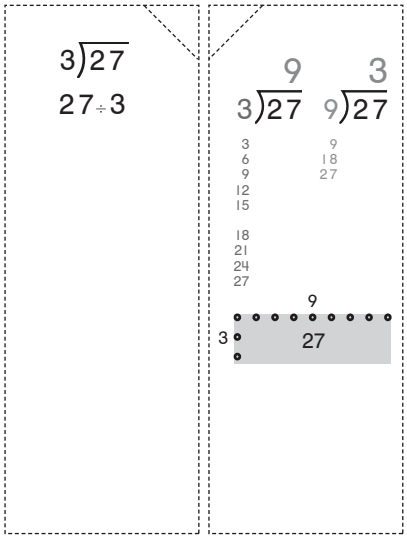
Un vistazo general al contenido

- **Hojas de verificación:** Una hoja de verificación consta de columnas de 20 multiplicaciones y divisiones sin orden fijo. Estas hojas pueden usarse para comprobar el dominio de las operaciones básicas.
- **Tarjetas de estrategias:** Los estudiantes usan las tarjetas de estrategias en la clase como ayuda de memoria, en juegos y para desarrollar estrategias para hacer multiplicaciones y divisiones.

Ejemplo de tarjeta de multiplicación



Ejemplo de tarjeta de división



- **Juegos:** Hacia el final de esta unidad se presentan juegos a los estudiantes para practicar la multiplicación y la división.

Anime a su niño a que le muestre estos materiales y a que le explique cómo se usan. Asegúrese de que su niño practique la multiplicación y la división cada noche.

Si tiene alguna duda o pregunta, por favor comuníquese conmigo.

Atentamente,
El maestro de su niño

CA CC

En la Unidad 1 se aplican los siguientes estándares auxiliares, contenidos en los *Estándares estatales comunes de matemáticas con adiciones para California*: **3.0A.1, 3.0A.2, 3.0A.3, 3.0A.4, 3.0A.5, 3.0A.6, 3.0A.7, 3.0A.9, 3.MD.5, 3.MD.5a, 3.MD.5b, 3.MD.7, 3.MD.7a, 3.MD.7b, 3.MD.7c, 3.MD.7d** y todos los de prácticas matemáticas.

Name _____

Signature Sheet

	Count-Bys Partner	Multiplications Partner	Divisions Partner	Multiplications Check Sheets	Divisions Check Sheets
5s				1:	1:
2s				1:	1:
10s				2:	2:
9s				2:	2:
				3:	3:
3s				4:	4:
4s				4:	4:
1s				5:	5:
0s				5:	5:
				6:	6:
6s				7:	7:
8s				7:	7:
7s				8:	8:
				9:	9:
				10:	10:

Name _____

Dash Record Sheet

Dash Number	Accurate	Fast	Really Fast
1			
2			
3			
4			
5			
6			
7			
8			
9			
9A			
9B			
9C			
10			
10A			
10B			
10C			
11			
11A			
11B			
11C			
12			
12A			
12B			
12C			

Dash Number	Accurate	Fast	Really Fast
13			
14			
15			
16			
17			
18			
19			
19A			
19B			
19C			
19D			
20			
20A			
20B			
20C			
20D			
21			
21A			
21B			
21C			
22			
22A			
22B			
22C			

Study Sheet A

Name

5s		
Count-bys	Mixed Up ×	Mixed Up ÷
1 × 5 = 5	2 × 5 = 10	10 ÷ 5 = 2
2 × 5 = 10	9 × 5 = 45	35 ÷ 5 = 7
3 × 5 = 15	1 × 5 = 5	50 ÷ 5 = 10
4 × 5 = 20	5 × 5 = 25	5 ÷ 5 = 1
5 × 5 = 25	7 × 5 = 35	20 ÷ 5 = 4
6 × 5 = 30	3 × 5 = 15	15 ÷ 5 = 3
7 × 5 = 35	10 × 5 = 50	30 ÷ 5 = 6
8 × 5 = 40	6 × 5 = 30	40 ÷ 5 = 8
9 × 5 = 45	4 × 5 = 20	25 ÷ 5 = 5
10 × 5 = 50	8 × 5 = 40	45 ÷ 5 = 9

2s		
Count-bys	Mixed Up ×	Mixed Up ÷
1 × 2 = 2	7 × 2 = 14	20 ÷ 2 = 10
2 × 2 = 4	1 × 2 = 2	2 ÷ 2 = 1
3 × 2 = 6	3 × 2 = 6	6 ÷ 2 = 3
4 × 2 = 8	5 × 2 = 10	16 ÷ 2 = 8
5 × 2 = 10	6 × 2 = 12	12 ÷ 2 = 6
6 × 2 = 12	8 × 2 = 16	4 ÷ 2 = 2
7 × 2 = 14	2 × 2 = 4	10 ÷ 2 = 5
8 × 2 = 16	10 × 2 = 20	8 ÷ 2 = 4
9 × 2 = 18	4 × 2 = 8	14 ÷ 2 = 7
10 × 2 = 20	9 × 2 = 18	18 ÷ 2 = 9

10s		
Count-bys	Mixed Up ×	Mixed Up ÷
1 × 10 = 10	1 × 10 = 10	80 ÷ 10 = 8
2 × 10 = 20	5 × 10 = 50	10 ÷ 10 = 1
3 × 10 = 30	2 × 10 = 20	50 ÷ 10 = 5
4 × 10 = 40	8 × 10 = 80	90 ÷ 10 = 9
5 × 10 = 50	7 × 10 = 70	40 ÷ 10 = 4
6 × 10 = 60	3 × 10 = 30	100 ÷ 10 = 10
7 × 10 = 70	4 × 10 = 40	30 ÷ 10 = 3
8 × 10 = 80	6 × 10 = 60	20 ÷ 10 = 2
9 × 10 = 90	10 × 10 = 100	70 ÷ 10 = 7
10 × 10 = 100	9 × 10 = 90	60 ÷ 10 = 6

9s		
Count-bys	Mixed Up ×	Mixed Up ÷
1 × 9 = 9	2 × 9 = 18	81 ÷ 9 = 9
2 × 9 = 18	4 × 9 = 36	18 ÷ 9 = 2
3 × 9 = 27	7 × 9 = 63	36 ÷ 9 = 4
4 × 9 = 36	8 × 9 = 72	9 ÷ 9 = 1
5 × 9 = 45	3 × 9 = 27	54 ÷ 9 = 6
6 × 9 = 54	10 × 9 = 90	27 ÷ 9 = 3
7 × 9 = 63	1 × 9 = 9	63 ÷ 9 = 7
8 × 9 = 72	6 × 9 = 54	72 ÷ 9 = 8
9 × 9 = 81	5 × 9 = 45	90 ÷ 9 = 10
10 × 9 = 90	9 × 9 = 81	45 ÷ 9 = 5

PATH to FLUENCY

1-3
Class Activity

Name _____ Date _____

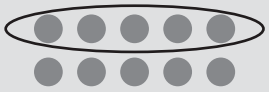
CA CC Content Standards **3.OA.1, 3.OA.3, 3.OA.5, 3.OA.7**
Mathematical Practices **MP.1, MP.2, MP.4, MP.6, MP.8**

VOCABULARY
array
row
column

► Explore Arrays

An **array** is an arrangement of objects in **rows** and **columns**. You can use multiplication to find the total number of objects in an array.

row



2-by-5 array
5 columns

column

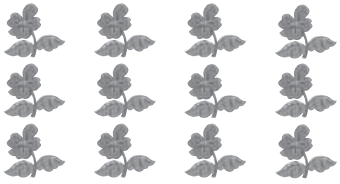
2 rows of 5 = 2 × 5 = 10

2 rows

► PATH to FLUENCY Write Multiplication Equations

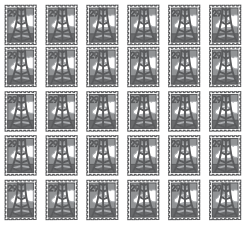
Write a multiplication equation for each array.

1. How many flowers?



_____

2. How many stamps?

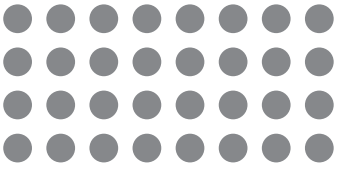


_____

3. How many mugs?

_____

4. **Math Journal** Write a problem that you can solve by using this array. Show how to solve your problem.



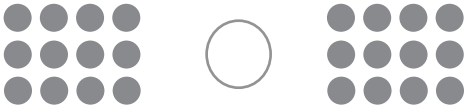
Name _____ Date _____

► Compare Arrays

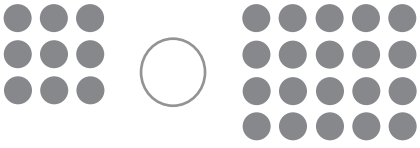
Without counting the dots in the array, write >, < or = in the circle.

5. 

6. 

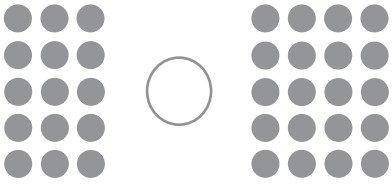
7. 

8. 

9. 

10. 

11. 

12. 

13. Create Your Own Draw two dot arrays and compare them using symbols. Then write an equation for each array to show that your comparison is correct.

Name _____ Date _____

► Make a Math Drawing to Solve a Problem

Show your work.

Make a drawing for each problem. Label your drawing with a multiplication equation. Then write the answer to the problem.

14. The clarinet section of the band marched in 6 rows, with 2 clarinet players in each row. How many clarinet players were there in all?

_____

15. Mali put some crackers on a tray. She put the crackers in 3 rows, with 5 crackers per row. How many crackers did she put on the tray?

_____

16. Ms. Shahin set up some chairs in 7 rows, with 5 chairs in each row. How many chairs did she set up?

_____

17. Zak has a box of crayons. The crayons are arranged in 4 rows, with 6 crayons in each row. How many crayons are in the box?

_____

1-3
Class Activity

Name _____ Date _____

VOCABULARY
Commutative Property of Multiplication

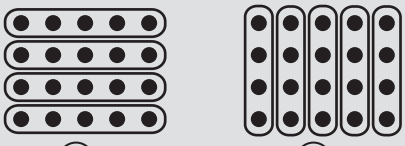
► Explore Commutativity

Multiplication is commutative. The **Commutative Property of Multiplication** states that you can switch the order of the factors without changing the product.

Arrays: $4 \times 5 = 5 \times 4$

$4 \times 5 = 20$ $5 \times 4 = 20$

Groups: $4 \times \textcircled{5} = 5 \times \textcircled{4}$



$4 \times \textcircled{5} = 20$ $5 \times \textcircled{4} = 20$

► Solve Problems Using the Commutative Property

Make a math drawing for each problem. Write a multiplication equation and the answer to the problem.

18. Katie bought some stickers. She put the stickers on her folder in 6 rows of 2. How many stickers did she buy?

_____

19. Marco also bought some stickers. He put the stickers on his folder in 2 rows of 6. How many stickers did he buy?

_____

20. On Monday, Juan helped Ms. Chang clean the art cabinet. He packed jars of paint in 3 boxes, with 7 jars per box. How many jars of paint did Juan pack?

_____

21. On Tuesday, Therese helped Ms. Chang. She packed jars of paint in 7 boxes, with 3 jars per box. How many jars of paint did Therese pack?

_____

1-4
Class Activity

Name Date

CA CC Content Standards 3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.6, 3.OA.7 Mathematical Practices MP.1, MP.3, MP.4, MP.6, MP.7

VOCABULARY
division **divisor**
dividend **quotient**

► Explore Division

Write an equation and solve the problem.

1. Marc bought some bags of limes. There were 5 limes in each bag. He bought 15 limes altogether. How many bags did he buy?

_____

2. There were 10 photographs on one wall of an art gallery. The photographs were in rows, with 5 photographs in each row. How many rows were there?

_____

The problems above can be represented by multiplication equations or by **division** equations.

Problem 1

Multiplication							Division						
□	×	5	=	15			15	÷	5	=	□		
number of groups (factor)		group size (factor)		total (product)			total (product)		group size (factor)		number of groups (factor)		

Problem 2

Multiplication							Division						
□	×	5	=	10			10	÷	5	=	□		
number of rows (factor)		number in each row (factor)		total (product)			total (product)		number in each row (factor)		number of rows (factor)		

Here are ways to write a division. The following all mean "15 divided by 5 equals 3."

$15 \div 5 = 3$ $15 / 5 = 3$ $\frac{15}{5} = 3$

$5\overline{)15}$ ← dividend; 3 ← quotient; ↑ divisor

The number you divide into is called the **dividend**. The number you divide by is called the **divisor**. The number that is the answer to a division problem is called the **quotient**.

Name _____ Date _____

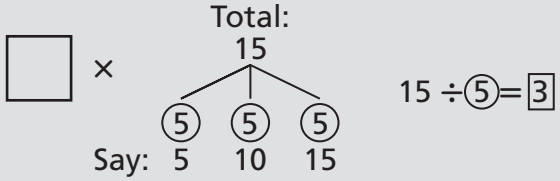
► Math Tools: Equal Shares Drawings

You can use Equal Shares Drawings to help solve division problems. Here is how you might solve Problem 1 on Student Activity Book page 23.

Start with the total, 15.

$15 \div (5) = \square$

Draw groups of 5, and connect them to the total. Count by 5s as you draw the groups. Stop when you reach 15, the total. Count how many groups you have: 3 groups.



You can use a similar type of drawing to find the number of rows or columns in an array. Here is how you might solve problem 2 on page 23.

Start with the total, 10.

$10 \div (5) = \square$

Draw rows of 5, and connect them to the total. Count by 5s as you draw the rows. Stop when you reach 10, the total. Count how many rows you have: 2 rows.

Write an equation and solve the problem.

3. At a bake sale, Luisa bought a lemon square for 35¢. If she paid using only nickels, how many nickels did she use?

_____

4. Mr. Su bought a sheet of 20 stamps. There were 5 stamps in each row. How many rows of stamps were there?

_____

Name _____ Date _____

► What's the Error?

Dear Math Students,

Today I found the unknown number in this division equation by using a related multiplication. Is my calculation correct?

$40 \div 5 = \square$ | 9 | $\times 5 = 40$

If not, please correct my work and tell me what I did wrong. How do you know my answer is wrong?

Your friend,
Puzzled Penguin

5. Write an answer to the Puzzled Penguin.

_____

_____

_____

_____

► PATH to FLUENCY Relate Division and Multiplication Equations with 5

Find the unknown numbers.

6. $20 \div 5 = \square$	$\square \times 5 = 20$	$20 \div 4 = \square$	$\square \times 4 = 20$
7. $10 \div 5 = \square$	$\square \times 5 = 10$	$10 \div 2 = \square$	$\square \times 2 = 10$
8. $15 \div 5 = \square$	$\square \times 5 = 15$	$15 \div 3 = \square$	$\square \times 3 = 15$
9. $30 \div 5 = \square$	$\square \times 5 = 30$	$30 \div 6 = \square$	$\square \times 6 = 30$
10. $5 \div 5 = \square$	$\square \times 5 = 5$	$5 \div 1 = \square$	$\square \times 1 = 5$
11. $25 \div 5 = \square$	$\square \times 5 = 25$	$25 \div 5 = \square$	$\square \times 5 = 25$

Name _____ Date _____

► Find the Number in Each Group

Write an equation and solve the problem. *Show your work.*

12. Aziz put 15 ice cubes in 5 glasses. He put the same number of ice cubes in each glass. How many ice cubes did he put in each glass?

_____

13. Lori's uncle gave her 20 stickers. She put the same number of stickers on each of 5 folders. How many stickers did she put on each folder?

_____

14. Todd cut a board that measured 45 inches in length into 5 pieces. Each piece he cut measures the same number of inches. How many inches does each piece measure?

_____

15. Paige placed 35 books on 5 shelves. She placed the same number of books on each shelf. How many books did she place on each shelf?

_____

16. Ten students gathered into 5 groups to play a math game. The same number of students are in each group. How many students are in each group?

_____

► Write a Word Problem

17. Write a word problem for 30 ÷ 5 where the 5 is the size of the group.

_____

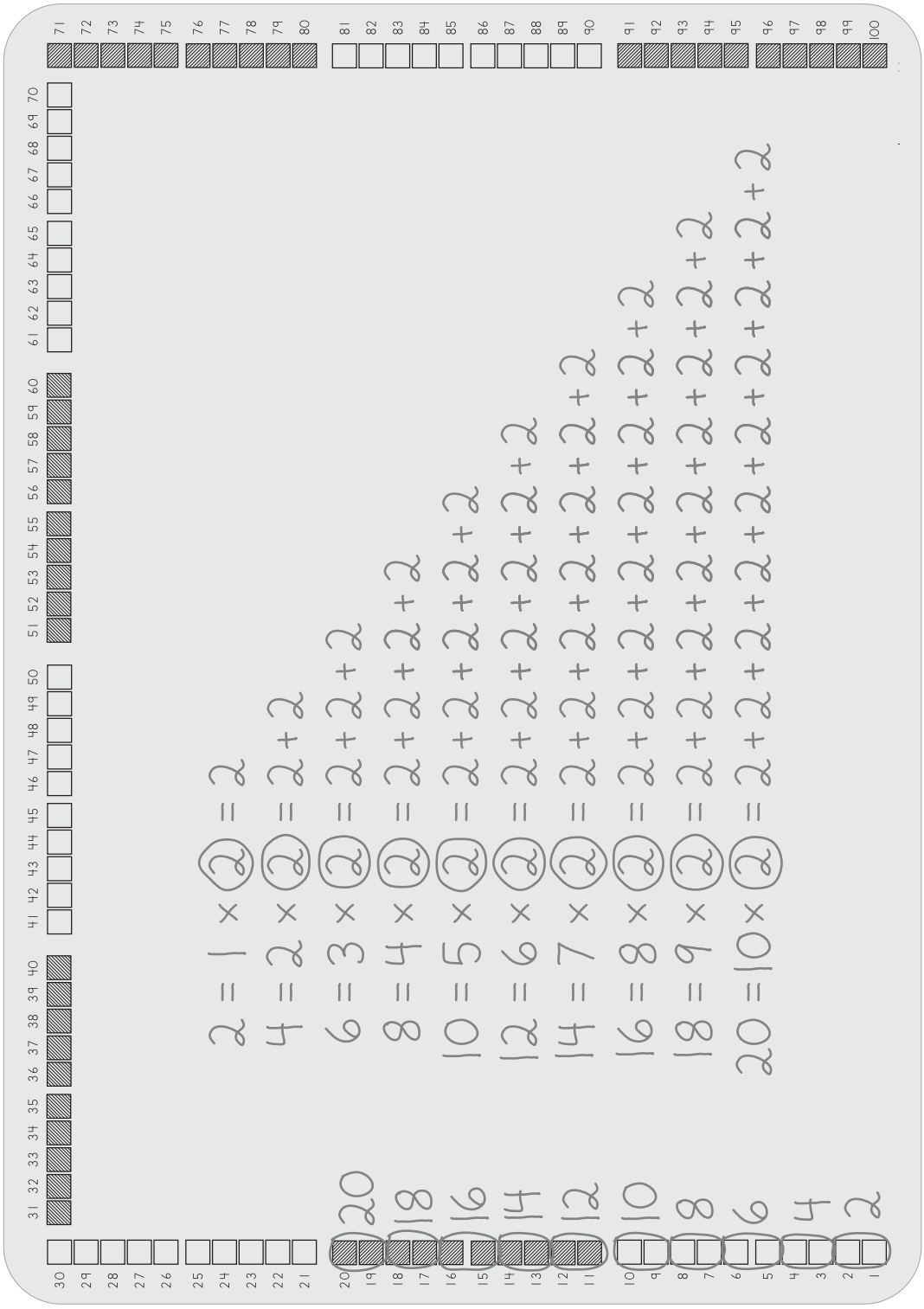
1-5
Class Activity

Name Date

CA CC Content Standards **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.7, 3.OA.9** Mathematical Practices **MP.1, MP.2, MP.7, MP.8**

► PATH to FLUENCY Explore Patterns with 2s

What patterns do you see below?



1-5
Class Activity

Name _____ Date _____

VOCABULARY
even number
odd number

► Even and Odd Numbers

The 2s count-bys are called *even numbers* because they are multiples of 2. In an **even number**, the ones digit is 0, 2, 4, 6, or 8. If a number is not a multiple of two, it is called an **odd number**.

Tell whether each number is even or odd.

1. 7 _____
2. 4 _____
3. 20 _____
4. 15 _____

► Solve Multiplication and Division Problems with 2s

Write an equation and solve the problem.

5. At the art fair, Tamika sold 9 pairs of earrings. How many individual earrings did she sell?

_____

6. Rhonda divided 8 crayons equally between her twin brothers. How many crayons did each boy get?

_____

Use the pictograph to solve each problem.

7. How many Peach-Banana Blast drinks were sold?

_____

8. In all, how many Strawberry Sensation and Citrus Surprise drinks were sold?

_____

Drinks Sold at the Smoothie Shop

Strawberry Sensation	
Peach-Banana Blast	
Mango-Madness	
Citrus Surprise	

Each  stands for 2 drinks.

9. How many more Peach-Banana Blast drinks were sold than Mango Madness drinks?

_____

Name _____

► PATH to FLUENCY Check Sheet 1: 5s and 2s

5s Multiplications	5s Divisions	2s Multiplications	2s Divisions
2 × 5 = 10	30 / 5 = 6	4 × 2 = 8	8 / 2 = 4
5 • 6 = 30	5 ÷ 5 = 1	2 • 8 = 16	18 ÷ 2 = 9
5 * 9 = 45	15 / 5 = 3	1 * 2 = 2	2 / 2 = 1
4 × 5 = 20	50 ÷ 5 = 10	6 × 2 = 12	16 ÷ 2 = 8
5 • 7 = 35	20 / 5 = 4	2 • 9 = 18	4 / 2 = 2
10 * 5 = 50	10 ÷ 5 = 2	2 * 2 = 4	20 ÷ 2 = 10
1 × 5 = 5	35 / 5 = 7	3 × 2 = 6	10 / 2 = 5
5 • 3 = 15	40 ÷ 5 = 8	2 • 5 = 10	12 ÷ 2 = 6
8 * 5 = 40	25 / 5 = 5	10 * 2 = 20	6 / 2 = 3
5 × 5 = 25	45 / 5 = 9	2 × 7 = 14	14 / 2 = 7
5 • 8 = 40	20 ÷ 5 = 4	2 • 10 = 20	4 ÷ 2 = 2
7 * 5 = 35	15 / 5 = 3	9 * 2 = 18	2 / 2 = 1
5 × 4 = 20	30 ÷ 5 = 6	2 × 6 = 12	8 ÷ 2 = 4
6 • 5 = 30	25 / 5 = 5	8 • 2 = 16	6 / 2 = 3
5 * 1 = 5	10 ÷ 5 = 2	2 * 3 = 6	20 ÷ 2 = 10
5 × 10 = 50	45 / 5 = 9	2 × 2 = 4	14 / 2 = 7
9 • 5 = 45	35 ÷ 5 = 7	1 • 2 = 2	10 ÷ 2 = 5
5 * 2 = 10	50 ÷ 5 = 10	2 * 4 = 8	16 ÷ 2 = 8
3 × 5 = 15	40 / 5 = 8	5 × 2 = 10	12 / 2 = 6
5 • 5 = 25	5 ÷ 5 = 1	7 • 2 = 14	18 ÷ 2 = 9

1-6
Class Activity

Name _____ Date _____

CA CC Content Standards **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.6, 3.OA.7** Mathematical Practices **MP.1, MP.2, MP.4, MP.6, MP.7**

► PATH to FLUENCY Use the Target

×	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6	9	12	15	18	21	24	27
4	0	4	8	12	16	20	24	28	32	36
5	0	5	10	15	20	25	30	35	40	45
6	0	6	12	18	24	30	36	42	48	54
7	0	7	14	21	28	35	42	49	56	63
8	0	8	16	24	32	40	48	56	64	72
9	0	9	18	27	36	45	54	63	72	81

1. Discuss how you can use the Target to find the product for 8×5.

2. Discuss how you can use the Target to practice division.

3. Practice using the Target.

4. When using the Target, how are multiplication and division alike? How are they different?

Name _____ Date _____

► Make Sense of Problems

Write an equation and solve the problem. *Show your work.*

5. Mrs. Cheng bought 8 pairs of mittens. How many individual mittens did she buy?

_____

6. Brian divided 10 crayons equally between his two sisters. How many crayons did each girl get?

_____

7. Maria has 5 piles of flash cards. There are 9 cards in each pile. How many flash cards does Maria have?

_____

8. A parking lot has 5 rows of parking spaces with the same number of spaces in each row. There are 35 parking spaces in the lot. How many spaces are in each row?

_____

9. Ari arranged his bottle cap collection into 9 rows with 2 bottle caps in each row. How many bottle caps are in his collection?

_____

► Write a Word Problem

10. Write a word problem that can be solved using the equation 45 ÷ 5 = where 5 is the number of groups.

_____

_____

_____

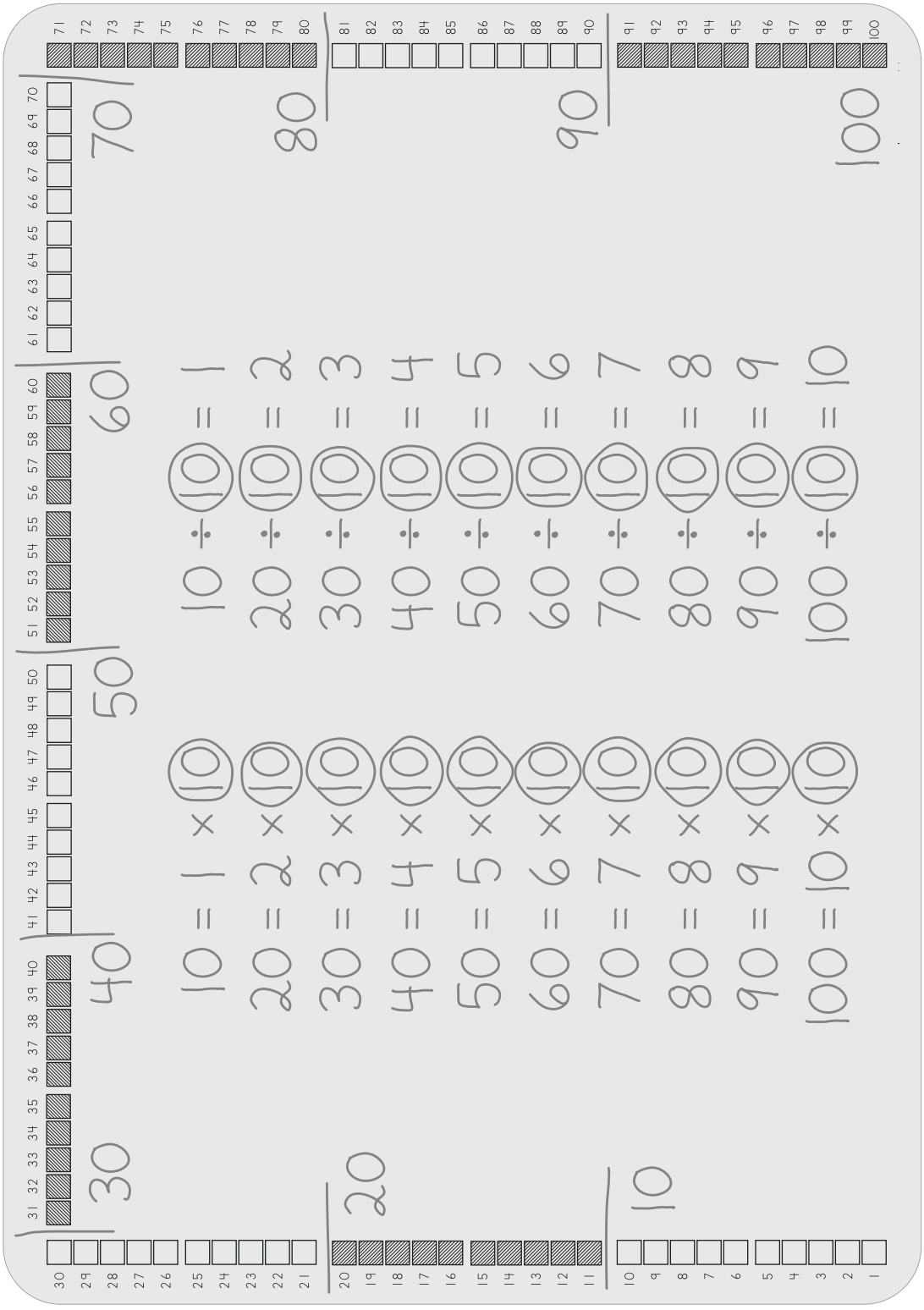
1-7
Class Activity

Name Date

CA CC Content Standards **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.6, 3.OA.7, 3.OA.9** Mathematical Practices **MP.1, MP.2, MP.4, MP.6, MP.7, MP.8**

► PATH to FLUENCY Explore Patterns with 10s

What patterns do you see below?



Name _____ Date _____

► Solve Problems with 10s

Write an equation and solve the problem. *Show your work.*

1. Raymundo has 9 dimes. How many cents does he have?

_____

2. Yoko has some dimes in her pocket, and no other coins. She has a total of 70¢. How many dimes does she have?

_____

3. Jonah picked 40 strawberries. He gave them to 10 of his friends. Each friend got the same number of strawberries. How many strawberries did each friend get?

_____

4. There are 10 Space Command trading cards in each pack. Zoe bought 5 packs of cards. How many cards did she buy in all?

_____

5. There were 80 students in the auditorium. There were 10 students in each row. How many rows of students were there?

_____

6. A roll of ribbon has 60 inches of ribbon. Harper cut all the ribbon into 10 equal length pieces. How many inches long is each piece?

_____

1-7
Class Activity

Name _____ Date _____

VOCABULARY
equation
variable

► Use Variables in Equations

When you write **equations** you can use a letter to represent an unknown number. This letter is called a **variable**.

Each of these equations has a variable.

$a \times 10 = 60$	$70 = c \times 7$	$w = 80 \div 10$	$9 = 90 \div c$
$2 \times y = 18$	$p = 9 \times 2$	$f = 18 \div 2$	$18 \div n = 2$

Solve each equation.

7. $14 = 7 \times a$	**8.** $90 \div g = 9$	**9.** $10 \div n = 5$	**10.** $8 \times f = 40$
$a =$ _____	$g =$ _____	$n =$ _____	$f =$ _____

► Write and Solve Equations with Variables

Write an equation and solve the problem.

11. A box of straws holds 60 straws. There are 10 straws in each row. How many rows are there?

_____

12. Ethan used 9 dimes to pay for his book. How much did his book cost?

_____

13. There are 10 relay teams with an equal number of people on each team running a race. There are 50 people running the race. How many people are there on each team?

_____

14. Amanda has 20 bracelets. She gave the same number of bracelets to 2 of her friends. How many bracelets did she give to each friend?

_____

Name _____ Date _____

► What's the Error?

Dear Math Students,

Today my teacher asked me to write a word problem that can be solved using the division 40 ÷ 10. Here is the problem I wrote:

> Kim has 40 apples and puts 4 apples in each bag. How many bags did Kim use?

Is my problem correct? If not, please correct my work and tell me what I did wrong.

Your friend,
Puzzled Penguin

15. Write an answer to the Puzzled Penguin.

_____

_____

_____

► Write and Solve Problems with 10s

16. Write a word problem that can be solved using the division 60 ÷ 10. Then write a related multiplication word problem.

_____

_____

17. Write a word problem that can be solved using the multiplication 10 × 3. Then write a related division word problem.

_____

_____

Name _____

► PATH to FLUENCY Check Sheet 2: 10s and 9s

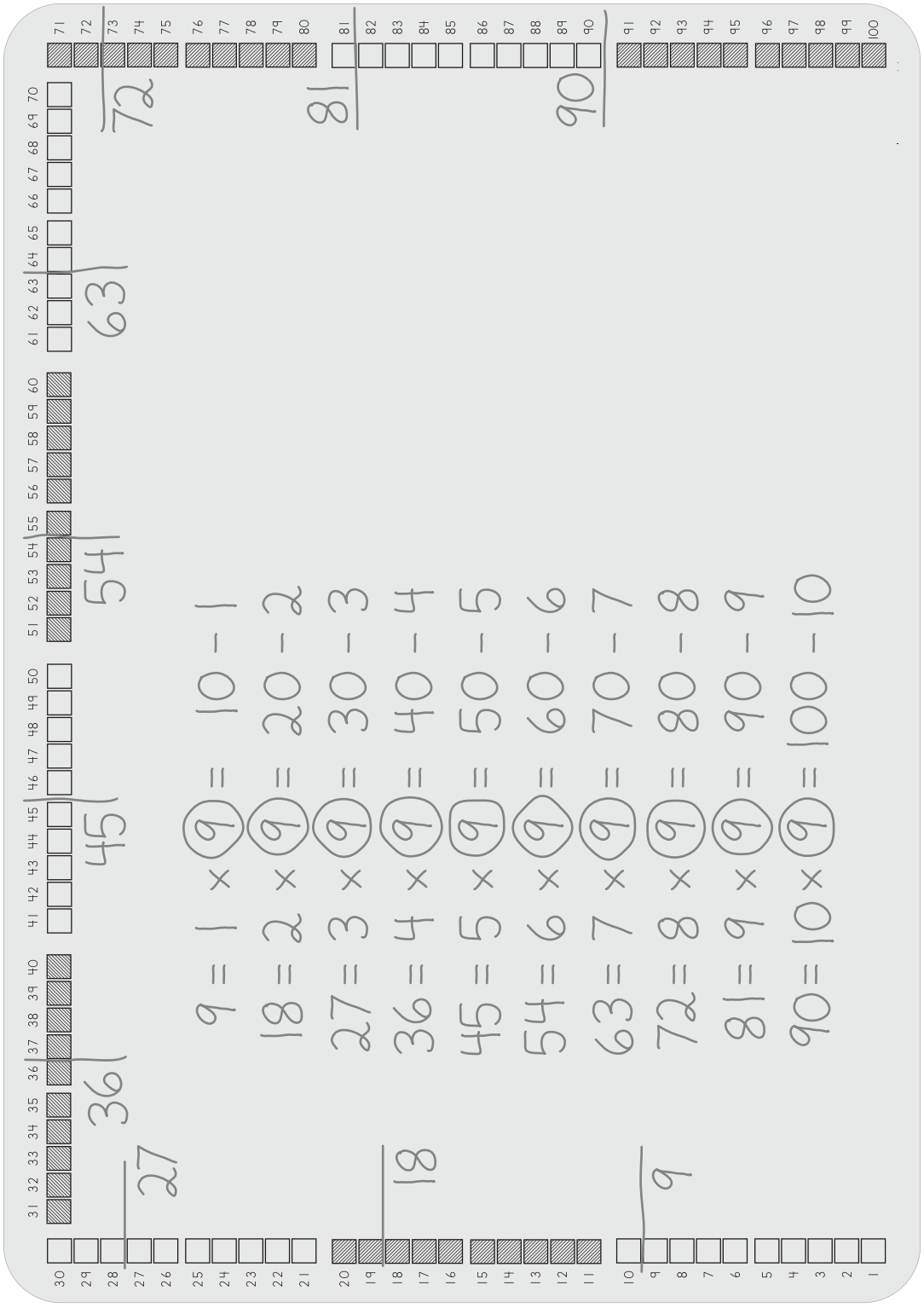
10s Multiplications	10s Divisions	9s Multiplications	9s Divisions
9 × 10 = 90	100 / 10 = 10	3 × 9 = 27	27 / 9 = 3
10 • 3 = 30	50 ÷ 10 = 5	9 • 7 = 63	9 ÷ 9 = 1
10 * 6 = 60	70 / 10 = 7	10 * 9 = 90	81 / 9 = 9
1 × 10 = 10	40 ÷ 10 = 4	5 × 9 = 45	45 ÷ 9 = 5
10 • 4 = 40	80 / 10 = 8	9 • 8 = 72	90 / 9 = 10
10 * 7 = 70	60 ÷ 10 = 6	9 * 1 = 9	36 ÷ 9 = 4
8 × 10 = 80	10 / 10 = 1	2 × 9 = 18	18 / 9 = 2
10 • 10 = 100	20 ÷ 10 = 2	9 • 9 = 81	63 ÷ 9 = 7
5 * 10 = 50	90 / 10 = 9	6 * 9 = 54	54 / 9 = 6
10 × 2 = 20	30 / 10 = 3	9 × 4 = 36	72 / 9 = 8
10 • 5 = 50	80 ÷ 10 = 8	9 • 5 = 45	27 ÷ 9 = 3
4 * 10 = 40	70 / 10 = 7	4 * 9 = 36	45 / 9 = 5
10 × 1 = 10	100 ÷ 10 = 10	9 × 1 = 9	63 ÷ 9 = 7
3 • 10 = 30	90 / 10 = 9	3 • 9 = 27	72 / 9 = 8
10 * 8 = 80	60 ÷ 10 = 6	9 * 8 = 72	54 ÷ 9 = 6
7 × 10 = 70	30 / 10 = 3	7 × 9 = 63	18 / 9 = 2
6 • 10 = 60	10 ÷ 10 = 1	6 • 9 = 54	90 ÷ 9 = 10
10 * 9 = 90	40 ÷ 10 = 4	9 * 9 = 81	9 ÷ 9 = 1
10 × 10 = 100	20 / 10 = 2	10 × 9 = 90	36 / 9 = 4
2 • 10 = 20	50 ÷ 10 = 5	2 • 9 = 18	81 ÷ 9 = 9

Name _____ Date _____

CA CC Content Standards **3.OA.7, 3.OA.9**
Mathematical Practices **MP.2, MP.5, MP.7, MP.8**

► PATH to FLUENCY Explore Patterns with 9s

What patterns do you see below?



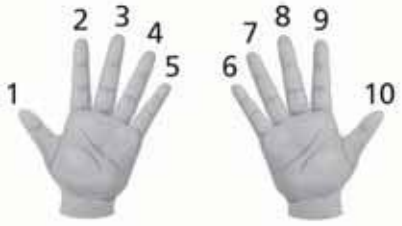
1-8
Class Activity

Name _____ Date _____

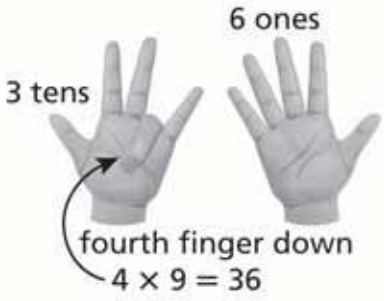
PATH to FLUENCY

► Math Tools: Quick 9s Multiplication

You can use the Quick 9s method to help you multiply by 9. Open your hands and turn them so they are facing you. Imagine that your fingers are numbered like this.



To find a number times 9, bend down the finger for that number. For example, to find 4 × 9, bend down your fourth finger.



The fingers to the left of your bent finger are the tens. The fingers to the right are the ones. For this problem, there are 3 tens and 6 ones, so 4 × 9 = 36.

Why does this work?
Because $4 \times 9 = 4 \times (10 - 1) = 40 - 4 = 36$

You could show 3 tens quickly by raising the first 3 fingers as shown above.

► Math Tools: Quick 9s Division

You can also use Quick 9s to help you divide by 9. For example, to find 72 ÷ 9, show 72 on your fingers.

Your eighth finger is down, so 72 ÷ 9 = 8.
8 × 9 = 80 − 8 = 72

Name _____

► PATH to FLUENCY Check Sheet 3: 2s, 5s, 9s, and 10s

2s, 5s, 9s, 10s Multiplications	2s, 5s, 9s, 10s Multiplications	2s, 5s, 9s, 10s Divisions	2s, 5s, 9s, 10s Divisions
2 × 10 = 20	5 × 10 = 50	18 / 2 = 9	36 / 9 = 4
10 • 5 = 50	10 • 9 = 90	50 ÷ 5 = 10	70 ÷ 10 = 7
9 * 6 = 54	4 * 10 = 40	72 / 9 = 8	18 / 2 = 9
7 × 10 = 70	2 × 9 = 18	60 ÷ 10 = 6	45 ÷ 5 = 9
2 • 3 = 6	5 • 3 = 15	12 / 2 = 6	45 / 9 = 5
5 * 7 = 35	6 * 9 = 54	30 ÷ 5 = 6	30 ÷ 10 = 3
9 × 10 = 90	10 × 3 = 30	18 / 9 = 2	6 / 2 = 3
6 • 10 = 60	3 • 2 = 6	50 ÷ 10 = 5	50 ÷ 5 = 10
8 * 2 = 16	5 * 8 = 40	14 / 2 = 7	27 / 9 = 3
5 × 6 = 30	9 × 9 = 81	25 / 5 = 5	70 / 10 = 7
9 • 5 = 45	10 • 4 = 40	81 ÷ 9 = 9	20 ÷ 2 = 10
8 * 10 = 80	9 * 2 = 18	20 / 10 = 2	45 / 5 = 9
2 × 1 = 2	5 × 1 = 5	8 ÷ 2 = 4	54 ÷ 9 = 6
3 • 5 = 15	9 • 6 = 54	45 / 5 = 9	80 / 10 = 8
4 * 9 = 36	10 * 1 = 10	63 ÷ 9 = 7	16 ÷ 2 = 8
3 × 10 = 30	7 × 2 = 14	30 / 10 = 3	15 / 5 = 3
2 • 6 = 12	6 • 5 = 30	10 ÷ 2 = 5	90 ÷ 9 = 10
4 * 5 = 20	8 * 9 = 72	40 ÷ 5 = 8	100 ÷ 10 = 10
9 × 7 = 63	10 × 6 = 60	9 / 9 = 1	12 / 2 = 6
1 • 10 = 10	2 • 8 = 16	50 ÷ 10 = 5	35 ÷ 5 = 7

1-9
Class Activity

Name Date

CA CC Content Standards **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.6, 3.OA.7** Mathematical Practices **MP.1, MP.4, MP.5**

► Make Sense of Problems with 2s, 5s, 9s, and 10s

Write an equation to represent each problem. Then solve the problem.

Show your work.

1. Ian planted tulip bulbs in an array with 5 rows and 10 columns. How many bulbs did he plant?

2. Erin gave 30 basketball cards to her 5 cousins. Each cousin got the same number of cards. How many cards did each cousin get?

3. Martina bought 7 cans of racquetballs. There were 2 balls per can. How many racquetballs did she buy in all?

4. The 27 students in the orchestra stood in rows for their school picture. There were 9 students in every row. How many rows of students were there?

5. Lindsey needs 40 note cards. The note cards are packaged 10 to a box. How many boxes of cards should Lindsey buy?

6. There are 25 student desks in the classroom. The desks are arranged in 5 rows with the same number of desks in each row. How many desks are in each row?

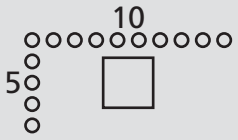
Name _____ Date _____

► Math Tools: Fast Array Drawings

When you solve a word problem involving an array, you can save time by making a Fast Array drawing. This type of drawing shows the number of items in each row and column, but does not show every single item.

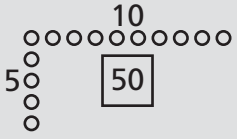
Here is how you might use a Fast Array drawing for problem 1 on Student Activity Book page 43.

Show the number of rows and the number of columns. Make a box in the center to show that you don't know the total.



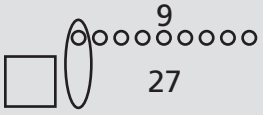
Here are three ways to find the total.

- Find 5×10.
- Use 10s count-bys to find the total in 5 rows of 10: 10, 20, 30, 40, 50.
- Use 5s count-bys to find the total in 10 rows of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50.



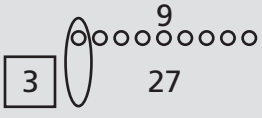
Here is how you might use a Fast Array drawing for problem 4 on page 43.

Show the number in each row and the total. Make a box to show that you don't know the number of rows.



Here are two ways to find the number of rows.

- Find $27 \div 9$ or solve $\square \times 9 = 27$.
- Count by 9s until you reach 27: 9, 18, 27.



Math Journal **Make a Fast Array drawing to solve each problem.**

7. Beth planted tulip bulbs in an array with 9 rows and 6 columns. How many bulbs did she plant?

8. The 36 students in the chorus stood in 4 rows for their school picture. How many students were in each row?

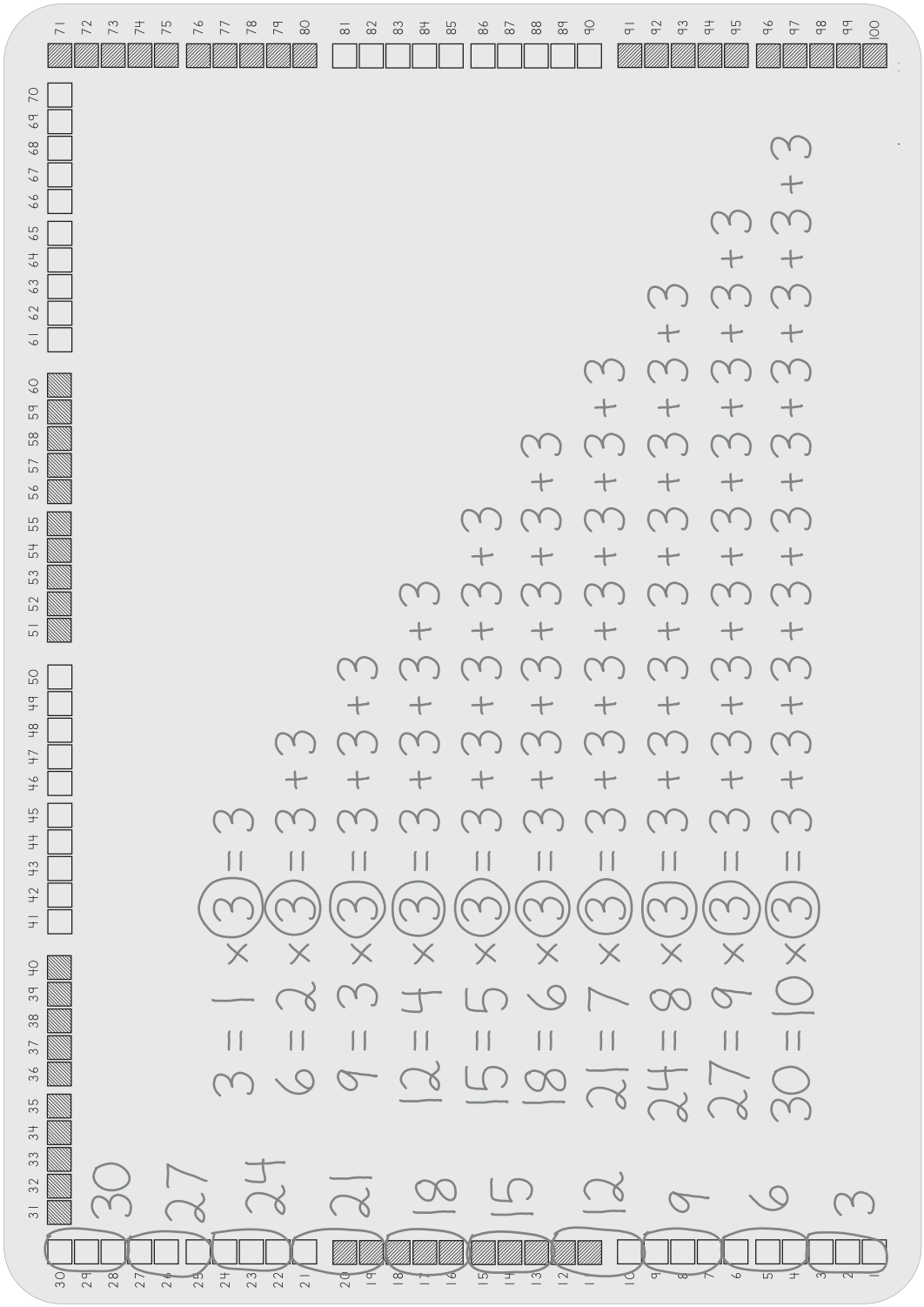
1-10
Class Activity

Name Date

CA CC Content Standards **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.7, 3.OA.9** Mathematical Practices **MP.1, MP.2, MP.4, MP.7, MP.8**

► PATH to FLUENCY Explore Patterns with 3s

What patterns do you see below?



Name _____ Date _____

► PATH to FLUENCY Use the 5s Shortcut for 3s

Write the 3s count-bys to find the total.

1. How many sides are in 8 triangles?

_____ _____ _____ _____ _____ _____ _____ _____

2. How many wheels are on 6 tricycles?

_____ _____ _____ _____ _____ _____

3. How many legs are on 7 tripods?

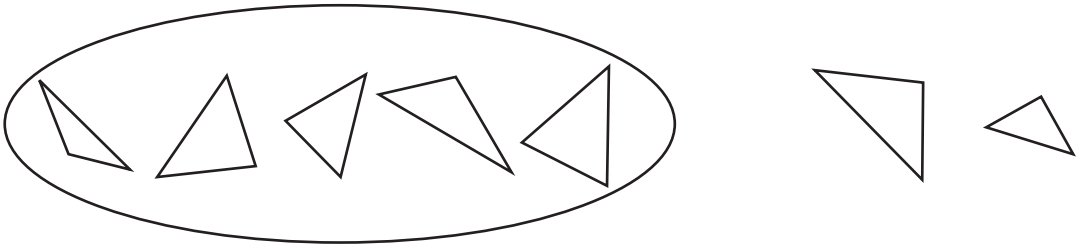
_____ _____ _____ _____ _____ _____ _____

Name _____ Date _____

► PATH to FLUENCY Use the 5s Shortcut for 3s (continued)

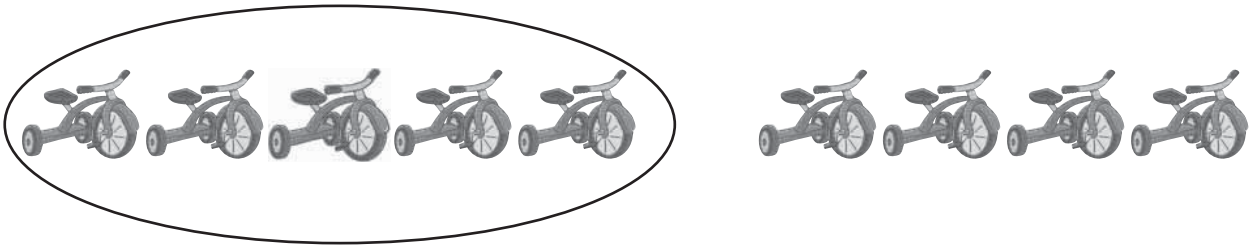
Find the total by starting with the fifth count-by and counting by 3s from there.

4. How many sides are in 7 triangles?



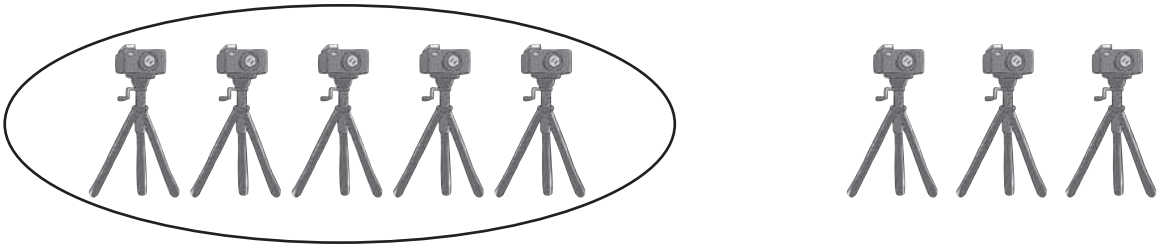
_____ _____ _____

5. How many wheels are on 9 tricycles?



_____ _____ _____ _____ _____

6. How many legs are on 8 tripods?



_____ _____ _____ _____

Name _____ Date _____

► Make Sense of Problems

Write an equation and solve the problem.

Show your work.

7. Spencer arranged his soccer trophies in 3 equal rows. If he has 12 trophies, how many trophies are in each row?

_____

8. How many sides do 8 triangles have altogether?

_____

9. For Sophie's class picture, the students stood in 3 rows with 5 students in each row. How many students were in the picture?

_____

10. Tickets to the school play cost $3 each. Mr. Cortez spent $27 on tickets. How many tickets did he buy?

_____

11. Jess solved 21 multiplication problems. If the problems were arranged in rows of 3, how many rows of problems did Jess solve?

_____

12. Last year, 6 sets of triplets were born at Watertown Hospital. During this time, how many triples were born at the hospital in all?

_____

Name _____

Study Sheet B

3s		
Count-bys	**Mixed Up ×**	**Mixed Up ÷**
1 × 3 = 3	5 × 3 = 15	27 ÷ 3 = 9
2 × 3 = 6	1 × 3 = 3	6 ÷ 3 = 2
3 × 3 = 9	8 × 3 = 24	18 ÷ 3 = 6
4 × 3 = 12	10 × 3 = 30	30 ÷ 3 = 10
5 × 3 = 15	3 × 3 = 9	9 ÷ 3 = 3
6 × 3 = 18	7 × 3 = 21	3 ÷ 3 = 1
7 × 3 = 21	9 × 3 = 27	12 ÷ 3 = 4
8 × 3 = 24	2 × 3 = 6	24 ÷ 3 = 8
9 × 3 = 27	4 × 3 = 12	15 ÷ 3 = 5
10 × 3 = 30	6 × 3 = 18	21 ÷ 3 = 7

4s		
Count-bys	**Mixed Up ×**	**Mixed Up ÷**
1 × 4 = 4	4 × 4 = 16	12 ÷ 4 = 3
2 × 4 = 8	1 × 4 = 4	36 ÷ 4 = 9
3 × 4 = 12	7 × 4 = 28	24 ÷ 4 = 6
4 × 4 = 16	3 × 4 = 12	4 ÷ 4 = 1
5 × 4 = 20	9 × 4 = 36	20 ÷ 4 = 5
6 × 4 = 24	10 × 4 = 40	28 ÷ 4 = 7
7 × 4 = 28	2 × 4 = 8	8 ÷ 4 = 2
8 × 4 = 32	5 × 4 = 20	40 ÷ 4 = 10
9 × 4 = 36	8 × 4 = 32	32 ÷ 4 = 8
10 × 4 = 40	6 × 4 = 24	16 ÷ 4 = 4

0s	
Count-bys	**Mixed Up ×**
1 × 0 = 0	3 × 0 = 0
2 × 0 = 0	10 × 0 = 0
3 × 0 = 0	5 × 0 = 0
4 × 0 = 0	8 × 0 = 0
5 × 0 = 0	7 × 0 = 0
6 × 0 = 0	2 × 0 = 0
7 × 0 = 0	9 × 0 = 0
8 × 0 = 0	6 × 0 = 0
9 × 0 = 0	1 × 0 = 0
10 × 0 = 0	4 × 0 = 0

1s		
Count-bys	**Mixed Up ×**	**Mixed Up ÷**
1 × 1 = 1	5 × 1 = 5	10 ÷ 1 = 10
2 × 1 = 2	7 × 1 = 7	8 ÷ 1 = 8
3 × 1 = 3	10 × 1 = 10	4 ÷ 1 = 4
4 × 1 = 4	1 × 1 = 1	9 ÷ 1 = 9
5 × 1 = 5	8 × 1 = 8	6 ÷ 1 = 6
6 × 1 = 6	4 × 1 = 4	7 ÷ 1 = 7
7 × 1 = 7	9 × 1 = 9	1 ÷ 1 = 1
8 × 1 = 8	3 × 1 = 3	2 ÷ 1 = 2
9 × 1 = 9	2 × 1 = 2	5 ÷ 1 = 5
10 × 1 = 10	6 × 1 = 6	3 ÷ 1 = 3

PATH to FLUENCY

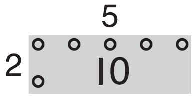
2×2	$\begin{array}{r} 2 \\ \times\ 3 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 2 \\ \hline \end{array}$	2×4 4×2	$\begin{array}{r} 2 \\ \times\ 5 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ \times\ 2 \\ \hline \end{array}$
2×6 6×2	$\begin{array}{r} 2 \\ \times\ 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times\ 2 \\ \hline \end{array}$	2×8 8×2	$\begin{array}{r} 2 \\ \times\ 9 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ \times\ 2 \\ \hline \end{array}$

$10 = 2 \times 5$

$10 = 5 \times 2$

5, 10

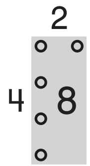
2, 4, 6, 8, 10



$$\begin{array}{r} 2 \\ \times\ 4 \\ \hline 8 \end{array} \qquad \begin{array}{r} 4 \\ \times\ 2 \\ \hline 8 \end{array}$$

2, 4, 6, 8

4, 8

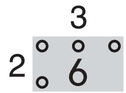


$6 = 2 \times 3$

$6 = 3 \times 2$

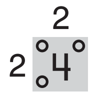
3, 6

2, 4, 6



$$\begin{array}{r} 2 \\ \times\ 2 \\ \hline 4 \end{array}$$

2, 4

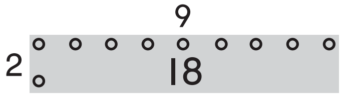


$18 = 2 \times 9$

$18 = 9 \times 2$

9, 18

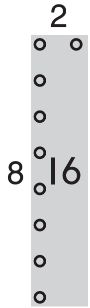
2, 4, 6, 8, 10, 12, 14, 16, 18



$$\begin{array}{r} 2 \\ \times\ 8 \\ \hline 16 \end{array} \qquad \begin{array}{r} 8 \\ \times\ 2 \\ \hline 16 \end{array}$$

8, 16

2, 4, 6, 8, 10, 12, 14, 16

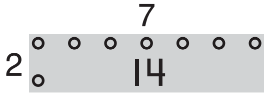


$14 = 2 \times 7$

$14 = 7 \times 2$

7, 14

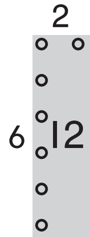
2, 4, 6, 8, 10, 12, 14



$$\begin{array}{r} 2 \\ \times\ 6 \\ \hline 12 \end{array} \qquad \begin{array}{r} 6 \\ \times\ 2 \\ \hline 12 \end{array}$$

6, 12

2, 4, 6, 8, 10, 12



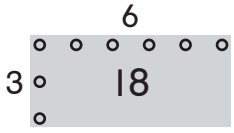
3×3	3×4 4×3	3×5 5×3	3×6 6×3
3×7 7×3	3×8 8×3	3×9 9×3	4×4

$18 = 3 \times 6$

$18 = 6 \times 3$

6, 12, 18

3, 6, 9, 12, 15, 18

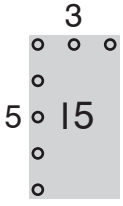


$3 \times 5 = 15$

$5 \times 3 = 15$

5, 10, 15

3, 6, 9, 12, 15

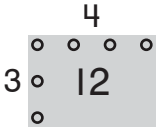


$12 = 3 \times 4$

$12 = 4 \times 3$

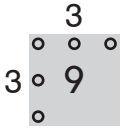
4, 8, 12

3, 6, 9, 12



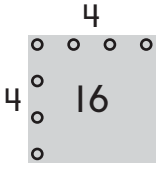
$3 \times 3 = 9$

3, 6, 9



$16 = 4 \times 4$

4, 8, 12, 16

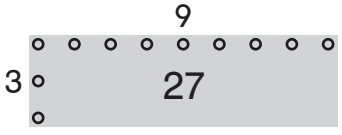


$3 \times 9 = 27$

$9 \times 3 = 27$

9, 18, 27

3, 6, 9, 12, 15, 18, 21, 24, 27

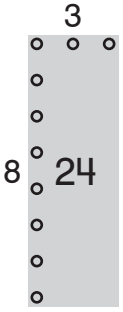


$24 = 3 \times 8$

$24 = 8 \times 3$

8, 16, 24

3, 6, 9, 12, 15, 18, 21, 24

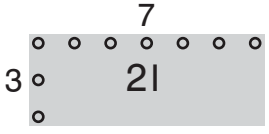


$3 \times 7 = 21$

$7 \times 3 = 21$

7, 14, 21

3, 6, 9, 12, 15, 18, 21



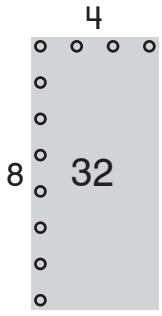
4×5 5×4	$\begin{array}{r} 4 \\ \times\ 6 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ \times\ 4 \\ \hline \end{array}$	4×7 7×4	$\begin{array}{r} 4 \\ \times\ 8 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ \times\ 4 \\ \hline \end{array}$
4×9 9×4	$\begin{array}{r} 5 \\ \times\ 5 \\ \hline \end{array}$	5×6 6×5	$\begin{array}{r} 5 \\ \times\ 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times\ 5 \\ \hline \end{array}$

$32 = 4 \times 8$

$32 = 8 \times 4$

8 4
16 8
24 12
32 16
20

24
28
32

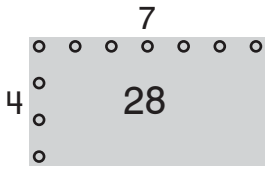


$4 \times 7 = 28$

$7 \times 4 = 28$

7 4
14 8
21 12
28 16
20

24
28

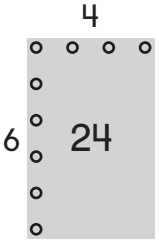


$24 = 4 \times 6$

$24 = 6 \times 4$

6 4
12 8
18 12
24 16
20

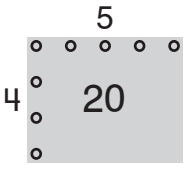
24



$4 \times 5 = 20$

$5 \times 4 = 20$

5 4
10 8
15 12
20 16
20

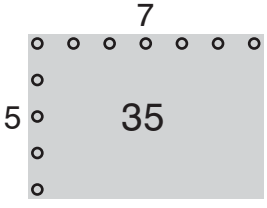


$35 = 5 \times 7$

$35 = 7 \times 5$

7 5
14 10
21 15
28 20
35 25

30
35

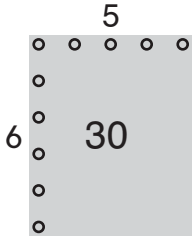


$5 \times 6 = 30$

$6 \times 5 = 30$

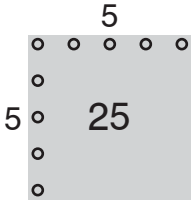
6 5
12 10
18 15
24 20
30 25

30



$25 = 5 \times 5$

5
10
15
20
25

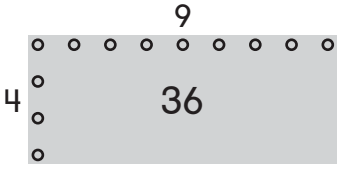


$4 \times 9 = 36$

$9 \times 4 = 36$

9 4
18 8
27 12
36 16
20

24
28
32
36

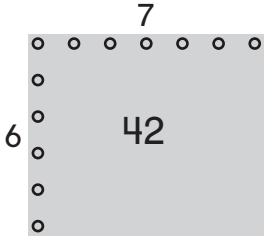


5×8 8×5	$\begin{array}{r} 5 \\ \times\ 9 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ \times\ 5 \\ \hline \end{array}$	6×6	$\begin{array}{r} 6 \\ \times\ 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times\ 6 \\ \hline \end{array}$
6×8 8×6	$\begin{array}{r} 6 \\ \times\ 9 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ \times\ 6 \\ \hline \end{array}$	7×7	$\begin{array}{r} 7 \\ \times\ 8 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ \times\ 7 \\ \hline \end{array}$

$42 = 7 \times 6$

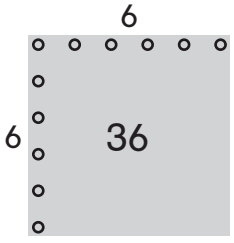
$42 = 6 \times 7$

6	7
12	14
18	21
24	28
30	35
36	42
42	



$$\begin{array}{r} 6 \\ \times\ 6 \\ \hline 36 \end{array}$$

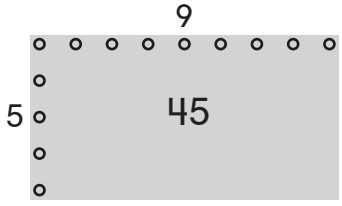
6
12
18
24
30
36



$45 = 9 \times 5$

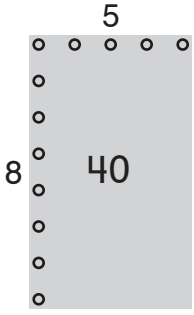
$45 = 5 \times 9$

5	9
10	18
15	27
20	36
25	45
30	
35	
40	
45	



$$\begin{array}{r} 8 \\ \times\ 5 \\ \hline 40 \end{array} \qquad \begin{array}{r} 5 \\ \times\ 8 \\ \hline 40 \end{array}$$

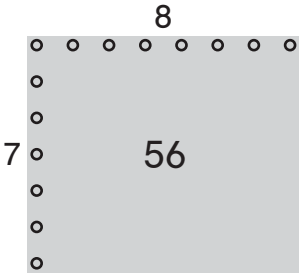
5	8
10	16
15	24
20	32
25	40
30	
35	
40	



$56 = 7 \times 8$

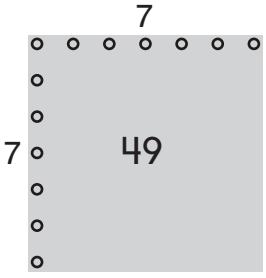
$56 = 8 \times 7$

8	7
16	14
24	21
32	28
40	35
48	42
56	49
	56



$$\begin{array}{r} 7 \\ \times\ 7 \\ \hline 49 \end{array}$$

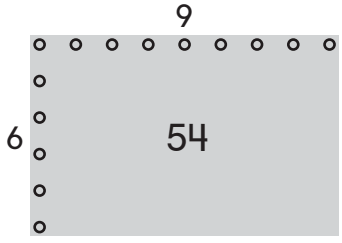
7
14
21
28
35
42
49



$54 = 9 \times 6$

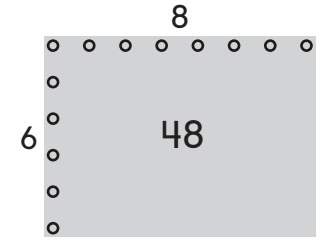
$54 = 6 \times 9$

6	9
12	18
18	27
24	36
30	45
36	54
42	
48	
54	



$$\begin{array}{r} 6 \\ \times 8 \\ \hline 48 \end{array} \qquad \begin{array}{r} 8 \\ \times\ 6 \\ \hline 48 \end{array}$$

6	8
12	16
18	24
24	32
30	40
36	48
42	
48	

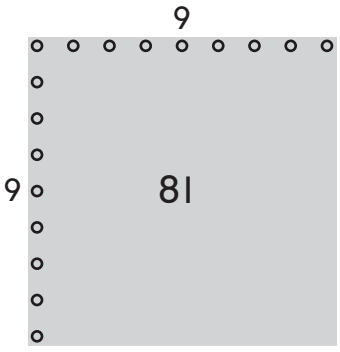


7×9 9×7	$\begin{array}{r} 8 \\ \times\ 8 \\ \hline \end{array}$	9×8 8×9	$\begin{array}{r} 9 \\ \times\ 9 \\ \hline \end{array}$

$81 = 9 \times 9$

9
18
27
36
45

54
63
72
81



$9 \times 8 = 72$

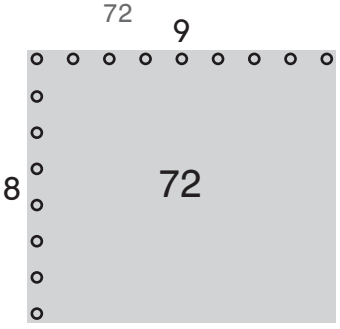
8
16
24
32
40

48
56
64
72

$8 \times 9 = 72$

9
18
27
36
45

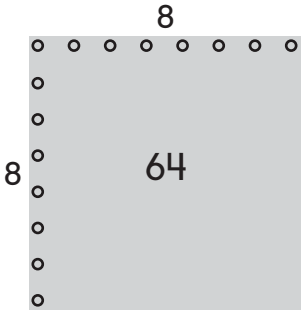
54
63
72



$64 = 8 \times 8$

8
16
24
32
40

48
56
64



$7 \times 9 = 63$

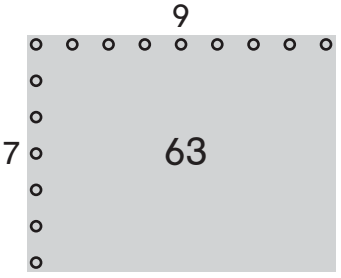
9
18
27
36
45

54
63

$9 \times 7 = 63$

7
14
21
28
35

42
49
56
63

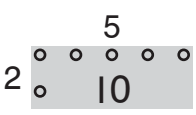


$2\overline{)4}$ $4 \div 2$	$2\overline{)6}$ $6 \div 2$	$2\overline{)8}$ $8 \div 2$	$2\overline{)10}$ $10 \div 2$
$2\overline{)12}$ $12 \div 2$	$2\overline{)14}$ $14 \div 2$	$2\overline{)16}$ $16 \div 2$	$2\overline{)18}$ $18 \div 2$

$2\overline{)10}$ $5\overline{)10}$

2, 4, 6, 8, 10

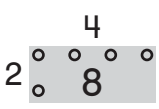
5, 10



$2\overline{)8}$ $4\overline{)8}$

2, 4, 6, 8

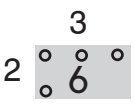
4, 8



$2\overline{)6}$ $3\overline{)6}$

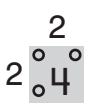
2, 4, 6

3, 6



$2\overline{)4}$

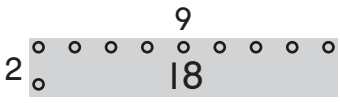
2, 4



$2\overline{)18}$ $9\overline{)18}$

2, 4, 6, 8, 10, 12, 14, 16, 18

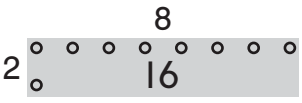
9, 18



$2\overline{)16}$ $8\overline{)16}$

2, 4, 6, 8, 10, 12, 14, 16

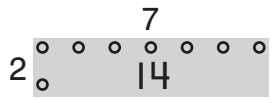
8, 16



$2\overline{)14}$ $7\overline{)14}$

2, 4, 6, 8, 10, 12, 14

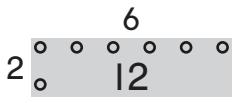
7, 14



$2\overline{)12}$ $6\overline{)12}$

2, 4, 6, 8, 10, 12

6, 12

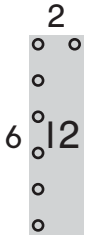


$3\overline{)6}$ $6 \div 3$	$4\overline{)8}$ $8 \div 4$	$5\overline{)10}$ $10 \div 5$	$6\overline{)12}$ $12 \div 6$
$7\overline{)14}$ $14 \div 7$	$8\overline{)16}$ $16 \div 8$	$9\overline{)18}$ $18 \div 9$	$3\overline{)9}$ $9 \div 3$

$6\overline{)12}$ $2\overline{)12}$

6
12

2
4
6
8
10
12



$5\overline{)10}$ $2\overline{)10}$

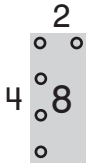
5
10

2
4
6
8
10

$4\overline{)8}$ $2\overline{)8}$

4
8

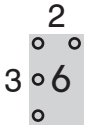
2
4
6
8



$3\overline{)6}$ $2\overline{)6}$

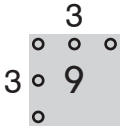
3
6

2
4
6



$3\overline{)9}$

3
6
9



$9\overline{)18}$ $2\overline{)18}$

9
18

2
4
6
8
10
12
14
16
18

$8\overline{)16}$ $2\overline{)16}$

8
16

2
4
6
8
10
12
14
16

$7\overline{)14}$ $2\overline{)14}$

7
14

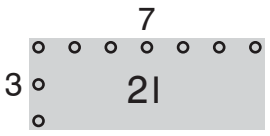
2
4
6
8
10
12
14

$3\overline{)12}$ $12 \div 3$	$3\overline{)15}$ $15 \div 3$	$3\overline{)18}$ $18 \div 3$	$3\overline{)21}$ $21 \div 3$
$3\overline{)24}$ $24 \div 3$	$3\overline{)27}$ $27 \div 3$	$4\overline{)12}$ $12 \div 4$	$5\overline{)15}$ $15 \div 5$

$3\overline{)21}$ $7\overline{)21}$

3, 6, 9, 12, 15, 18, 21

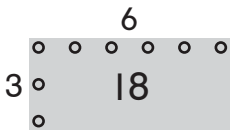
7, 14, 21



$3\overline{)18}$ $6\overline{)18}$

3, 6, 9, 12, 15, 18

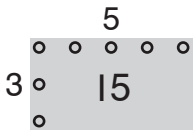
6, 12, 18



$3\overline{)15}$ $5\overline{)15}$

3, 6, 9, 12, 15

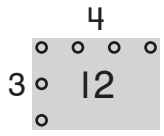
5, 10, 15



$3\overline{)12}$ $4\overline{)12}$

3, 6, 9, 12

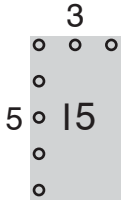
4, 8, 12



$5\overline{)15}$ $3\overline{)15}$

5, 10, 15

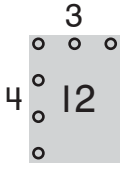
3, 6, 9, 12, 15



$4\overline{)12}$ $3\overline{)12}$

4, 8, 12

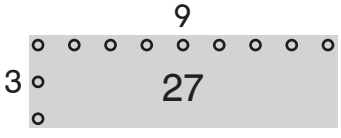
3, 6, 9, 12



$3\overline{)27}$ $9\overline{)27}$

3, 6, 9, 12, 15, 18, 21, 24, 27

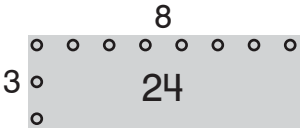
9, 18, 27



$3\overline{)24}$ $8\overline{)24}$

3, 6, 9, 12, 15, 18, 21, 24

8, 16, 24

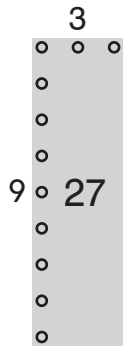


$6\overline{)18}$ $18 \div 6$	$7\overline{)21}$ $21 \div 7$	$8\overline{)24}$ $24 \div 8$	$9\overline{)27}$ $27 \div 9$
$4\overline{)16}$ $16 \div 4$	$4\overline{)20}$ $20 \div 4$	$4\overline{)24}$ $24 \div 4$	$4\overline{)28}$ $28 \div 4$

$9\overline{)27}$ $3\overline{)27}$

9
18
27

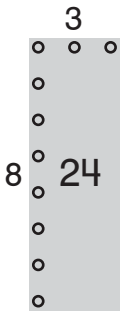
3
6
9
12
15
18
21
24
27



$8\overline{)24}$ $3\overline{)24}$

8
16
24

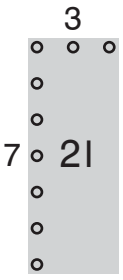
3
6
9
12
15
18
21
24



$7\overline{)21}$ $3\overline{)21}$

7
14
21

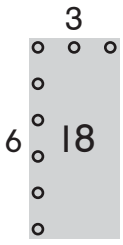
3
6
9
12
15
18
21



$6\overline{)18}$ $3\overline{)18}$

6
12
18

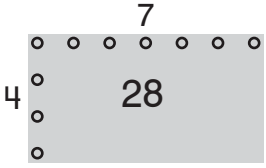
3
6
9
12
15
18



$4\overline{)28}$ $7\overline{)28}$

4
8
12
16
20
24
28

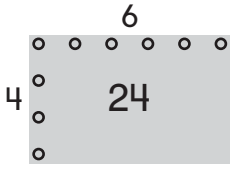
7
14
21
28



$4\overline{)24}$ $6\overline{)24}$

4
8
12
16
20
24

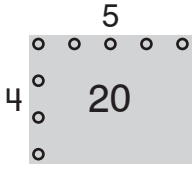
6
12
18
24



$4\overline{)20}$ $5\overline{)20}$

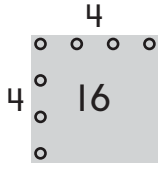
4
8
12
16
20

5
10
15
20



$4\overline{)16}$

4
8
12
16

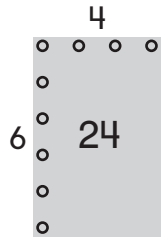


$4\overline{)32}$ $32 \div 4$	$4\overline{)36}$ $36 \div 4$	$5\overline{)20}$ $20 \div 5$	$6\overline{)24}$ $24 \div 6$
$7\overline{)28}$ $28 \div 7$	$8\overline{)32}$ $32 \div 8$	$9\overline{)36}$ $36 \div 9$	$5\overline{)25}$ $25 \div 5$

$4 \times 6 = 24$ $6 \times 4 = 24$

6, 12, 18, 24

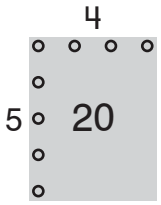
4, 8, 12, 16, 20, 24



$4 \times 5 = 20$ $5 \times 4 = 20$

5, 10, 15, 20

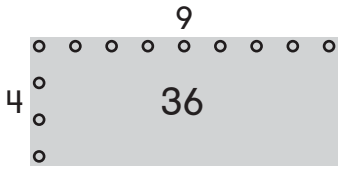
4, 8, 12, 16, 20



$9 \times 4 = 36$ $4 \times 9 = 36$

4, 8, 12, 16, 20, 24, 28, 32, 36

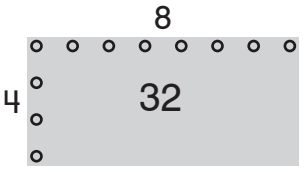
9, 18, 27, 36



$8 \times 4 = 32$ $4 \times 8 = 32$

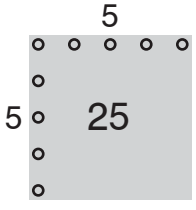
4, 8, 12, 16, 20, 24, 28, 32

8, 16, 24, 32



$5 \times 5 = 25$

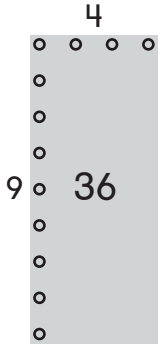
5, 10, 15, 20, 25



$9 \times 4 = 36$ $4 \times 9 = 36$

9, 18, 27, 36

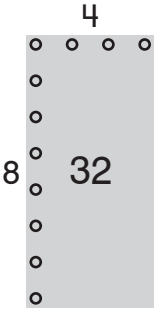
4, 8, 12, 16, 20, 24, 28, 32, 36



$8 \times 4 = 32$ $4 \times 8 = 32$

8, 16, 24, 32

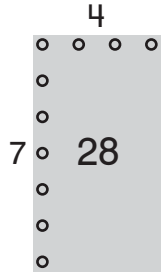
4, 8, 12, 16, 20, 24, 28, 32



$7 \times 4 = 28$ $4 \times 7 = 28$

7, 14, 21, 28

4, 8, 12, 16, 20, 24, 28

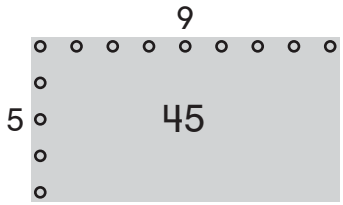


$5\overline{)30}$ $30 \div 5$	$5\overline{)35}$ $35 \div 5$	$5\overline{)40}$ $40 \div 5$	$5\overline{)45}$ $45 \div 5$
$6\overline{)30}$ $30 \div 6$	$7\overline{)35}$ $35 \div 7$	$8\overline{)40}$ $40 \div 8$	$9\overline{)45}$ $45 \div 9$

$5\overline{)45}$ $9\overline{)45}$

5, 10, 15, 20, 25, 30, 35, 40, 45

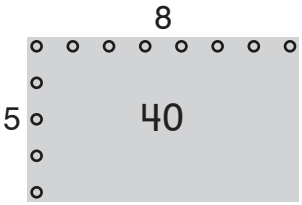
9, 18, 27, 36, 45



$5\overline{)40}$ $8\overline{)40}$

5, 10, 15, 20, 25, 30, 35, 40

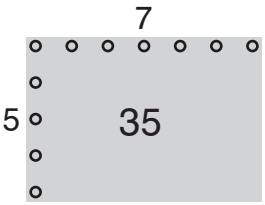
8, 16, 24, 32, 40



$5\overline{)35}$ $7\overline{)35}$

5, 10, 15, 20, 25, 30, 35

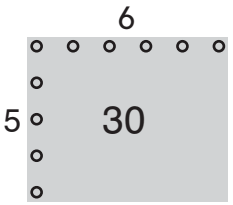
7, 14, 21, 28, 35



$5\overline{)30}$ $6\overline{)30}$

5, 10, 15, 20, 25, 30

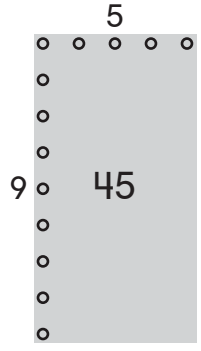
6, 12, 18, 24, 30



$9\overline{)45}$ $5\overline{)45}$

9, 18, 27, 36, 45

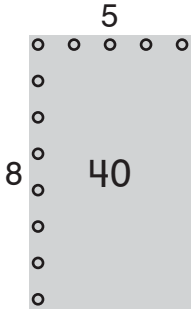
5, 10, 15, 20, 25, 30, 35, 40, 45



$8\overline{)40}$ $5\overline{)40}$

8, 16, 24, 32, 40

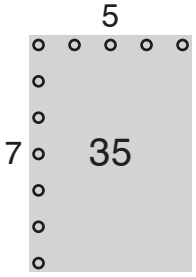
5, 10, 15, 20, 25, 30, 35, 40



$7\overline{)35}$ $5\overline{)35}$

7, 14, 21, 28, 35

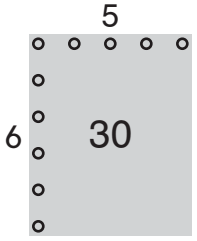
5, 10, 15, 20, 25, 30, 35



$6\overline{)30}$ $5\overline{)30}$

6, 12, 18, 24, 30

5, 10, 15, 20, 25, 30



$6\overline{)36}$

$36 \div 6$

$6\overline{)42}$

$42 \div 6$

$6\overline{)48}$

$48 \div 6$

$6\overline{)54}$

$54 \div 6$

$7\overline{)42}$

$42 \div 7$

$8\overline{)48}$

$48 \div 8$

$9\overline{)54}$

$54 \div 9$

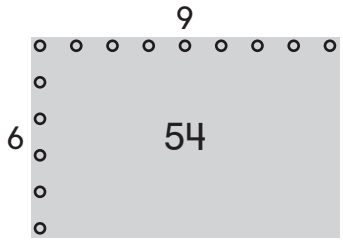
$7\overline{)49}$

$49 \div 7$

$6\overline{)54}$ $9\overline{)54}$

6, 12, 18, 24, 30, 36, 42, 48, 54

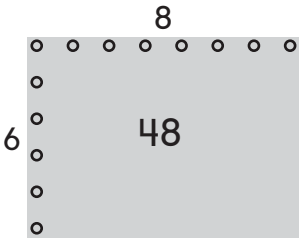
9, 18, 27, 36, 45, 54



$6\overline{)48}$ $8\overline{)48}$

6, 12, 18, 24, 30, 36, 42, 48

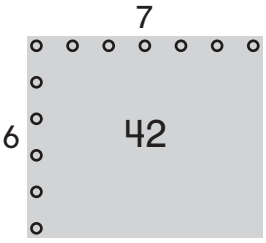
8, 16, 24, 32, 40, 48



$6\overline{)42}$ $7\overline{)42}$

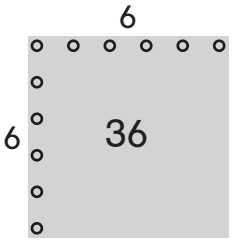
6, 12, 18, 24, 30, 36, 42

7, 14, 21, 28, 35, 42



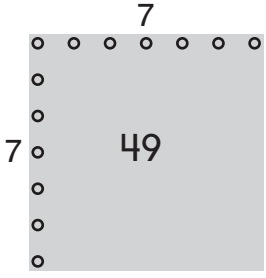
$6\overline{)36}$

6, 12, 18, 24, 30, 36



$7\overline{)49}$

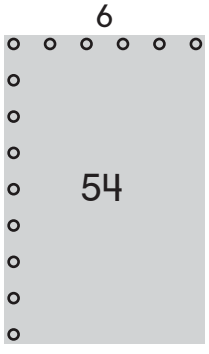
7, 14, 21, 28, 35, 42, 49



$9\overline{)54}$ $6\overline{)54}$

9, 18, 27, 36, 45, 54

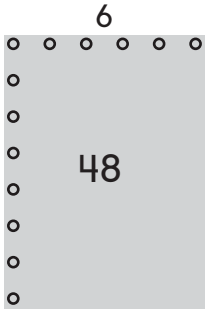
6, 12, 18, 24, 30, 36, 42, 48, 54



$8\overline{)48}$ $6\overline{)48}$

8, 16, 24, 32, 40, 48

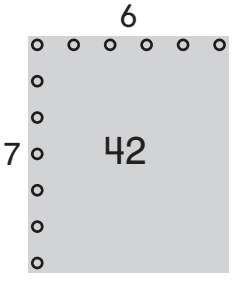
6, 12, 18, 24, 30, 36, 42, 48



$7\overline{)42}$ $6\overline{)42}$

7, 14, 21, 28, 35, 42

6, 12, 18, 24, 30, 36, 42



$7\overline{)56}$

$56 \div 7$

$7\overline{)63}$

$63 \div 7$

$8\overline{)56}$

$56 \div 8$

$9\overline{)63}$

$63 \div 9$

$8\overline{)64}$

$64 \div 8$

$8\overline{)72}$

$72 \div 8$

$9\overline{)72}$

$72 \div 9$

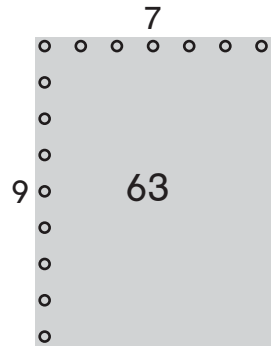
$9\overline{)81}$

$81 \div 9$

$9\overline{)63}$ $7\overline{)63}$

9, 18, 27, 36, 45, 54, 63

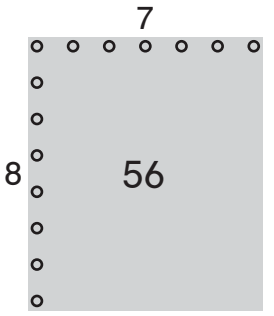
7, 14, 21, 28, 35, 42, 49, 56, 63



$8\overline{)56}$ $7\overline{)56}$

8, 16, 24, 32, 40, 48, 56

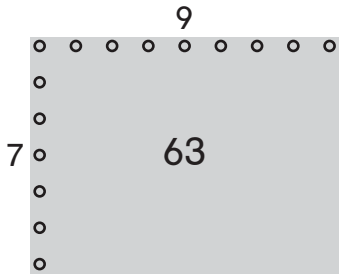
7, 14, 21, 28, 35, 42, 49, 56



$7\overline{)63}$ $9\overline{)63}$

7, 14, 21, 28, 35, 42, 49, 56, 63

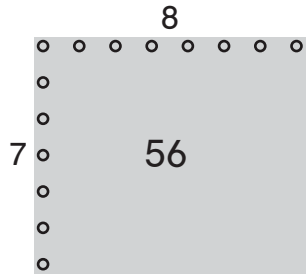
9, 18, 27, 36, 45, 54, 63



$7\overline{)56}$ $8\overline{)56}$

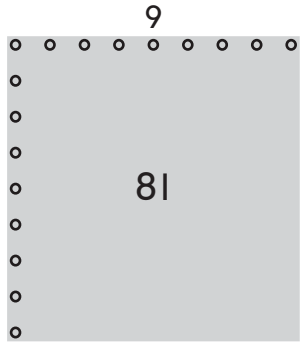
7, 14, 21, 28, 35, 42, 49, 56

8, 16, 24, 32, 40, 48, 56



$9\overline{)81}$

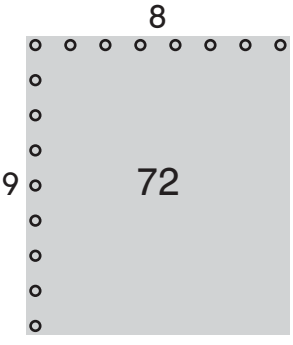
9, 18, 27, 36, 45, 54, 63, 72, 81



$9\overline{)72}$ $8\overline{)72}$

9, 18, 27, 36, 45, 54, 63, 72

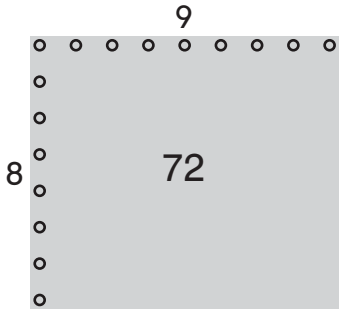
8, 16, 24, 32, 40, 48, 56, 64, 72



$8\overline{)72}$ $9\overline{)72}$

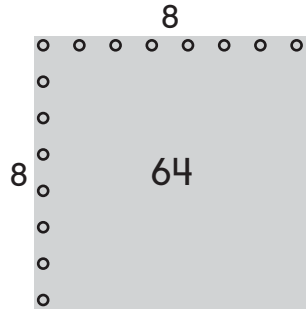
8, 16, 24, 32, 40, 48, 56, 64, 72

9, 18, 27, 36, 45, 54, 63, 72



$8\overline{)64}$

8, 16, 24, 32, 40, 48, 56, 64



1-11
Class Activity

Name Date

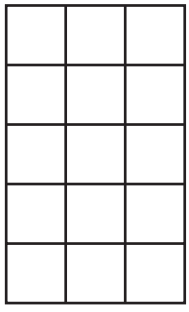
CA CC Content Standards 3.OA.5, 3.OA.7, 3.MD.5, 3.MD.5a, 3.MD.5b, 3.MD.7, 3.MD.7a, 3.MD.7b, 3.MD.7c, 3.MD.7d Mathematical Practices MP.2, MP.7

► PATH to FLUENCY Find the Area

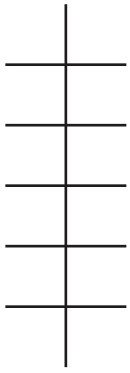
The area of a rectangle is the number of square units that fit inside of it.

Write a multiplication equation to represent the area of each rectangle. Then shade a whole number of rows in each rectangle and write a multiplication and addition equation to represent the area of each rectangle.

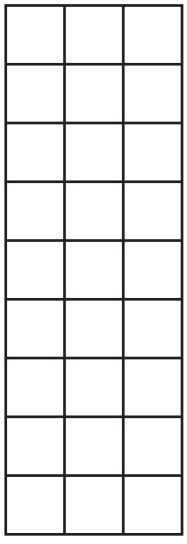
1.



2.



3.



_____ _____ _____

_____ _____ _____

_____ _____ _____

Make a rectangle drawing to represent each problem. Then give the product.

4. $5 \times 3 =$ _____

5. $7 * 2 =$ _____

6. $2 \bullet 9 =$ _____

Name _____ Date _____

VOCABULARY
Distributive Property

► PATH to FLUENCY Different Ways to Find Area

The large rectangle has been divided into two small rectangles. You can find the area of the large rectangle in two ways:

- Add the areas of the two small rectangles:

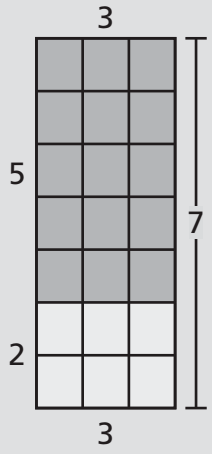
  $5 \times 3 =$ 15 square units

  $2 \times 3 =$ 6 square units

  21 square units

  The **Distributive Property** is shown by
  $7 \times 3 = (5 + 2) \times 3 = (5 \times 3) + (2 \times 3)$
- Multiply the number of rows in the large rectangle by the number of square units in each row:

  $7 \times 3 =$ 21 square units

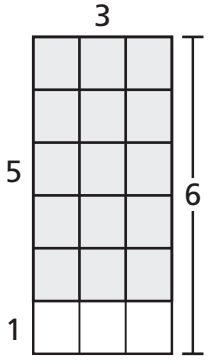


Complete.

7. Find the area of the large rectangle by finding the areas of the two small rectangles and adding them.

_____

_____



8. Find the area of the large rectangle by multiplying the number of rows by the number of square units in each row.

_____

_____

9. Find this product: $5 \times 4 =$ _____

10. Find this product: $2 \times 4 =$ _____

11. Use your answers to Exercises 9 and 10 to find this product: $7 \times 4 =$ _____

Name _____

▶ PATH to FLUENCY Check Sheet 4: 3s and 4s

3s Multiplications	3s Divisions	4s Multiplications	4s Divisions
8 × 3 = 24	9 / 3 = 3	1 × 4 = 4	40 / 4 = 10
3 • 2 = 6	21 ÷ 3 = 7	4 • 5 = 20	12 ÷ 4 = 3
3 * 5 = 15	27 / 3 = 9	8 * 4 = 32	24 / 4 = 6
10 × 3 = 30	3 ÷ 3 = 1	3 × 4 = 12	8 ÷ 4 = 2
3 • 3 = 9	18 / 3 = 6	4 • 6 = 24	4 / 4 = 1
3 * 6 = 18	12 ÷ 3 = 4	4 * 9 = 36	28 ÷ 4 = 7
7 × 3 = 21	30 / 3 = 10	10 × 4 = 40	32 / 4 = 8
3 • 9 = 27	6 ÷ 3 = 2	4 • 7 = 28	16 ÷ 4 = 4
4 * 3 = 12	24 / 3 = 8	4 * 4 = 16	36 / 4 = 9
3 × 1 = 3	15 / 3 = 5	2 × 4 = 8	20 / 4 = 5
3 • 4 = 12	21 ÷ 3 = 7	4 • 3 = 12	4 ÷ 4 = 1
3 * 3 = 9	3 / 3 = 1	4 * 2 = 8	32 / 4 = 8
3 × 10 = 30	9 ÷ 3 = 3	9 × 4 = 36	8 ÷ 4 = 2
2 • 3 = 6	27 / 3 = 9	1 • 4 = 4	16 / 4 = 4
3 * 7 = 21	30 ÷ 3 = 10	4 * 6 = 24	36 ÷ 4 = 9
6 × 3 = 18	18 / 3 = 6	5 × 4 = 20	12 / 4 = 3
5 • 3 = 15	6 ÷ 3 = 2	4 • 4 = 16	40 ÷ 4 = 10
3 * 8 = 24	15 ÷ 3 = 5	7 * 4 = 28	20 ÷ 4 = 5
9 × 3 = 27	12 / 3 = 4	8 × 4 = 32	24 / 4 = 6
2 • 3 = 6	24 ÷ 3 = 8	10 • 4 = 40	28 ÷ 4 = 7

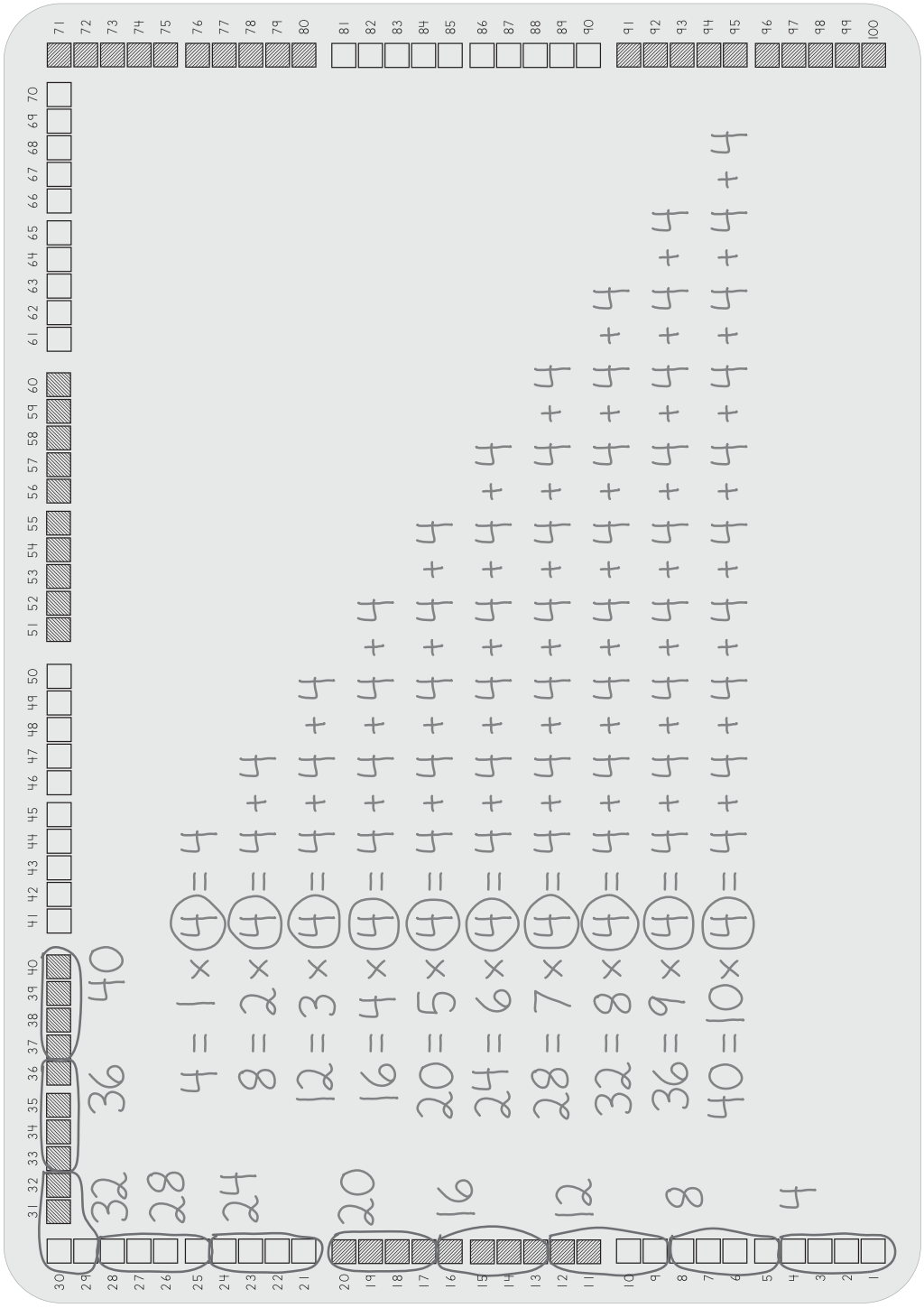
1-12
Class Activity

Name Date

CA CC Content Standards **3.OA.2, 3.OA.3, 3.OA.4, 3.OA.5, 3.OA.7, 3.OA.9, 3.MD.7, 3.MD.7b, 3.MD.7c, 3.MD.7d**
Mathematical Practices **MP.1, MP.2, MP.3, MP.6, MP.7, MP.8,**

► PATH to FLUENCY Explore Patterns with 4s

What patterns do you see below?

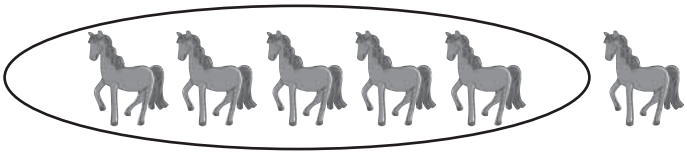


Name _____ Date _____

► PATH to FLUENCY Use the 5s Shortcut for 4s

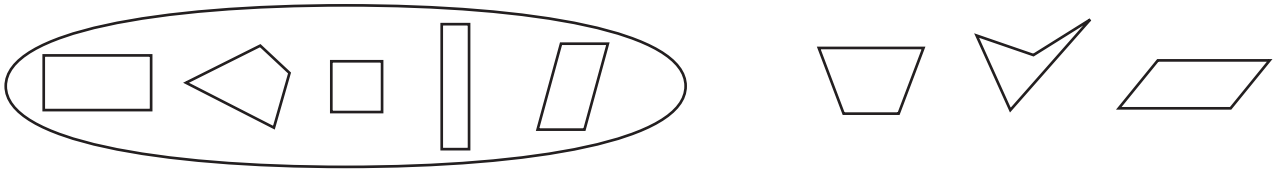
Solve each problem.

1. How many legs are on 6 horses? Find the total by starting with the fifth count-by and counting up from there.



_____ _____

2. How many sides are in 8 quadrilaterals? Find the total by starting with the fifth count-by and counting up from there.



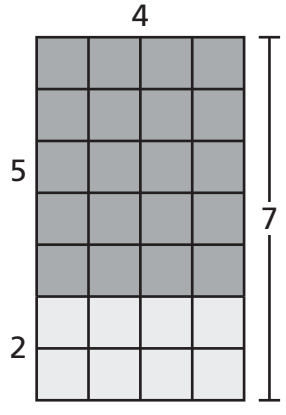
_____ _____ _____ _____

This large rectangle is made up of two small rectangles.

3. Find the area of the large rectangle by finding the areas of the two small rectangles and adding them.

_____

_____



4. Find the area of the large rectangle by multiplying the number of rows by the number of square units in each row.

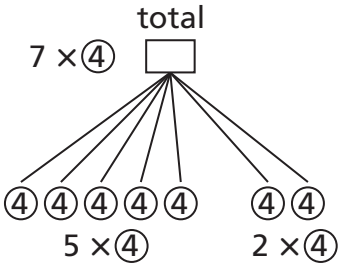
_____

Name _____ Date _____

► PATH to FLUENCY Use Multiplications You Know

You can combine multiplications to find other multiplications.

This Equal Shares Drawing shows that 7 groups of 4 is the same as 5 groups of 4 plus 2 groups of 4.



5. Find 5 × ④ and 2 × ④ and add the answers.

_____

6. Find 7 × ④. Did you get the same answer as in exercise 5?

_____

7. Find this product: 5 × 4 = _____

8. Find this product: 4 × 4 = _____

9. Use your answers to exercises 7 and 8 to find this product: 9 × 4 = _____

10. Make a drawing to show that your answers to exercises 7–9 are correct.

Name _____ Date _____

► What's the Error?

Dear Math Students,

Today I had to find 8 x 4. I didn't know the answer, but I figured it out by combining two multiplications I did know:

$$\begin{array}{r} 5 \times 2 = 10 \\ 3 \times 2 = \ \ 6 \\ \hline 8 \times 4 = 16 \end{array}$$

Is my answer right? If not, please correct my work and tell me why it is wrong.

Your friend,
The Puzzled Penguin

11. Write an answer to the Puzzled Penguin.

_____

_____

_____

► Make Sense of Problems

Write an equation and solve the problem.

12. Galen has 20 pictures to place in his book. If he puts 4 pictures on each page, how many pages will he fill?

_____

13. Emery arranged the tiles in an array with 4 columns and 7 rows. How many tiles were in the array? _____

1-13
Class Activity

Name Date

CA CC Content Standards **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.6, 3.OA.7** Mathematical Practices **MP.1, MP.4, MP.5**

► Make Sense of Problems

Write an equation and solve the problem.

Show your work.

1. The garden shop received a shipment of 12 rose bushes. They arranged the rose bushes in 3 rows with the same number of bushes in each row. How many rose bushes were in each row?

_____

2. Eric saw 4 stop signs on the way to school. Each stop sign had 8 sides. How many sides were on all 4 stop signs?

_____

3. Ed needs 14 batteries. If he buys the batteries in packages of 2, how many packages of batteries will he need to buy?

_____

4. A flag has 5 rows of stars with the same number of stars in each row. There are 35 stars on the flag. How many stars are in each row?

_____

5. Melia learned in science class that insects have 6 legs. What is the total number of legs on 9 insects?

_____

6. Stan has 4 model car kits. Each kit comes with 5 tires. How many tires does Stan have altogether?

_____

Name _____ Date _____

► Make Sense of Problems (continued)

Write an equation and solve the problem. *Show your work.*

7. Maria bought a shoe rack. The shoe rack has 3 rows with places for 6 shoes on each row. How many shoes can be placed on the shoe rack?

_____

8. The park has 4 swing sets with the same number of swings on each set. There is a total of 16 swings at the park. How many swings are on each swing set?

_____

9. Amanda has 27 seashells in her collection. She displayed the seashells in 3 rows with the same number of seashells in each row. How many seashells are in each row?

_____

10. The art room has 4 round tables. There are 6 chairs around each table. Altogether, how many chairs are around the tables?

_____

11. Shanna is making bead necklaces for the craft fair. She can make 3 necklaces a day. She plans to make 21 necklaces. How many days will it take her to make the necklaces?

_____

12. One section on a plane has 9 rows of seats. Five passengers can sit in each row. How many passengers could sit in this section of the plane?

_____

Name _____ Date _____

► PATH to FLUENCY Play *Solve the Stack*

Read the rules for playing *Solve the Stack*. Then play the game with your group.

Rules for *Solve the Stack*

Number of players: 2–4

What you will need: 1 set of multiplication and division Strategy Cards

1. Shuffle the cards. Place them exercise side up in the center of the table.
2. Players take turns. On each turn, a player finds the answer to the multiplication or division on the top card and then turns the card over to check the answer.
3. If a player's answer is correct, he or she takes the card. If it is incorrect, the card is placed at the bottom of the stack.
4. Play ends when there are no more cards in the stack. The player with the most cards wins.

Name _____ Date _____

► PATH to FLUENCY Play *High Card Wins*

Read the rules for playing *High Card Wins*. Then play the game with your partner.

Rules for *High Card Wins*

Number of players: 2

What you will need: 1 set of multiplication and division Strategy Cards for 2s, 3s, 4s, 5s, 9s

1. Shuffle the cards. Deal all the cards evenly between the two players.
2. Players put their stacks in front of them, exercise side up.
3. Each player takes the top card from his or her stack and puts it exercise side up in the center of the table.
4. Each player says the multiplication or division answer and then turns the card over to check. Then players do one of the following:
   - If one player says the wrong answer, the other player takes both cards and puts them at the bottom of his or her pile.
   - If both players say the wrong answer, both players take back their cards and put them at the bottom of their piles.
   - If both players say the correct answer, the player with the higher product or quotient takes both cards and puts them at the bottom of his or her pile. If the products or quotients are the same, the players set the cards aside and play another round. The winner of the next round takes all the cards.
5. Play continues until one player has all the cards.

1-14
Class Activity

Name _____ Date _____

CA CC Content Standards **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.5, 3.OA.6, 3.OA.7, 3.MD.7, 3.MD.7c, 3.MD.7d** Mathematical Practices **MP.1, MP.4, MP.6**

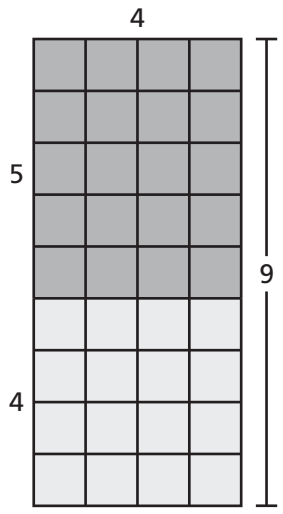
► PATH to FLUENCY Review Strategies

Complete.

1. Emily knows that $4 \times 10 = 40$. How can she use subtraction and multiples of 9 to find 4×9?

_____

2. Joey knows the multiplications 5×4 and 4×4. How can he use their products to find 9×4?



_____

3. Hannah knows that each division has a related multiplication. What related multiplication fact can she use to find $18 \div 3$?

_____

4. Kyle knows that $5 \times 3 = 15$. How can he use the 5s shortcut to find 8×3?

_____

5. Letitia knows that $5 \times 4 = 20$. How can she use the 5s shortcut to find 9×4?

_____

6. Jorge knows that $6 \times 9 = 54$. How can he use the Commutative Property or arrays to find 9×6?

_____

_____

Name _____ Date _____

► Make Sense of Problems

Write an equation and solve the problem. *Show your work.*

7. Jordan has 32 peaches. He wants to divide them equally among 4 baskets. How many peaches will he put in each basket?

_____

8. A guitar has 6 strings. If Taylor replaces all the strings on 3 guitars, how many strings does he need?

_____

9. Kassler's photograph album holds 5 pictures on each page. Kassler has 40 pictures. How many pages will he fill?

_____

10. Emily rides her bike 3 miles every day. How many miles does she ride her bike in a week?

_____

11. Ruel has a board 36 inches long. He wants to saw it into equal pieces 9 inches long. How many pieces will he get?

_____

► Write a Word Problem

12. Write a word problem that can be solved using the equation $7 \times 10 = 70$.

_____

_____

_____

1-15
Class Activity

Name Date

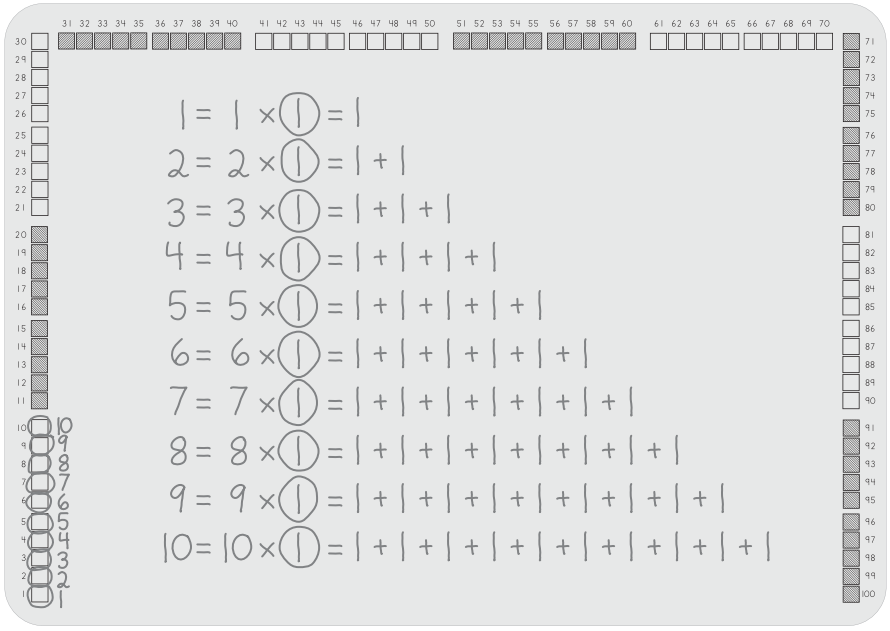
CA CC Content Standards **3.OA.5, 3.OA.7, 3.OA.9**
Mathematical Practices **MP.7, MP.8**

PATH to FLUENCY

► Explore Patterns with 1s

What patterns do you see below?

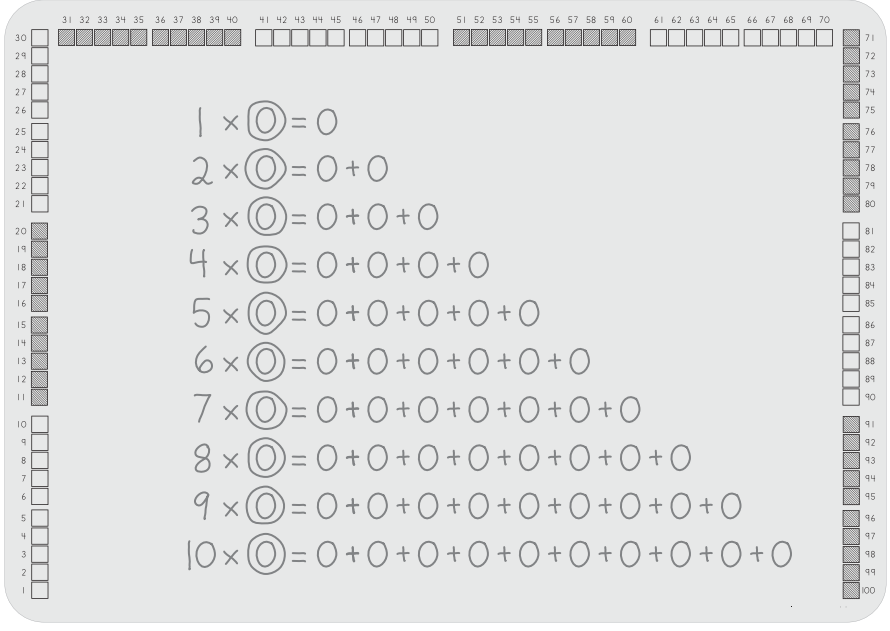
1.



► Explore Patterns with 0s

What patterns do you see below?

2.



Name _____ Date _____

▶ PATH to FLUENCY Multiplication Properties and Division Rules

Properties and Rules

Property for 1	Division Rule for 1	Zero Property	Division Rule for 0
$1 \times 6 = 6$ $6 \times 1 = 6$	$8 \div 1 = 8$ $8 \div 8 = 1$	$6 \times 0 = 0$ $0 \times 6 = 0$	$0 \div 6 = 0$ $6 \div 0$ is impossible.

Associative Property of Multiplication

When you group factors in different ways, the product stays the same. The parentheses tell you which numbers to multiply first.

$(3 \times 2) \times 5 = \square$
$6 \times 5 = 30$

$3 \times (2 \times 5) = \square$
$3 \times 10 = 30$

Find each product.

3. $2 \times (6 \times 1) = \square$
4. $(4 \times 2) \times 2 = \square$
5. $7 \times (1 \times 5) = \square$
6. $(9 \times 8) \times 0 = \square$
7. $3 \times (2 \times 3) = \square$
8. $6 \times (0 \times 7) = \square$

Solve each problem. *Show your work.*

9. Shawn gave 1 nickel to each of his sisters. If he gave away 3 nickels, how many sisters does Shawn have? _____

10. Kara has 3 boxes. She put 0 toys in each box. How many toys are in the boxes? _____

11. There are 3 tables in the library. Each table has 2 piles of books on it. If there are 3 books in each pile, how many books are on the tables?

_____

Name _____ Date _____

► PATH to FLUENCY Identify Addition and Multiplication Properties

Addition Properties	Multiplication Properties
A. Commutative Property of Addition The order in which numbers are added does not change their sum. $3 + 5 = 5 + 3$	**D. Commutative Property of Multiplication** The order in which numbers are multiplied does not change their product. $3 \times 5 = 5 \times 3$
B. Associative Property of Addition The way in which numbers are grouped does not change their sum. $(3 + 2) + 5 = 3 + (2 + 5)$	**E. Associative Property of Multiplication** The way in which numbers are grouped does not change their product. $(3 \times 2) \times 5 = 3 \times (2 \times 5)$
C. Identity Property of Addition If 0 is added to a number, the sum equals that number. $3 + 0 = 3$	**F. Identity Property of Multiplication** The product of 1 and any number is that number. $3 \times 1 = 3$
	G. Zero Property of Multiplication If 0 is multiplied by a number, the product is 0. $3 \times 0 = 0$

Write the letter of the property that is shown.

12. $1 \times 9 = 9$ _____

13. $5 + (6 + 7) = (5 + 6) + 7$ _____

14. $5 \times 0 = 0$ _____

15. $8 + 0 = 8$ _____

16. $3 \times 9 = \square \times 3$ _____

17. $(2 \times 1) \times 3 = 2 \times (\square \times 3)$ _____

Name _____ Date _____

PATH to FLUENCY

► Use Properties to Solve Equations

Use properties and rules to find the unknown numbers.

18. $5 \times 8 = \square \times 5$

19. $4 + 3 = \square + 4$

20. $0 \div 8 = \square$

21. $4 \div 4 = \square$

22. $(3 \times 2) \times 4 = 3 \times (\square \times 4)$

23. $6 \times 2 = 2 \times \square$

24. $5 \times 3 = \square \times 5$

25. $(6 + 2) + 2 = 6 + (\square + 2)$

26. $11 + 0 = \square$

27. $65 \times 1 = \square$

28. $5 \times (2 \times 6) = (5 \times 2) \times \square$

29. $17 \times 0 = \square$

► Use Equations to Demonstrate Properties

Write your own equation that shows the property.

30. Commutative Property of Multiplication

_____

31. Associative Property of Addition

_____

32. Identity Property of Addition

_____

33. Identity Property of Multiplication

_____

34. Associative Property of Multiplication

_____

35. Zero Property of Multiplication

_____

36. Commutative Property of Addition

_____

1-16
Class Activity

Name Date

CA CC Content Standards 3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.6, 3.OA.7 Mathematical Practices MP.1, MP.4

► Identify Types of Problems

Read each problem and decide what type of problem it is. Write the letter from the list below. Then write an equation to solve the problem.

a. Array Multiplication
b. Array Division
c. Equal Groups Multiplication
d. Equal Groups Division with an Unknown Group Size
e. Equal Groups Division with an Unknown Multiplier (number of groups)
f. None of the above

1. Mrs. Ostrega has 3 children. She wants to buy 5 juice boxes for each child. How many juice boxes does she need?

_____

2. Sophie picked 15 peaches from one tree and 3 peaches from another. How many peaches did she pick in all?

_____

3. Zamir brought 21 treats to the dog park. He divided the treats equally among the 7 dogs that were there. How many treats did each dog get?

_____

4. Art said he could make 12 muffins in his muffin pan. The pan has space for 3 muffins in a row. How many rows does the muffin pan have?

_____

5. Bia is helping with the lights for the school play. Each box of light bulbs has 6 rows, with 3 bulbs in each row. How many light bulbs are in each box?

_____

6. Tryouts were held to find triplets to act in a commercial for Triple-Crunch Cereal. If 24 children tried out for the commercial, how many sets of triplets tried out?

_____

Name _____ Date _____

► Make Sense of Problems

Write an equation and solve the problem. *Show your work.*

7. The produce market sells oranges in bags of 6. Santos bought 1 bag. How many oranges did he buy?

_____

8. Janine bought a jewelry organizer with 36 pockets. The pockets are arranged in 9 rows with the same number of pockets in each row. How many pockets are in each row?

_____

9. A parking lot has 9 rows of parking spaces. Each row has 7 spaces. How many cars can park in the lot?

_____

10. Keshawn bought 18 animal stickers for his sisters. He gave 6 stickers to each sister and had none left. How many sisters does Keshawn have?

_____

11. The pet store put 3 fish bowls on a shelf. The store put 0 goldfish in each bowl. How many goldfish are in the bowls?

_____

► Write a Word Problem

12. Write a word problem that can be solved using $0 \div 5$, where 5 is the group size.

_____

_____

_____

Name _____

▶ PATH to FLUENCY Check Sheet 5: 1s and 0s

1s Multiplications	1s Divisions	0s Multiplications
1 × 4 = 4	10 / 1 = 10	4 × 0 = 0
5 • 1 = 5	5 ÷ 1 = 5	2 • 0 = 0
7 * 1 = 7	7 / 1 = 7	0 * 8 = 0
1 × 8 = 8	9 ÷ 1 = 9	0 × 5 = 0
1 • 6 = 6	3 / 1 = 3	6 • 0 = 0
10 * 1 = 10	10 ÷ 1 = 10	0 * 7 = 0
1 × 9 = 9	2 / 1 = 2	0 × 2 = 0
3 • 1 = 3	8 ÷ 1 = 8	0 • 9 = 0
1 * 2 = 2	6 / 1 = 6	10 * 0 = 0
1 × 1 = 1	9 / 1 = 9	1 × 0 = 0
8 • 1 = 8	1 ÷ 1 = 1	0 • 6 = 0
1 * 7 = 7	5 / 1 = 5	9 * 0 = 0
1 × 5 = 5	3 ÷ 1 = 3	0 × 4 = 0
6 • 1 = 6	4 / 1 = 4	3 • 0 = 0
1 * 1 = 1	2 ÷ 1 = 2	0 * 3 = 0
1 × 10 = 10	8 / 1 = 8	8 × 0 = 0
9 • 1 = 9	4 ÷ 1 = 4	0 • 10 = 0
4 * 1 = 4	7 ÷ 1 = 7	0 * 1 = 0
2 × 1 = 2	1 / 1 = 1	5 × 0 = 0
1 • 3 = 3	6 ÷ 1 = 6	7 • 0 = 0

Name _____

▶ PATH to FLUENCY Check Sheet 6: Mixed 3s, 4s, 0s, and 1s

3s, 4s, 0s, 1s Multiplications	3s, 4s, 0s, 1s Multiplications	3s, 4s, 1s Divisions	3s, 4s, 1s Divisions
5 × 3 = 15	0 × 5 = 0	18 / 3 = 6	4 / 1 = 4
6 • 4 = 24	10 • 1 = 10	20 ÷ 4 = 5	21 ÷ 3 = 7
9 * 0 = 0	6 * 3 = 18	1 / 1 = 1	16 / 4 = 4
7 × 1 = 7	2 × 4 = 8	21 ÷ 3 = 7	9 ÷ 1 = 9
3 • 3 = 9	5 • 0 = 0	12 / 4 = 3	15 / 3 = 5
4 * 7 = 28	1 * 2 = 2	5 ÷ 1 = 5	8 ÷ 4 = 2
0 × 10 = 0	10 × 3 = 30	15 / 3 = 5	5 / 1 = 5
1 • 6 = 6	5 • 4 = 20	24 ÷ 4 = 6	30 ÷ 3 = 10
3 * 4 = 12	0 * 8 = 0	7 / 1 = 7	12 / 4 = 3
5 × 4 = 20	9 × 2 = 18	12 / 3 = 4	8 / 1 = 8
0 • 5 = 0	10 • 3 = 30	36 ÷ 4 = 9	27 ÷ 3 = 9
9 * 1 = 9	9 * 4 = 36	6 / 1 = 6	40 / 4 = 10
2 × 3 = 6	1 × 0 = 0	12 ÷ 3 = 4	4 ÷ 1 = 4
3 • 4 = 12	1 • 6 = 6	16 / 4 = 4	9 / 3 = 3
0 * 9 = 0	3 * 6 = 18	7 ÷ 1 = 7	16 ÷ 4 = 4
1 × 5 = 5	7 × 4 = 28	9 / 3 = 3	10 / 1 = 10
2 • 3 = 6	6 • 0 = 0	8 ÷ 4 = 2	9 ÷ 3 = 3
4 * 4 = 16	8 * 1 = 8	2 ÷ 1 = 2	20 ÷ 4 = 5
9 × 0 = 0	3 × 9 = 27	6 / 3 = 2	6 / 1 = 6
1 • 1 = 1	1 • 4 = 4	32 ÷ 4 = 8	24 ÷ 3 = 8

1-17
Class Activity

Name Date

CA CC Content Standards **3.OA.6, 3.OA.7**
Mathematical Practices **MP.5**

► PATH to FLUENCY Play *Multiplication Three-in-a-Row*

Read the rules for playing *Multiplication Three-in-a-Row*. Then play the game with a partner.

Rules for *Multiplication Three-in-a-Row*

Number of players: 2

What You Will Need: A set of multiplication Strategy Cards, *Three-in-a-Row* Game Grids for each player (see page 75)

1. Each player looks through the cards and writes any nine of the products in the squares of a Game Grid. A player may write the same product more than once.
2. Shuffle the cards and place them exercise side up in the center of the table.
3. Players take turns. On each turn, a player finds the answer to the multiplication on the top card and then turns the card over to check the answer.
4. If the answer is correct, the player looks to see if the product is on the game grid. If it is, the player puts an X through that grid square. If the answer is wrong, or if the product is not on the grid, the player does not mark anything. The player then puts the card problem side up on the bottom of the stack.
5. The first player to mark three squares in a row (horizontally, vertically, or diagonally) wins.

Name _____ Date _____

► PATH to FLUENCY Play *Division Race*

Read the rules for playing *Division Race*. Then play the game with a partner.

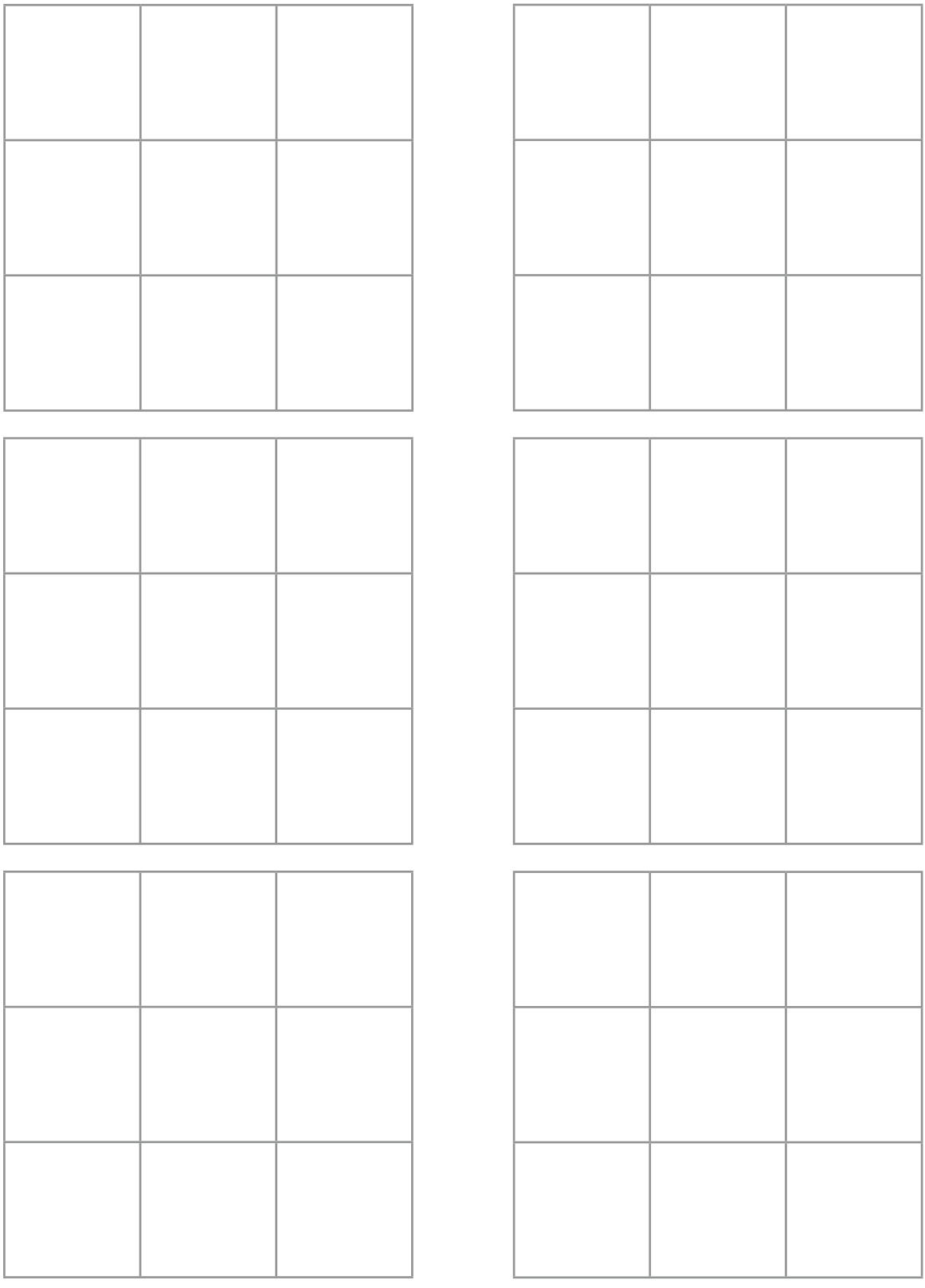
Rules for *Division Race*

Number of players: 2

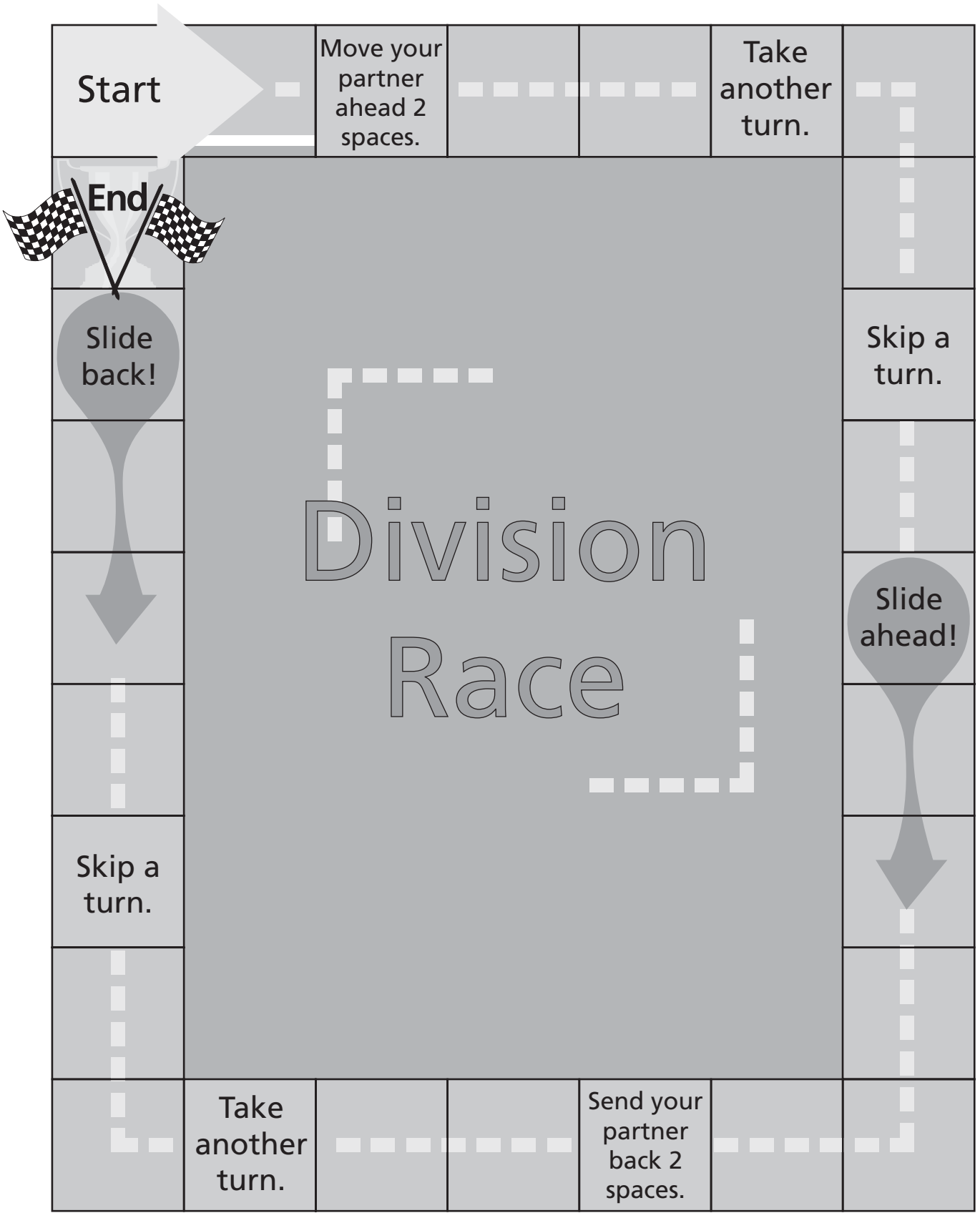
What You Will Need: a set of division Strategy Cards, the *Division Race* game board (see page 76), a different game piece for each player

1. Shuffle the cards and then place them exercise side up on the table.
2. Both players put their game pieces on "START."
3. Players take turns. On each turn, a player finds the answer to the division on the top card and then turns the card over to check the answer.
4. If the answer is correct, the player moves *forward* that number of spaces. If a player's answer is wrong, the player moves *back* a number of spaces equal to the correct answer. Players cannot move back beyond the "START" square. The player puts the card on the bottom of the stack.
5. If a player lands on a space with special instructions, he or she should follow those instructions.
6. The game ends when everyone lands on or passes the "End" square.

Name _____



Name _____



Name _____

▶ PATH to FLUENCY Dashes 1–4

Complete each Dash. Check your answers on page 81.

Dash 1 2s and 5s Multiplications	Dash 2 2s and 5s Divisions	Dash 3 9s and 10s Multiplications	Dash 4 9s and 10s Divisions
a. 2 × 6 = ____	a. 18 / 2 = ____	a. 9 × 10 = ____	a. 100 / 10 = ____
b. 9 * 5 = ____	b. 25 ÷ 5 = ____	b. 10 * 3 = ____	b. 9 ÷ 9 = ____
c. 7 • 2 = ____	c. 8 / 2 = ____	c. 1 • 9 = ____	c. 30 / 10 = ____
d. 5 × 8 = ____	d. 45 ÷ 5 = ____	d. 2 × 10 = ____	d. 81 ÷ 9 = ____
e. 2 * 4 = ____	e. 16 / 2 = ____	e. 9 * 9 = ____	e. 70 / 10 = ____
f. 3 • 5 = ____	f. 20 ÷ 5 = ____	f. 10 • 6 = ____	f. 45 ÷ 9 = ____
g. 1 × 2 = ____	g. 4 / 2 = ____	g. 4 × 9 = ____	g. 10 / 10 = ____
h. 5 * 7 = ____	h. 40 ÷ 5 = ____	h. 10 × 10 = ____	h. 54 ÷ 9 = ____
i. 2 • 9 = ____	i. 20 / 2 = ____	i. 9 * 2 = ____	i. 50 / 10 = ____
j. 4 × 5 = ____	j. 35 ÷ 5 = ____	j. 1 • 10 = ____	j. 27 ÷ 9 = ____
k. 5 * 2 = ____	k. 6 / 2 = ____	k. 7 × 9 = ____	k. 20 / 10 = ____
l. 5 • 1 = ____	l. 15 ÷ 5 = ____	l. 10 * 5 = ____	l. 72 ÷ 9 = ____
m. 2 × 2 = ____	m. 14 / 2 = ____	m. 9 • 8 = ____	m. 40 / 10 = ____
n. 10 × 5 = ____	n. 5 ÷ 5 = ____	n. 7 × 10 = ____	n. 18 ÷ 9 = ____
o. 10 * 2 = ____	o. 10 / 2 = ____	o. 3 * 9 = ____	o. 60 / 10 = ____
p. 5 • 6 = ____	p. 10 ÷ 5 = ____	p. 10 • 4 = ____	p. 90 ÷ 9 = ____
q. 2 × 3 = ____	q. 6 / 2 = ____	q. 9 × 5 = ____	q. 90 / 10 = ____
r. 5 * 5 = ____	r. 30 ÷ 5 = ____	r. 8 * 10 = ____	r. 63 ÷ 9 = ____
s. 8 • 2 = ____	s. 2 / 2 = ____	s. 6 • 9 = ____	s. 80 / 10 = ____
t. 6 × 5 = ____	t. 45 ÷ 5 = ____	t. 10 × 9 = ____	t. 36 ÷ 9 = ____

Name _____

► PATH to FLUENCY Dashes 5–8

Complete each Dash. Check your answers on page 81.

Dash 5 3s and 4s Multiplications	Dash 6 3s and 4s Divisions	Dash 7 0s and 1s Multiplications	Dash 8 1s and $n \div n$ Divisions
a. 3 × 9 = ____	a. 12 / 4 = ____	a. 0 × 6 = ____	a. 9 / 9 = ____
b. 4 * 2 = ____	b. 20 ÷ 4 = ____	b. 1 * 4 = ____	b. 8 ÷ 1 = ____
c. 6 • 3 = ____	c. 21 / 3 = ____	c. 4 • 0 = ____	c. 7 / 7 = ____
d. 10 × 4 = ____	d. 16 ÷ 4 = ____	d. 8 × 1 = ____	d. 6 ÷ 1 = ____
e. 3 * 1 = ____	e. 9 / 3 = ____	e. 0 * 2 = ____	e. 1 / 1 = ____
f. 4 • 1 = ____	f. 32 ÷ 4 = ____	f. 1 • 3 = ____	f. 4 ÷ 1 = ____
g. 10 × 3 = ____	g. 24 / 4 = ____	g. 9 × 0 = ____	g. 2 / 2 = ____
h. 5 * 4 = ____	h. 18 ÷ 3 = ____	h. 2 * 1 = ____	h. 2 ÷ 1 = ____
i. 3 • 3 = ____	i. 40 / 4 = ____	i. 0 • 8 = ____	i. 8 / 8 = ____
j. 4 × 4 = ____	j. 12 ÷ 3 = ____	j. 1 × 10 = ____	j. 9 ÷ 1 = ____
k. 8 * 3 = ____	k. 6 / 3 = ____	k. 7 * 0 = ____	k. 3 / 3 = ____
l. 7 • 4 = ____	l. 28 ÷ 4 = ____	l. 1 • 1 = ____	l. 5 ÷ 1 = ____
m. 3 × 2 = ____	m. 24 / 3 = ____	m. 0 × 0 = ____	m. 5 / 5 = ____
n. 4 * 9 = ____	n. 20 ÷ 4 = ____	n. 5 * 1 = ____	n. 10 / 10 = ____
o. 7 • 3 = ____	o. 27 / 3 = ____	o. 1 • 0 = ____	o. 7 ÷ 1 = ____
p. 3 × 4 = ____	p. 15 ÷ 3 = ____	p. 1 × 6 = ____	p. 4 / 4 = ____
q. 3 * 5 = ____	q. 27 / 3 = ____	q. 5 * 0 = ____	q. 10 ÷ 1 = ____
r. 4 • 6 = ____	r. 36 ÷ 4 = ____	r. 0 • 3 = ____	r. 6 / 6 = ____
s. 4 × 3 = ____	s. 8 / 4 = ____	s. 7 × 1 = ____	s. 3 ÷ 1 = ____
t. 8 * 4 = ____	t. 40 ÷ 4 = ____	t. 1 * 9 = ____	t. 1 / 1 = ____

Name _____

▶ PATH to FLUENCY Dashes 9–12

Complete each Dash. Check your answers on page 82.

Dash 9 2s, 5s, 9s, 10s Multiplications	Dash 10 2s, 5s, 9s, 10s Divisions	Dash 11 3s, 4s, 0s, 1s Multiplications	Dash 12 3s, 4s, 1s Divisions
a. 4 × 5 = ____	a. 8 / 2 = ____	a. 3 × 0 = ____	a. 12 / 4 = ____
b. 10 • 3 = ____	b. 50 ÷ 10 = ____	b. 4 • 6 = ____	b. 5 ÷ 1 = ____
c. 8 * 9 = ____	c. 15 / 5 = ____	c. 9 * 1 = ____	c. 21 / 3 = ____
d. 6 × 2 = ____	d. 63 ÷ 9 = ____	d. 3 × 3 = ____	d. 1 ÷ 1 = ____
e. 5 • 7 = ____	e. 90 / 10 = ____	e. 8 • 4 = ____	e. 16 / 4 = ____
f. 10 * 5 = ____	f. 90 ÷ 9 = ____	f. 0 * 5 = ____	f. 9 ÷ 3 = ____
g. 8 × 2 = ____	g. 35 / 5 = ____	g. 1 × 6 = ____	g. 32 / 4 = ____
h. 6 • 10 = ____	h. 14 ÷ 2 = ____	h. 4 • 3 = ____	h. 8 ÷ 1 = ____
i. 9 * 3 = ____	i. 27 / 9 = ____	i. 7 * 4 = ____	i. 24 / 4 = ____
j. 2 × 9 = ____	j. 45 / 5 = ____	j. 3 × 7 = ____	j. 18 / 3 = ____
k. 5 • 8 = ____	k. 10 ÷ 10 = ____	k. 0 • 1 = ____	k. 10 ÷ 1 = ____
l. 10 * 7 = ____	l. 25 / 5 = ____	l. 10 * 1 = ____	l. 40 / 4 = ____
m. 5 × 5 = ____	m. 54 ÷ 9 = ____	m. 4 × 4 = ____	m. 12 ÷ 3 = ____
n. 1 • 5 = ____	n. 6 / 2 = ____	n. 9 • 3 = ____	n. 6 / 3 = ____
o. 9 * 6 = ____	o. 72 ÷ 9 = ____	o. 8 * 0 = ____	o. 4 ÷ 4 = ____
p. 10 × 10 = ____	p. 40 / 5 = ____	p. 5 × 4 = ____	p. 7 / 1 = ____
q. 4 • 2 = ____	q. 80 ÷ 10 = ____	q. 1 • 6 = ____	q. 28 ÷ 4 = ____
r. 10 * 8 = ____	r. 18 ÷ 2 = ____	r. 3 * 8 = ____	r. 24 ÷ 3 = ____
s. 3 × 9 = ____	s. 36 / 9 = ____	s. 4 × 9 = ____	s. 20 / 4 = ____
t. 9 • 9 = ____	t. 30 ÷ 5 = ____	t. 0 • 4 = ____	t. 27 ÷ 3 = ____

Name _____

► PATH to FLUENCY Dashes 9A–12A

Complete each Dash. Check your answers on page 82.

Dash 9A 2s, 5s, 9s, 10s Multiplications	Dash 10A 2s, 5s, 9s, 10s Divisions	Dash 11A 3s, 4s, 0s, 1s Multiplications	Dash 12A 3s, 4s, 1s Divisions
a. 9 × 9 = ____	a. 30 / 5 = ____	a. 0 × 4 = ____	a. 10 / 1 = ____
b. 4 * 5 = ____	b. 18 ÷ 2 = ____	b. 4 * 9 = ____	b. 40 ÷ 4 = ____
c. 10 • 3 = ____	c. 40 / 5 = ____	c. 3 • 8 = ____	c. 12 / 3 = ____
d. 3 × 9 = ____	d. 6 ÷ 2 = ____	d. 3 × 0 = ____	d. 6 ÷ 3 = ____
e. 10 * 8 = ____	e. 25 / 5 = ____	e. 4 * 6 = ____	e. 4 / 4 = ____
f. 6 • 2 = ____	f. 45 ÷ 5 = ____	f. 9 • 1 = ____	f. 7 ÷ 1 = ____
g. 8 × 9 = ____	g. 14 / 2 = ____	g. 3 × 3 = ____	g. 28 / 4 = ____
h. 4 * 2 = ____	h. 90 ÷ 9 = ____	h. 8 * 4 = ____	h. 24 ÷ 3 = ____
i. 10 • 10 = ____	i. 63 / 9 = ____	i. 0 • 5 = ____	i. 20 / 4 = ____
j. 9 × 6 = ____	j. 50 ÷ 10 = ____	j. 1 × 6 = ____	j. 27 ÷ 3 = ____
k. 5 * 7 = ____	k. 8 / 2 = ____	k. 5 * 4 = ____	k. 12 / 4 = ____
l. 10 • 5 = ____	l. 15 ÷ 5 = ____	l. 8 • 0 = ____	l. 5 ÷ 1 = ____
m. 8 × 2 = ____	m. 90 / 10 = ____	m. 9 × 3 = ____	m. 21 / 3 = ____
n. 6 * 10 = ____	n. 35 ÷ 5 = ____	n. 4 * 4 = ____	n. 1 ÷ 1 = ____
o. 2 * 9 = ____	o. 27 / 9 = ____	o. 10 • 1 = ____	o. 16 / 4 = ____
p. 9 • 6 = ____	p. 10 ÷ 10 = ____	p. 4 × 3 = ____	p. 9 ÷ 3 = ____
q. 1 × 5 = ____	q. 54 / 9 = ____	q. 7 * 4 = ____	q. 32 / 4 = ____
r. 5 * 5 = ____	r. 72 ÷ 9 = ____	r. 3 • 7 = ____	r. 8 ÷ 1 = ____
s. 10 • 7 = ____	s. 80 / 10 = ____	s. 0 × 1 = ____	s. 24 / 4 = ____
t. 5 × 8 = ____	t. 36 ÷ 9 = ____	t. 10 * 1 = ____	t. 18 ÷ 3 = ____

Name _____

► Answers to Dashes 1–8

Use this sheet to check your answers to the Dashes on pages 77 and 78.

Dash 1 2s and 5s ×	Dash 2 2s and 5s ÷	Dash 3 9s and 10s ×	Dash 4 9s and 10s ÷	Dash 5 3s and 4s ×	Dash 6 3s and 4s ÷	Dash 7 0s and 1s ×	Dash 8 1s and $n \div n$ ÷
a. 12	a. 9	a. 90	a. 10	a. 27	a. 3	a. 0	a. 1
b. 45	b. 5	b. 30	b. 1	b. 8	b. 5	b. 4	b. 8
c. 14	c. 4	c. 9	c. 3	c. 18	c. 7	c. 0	c. 1
d. 40	d. 9	d. 20	d. 9	d. 40	d. 4	d. 8	d. 6
e. 8	e. 8	e. 81	e. 7	e. 3	e. 3	e. 0	e. 1
f. 15	f. 4	f. 60	f. 5	f. 4	f. 8	f. 3	f. 4
g. 2	g. 2	g. 36	g. 1	g. 30	g. 6	g. 0	g. 1
h. 35	h. 8	h. 100	h. 6	h. 20	h. 6	h. 2	h. 2
i. 18	i. 10	i. 18	i. 5	i. 9	i. 10	i. 0	i. 1
j. 20	j. 7	j. 10	j. 3	j. 16	j. 4	j. 10	j. 9
k. 10	k. 3	k. 63	k. 2	k. 24	k. 2	k. 0	k. 1
l. 5	l. 3	l. 50	l. 8	l. 28	l. 7	l. 1	l. 5
m. 4	m. 7	m. 72	m. 4	m. 6	m. 8	m. 0	m. 1
n. 50	n. 1	n. 70	n. 2	n. 36	n. 5	n. 5	n. 1
o. 20	o. 5	o. 27	o. 6	o. 21	o. 9	o. 0	o. 7
p. 30	p. 2	p. 40	p. 10	p. 12	p. 5	p. 6	p. 1
q. 6	q. 3	q. 45	q. 9	q. 15	q. 9	q. 0	q. 10
r. 25	r. 6	r. 80	r. 7	r. 24	r. 9	r. 0	r. 1
s. 16	s. 1	s. 54	s. 8	s. 12	s. 2	s. 7	s. 3
t. 30	t. 9	t. 90	t. 4	t. 32	t. 10	t. 9	t. 0

Name _____

► Answers to Dashes 9–12, 9A–12A

Use this sheet to check your answers to the Dashes on pages 79 and 80.

Dash 9 ×	Dash 10 ÷	Dash 11 ×	Dash 12 ÷	Dash 9A ×	Dash 10A ÷	Dash 11A ×	Dash 12A ÷
a. 20	a. 4	a. 0	a. 3	a. 81	a. 6	a. 0	a. 10
b. 30	b. 5	b. 24	b. 5	b. 20	b. 9	b. 36	b. 10
c. 72	c. 3	c. 9	c. 7	c. 30	c. 8	c. 24	c. 4
d. 12	d. 7	d. 9	d. 1	d. 27	d. 3	d. 0	d. 2
e. 35	e. 9	e. 32	e. 4	e. 80	e. 5	e. 24	e. 1
f. 50	f. 10	f. 0	f. 3	f. 12	f. 9	f. 9	f. 7
g. 16	g. 7	g. 6	g. 8	g. 72	g. 7	g. 9	g. 7
h. 60	h. 7	h. 12	h. 8	h. 8	h. 10	h. 32	h. 8
i. 27	i. 3	i. 28	i. 6	i. 100	i. 7	i. 0	i. 5
j. 18	j. 9	j. 21	j. 6	j. 54	j. 5	j. 6	j. 9
k. 40	k. 1	k. 0	k. 10	k. 35	k. 4	k. 20	k. 3
l. 70	l. 5	l. 10	l. 10	l. 50	l. 3	l. 0	l. 5
m. 25	m. 6	m. 16	m. 4	m. 16	m. 9	m. 27	m. 7
n. 5	n. 3	n. 27	n. 2	n. 60	n. 7	n. 16	n. 1
o. 54	o. 8	o. 0	o. 1	o. 18	o. 3	o. 10	o. 4
p. 100	p. 8	p. 20	p. 7	p. 54	p. 1	p. 12	p. 3
q. 8	q. 8	q. 6	q. 7	q. 5	q. 6	q. 28	q. 8
r. 80	r. 9	r. 24	r. 8	r. 25	r. 8	r. 21	r. 8
s. 27	s. 4	s. 36	s. 5	s. 70	s. 8	s. 0	s. 6
t. 81	t. 6	t. 0	t. 9	t. 40	t. 4	t. 10	t. 6

1-18
Class Activity

Name Date

CA CC Content Standards **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.6** Mathematical Practices **MP.1, MP.4**

► Solve Word Problems with 2s, 3s, 4s, 5s, and 9s

Write an equation and solve the problem. *Show your work.*

1. Toni counted 36 legs in the lion house at the zoo. How many lions were there?

_____

2. One wall of an art gallery has a row of 5 paintings and a row of 9 paintings. How many paintings are on the wall?

_____

3. Josh's muffin pan is an array with 4 rows and 6 columns. How many muffins can Josh make in the pan?

_____

4. To get ready for the school spelling bee, Tanya studied 3 hours each night for an entire week. How many hours did she study?

_____

5. The 14 trumpet players in the marching band lined up in 2 equal rows. How many trumpet players were in each row?

_____

6. The Sunnyside Riding Stable has 9 horses. The owners are going to buy new horseshoes for all the horses. How many horseshoes are needed?

_____

Name _____ Date _____

► Make Sense of Problems

Write an equation and solve the problem. *Show your work.*

7. Sadie plans to read 2 books every month for 6 months. How many books will she read during that time?

_____

8. A farmers' market sells pumpkins for $5 each. On Friday the market made $35 from the sale of pumpkins. How many pumpkins did the market sell on Friday?

_____

9. A keypad on Tim's phone has 21 buttons. There are 3 buttons in each row. How many rows of buttons are on the keypad?

_____

10. Paisley has a quilt that is made of different color squares. The quilt has 6 rows of 4 squares. How many squares are in the quilt?

_____

11. Each student collected 10 leaves for a group science project. If the group collected a total of 80 leaves, how many students are in the group?

_____

► Write a Word Problem

12. Write and solve a word problem that can be solved using the equation $4 \times 1 = n$.

_____

_____

_____

1-19
Class Activity

Name Date

CA CC Content Standards **3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.5** Mathematical Practices **MP.1, MP.2, MP.4, MP.5**

► PATH to FLUENCY Math and Hobbies

A hobby is something you do for fun. Owen's hobby is photography. He took pictures on a field trip and displayed them on a poster.

Solve.

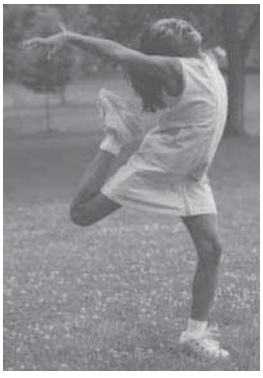
1. How many photos did Owen display on the poster? Explain the different strategies you can use to find the answer. Write an equation for each.

2. What other ways could Owen have arranged the photos in an array on the poster?

Name _____ Date _____

► PATH to FLUENCY What is Your Hobby?

Carina asked some third graders, "What is your hobby?"
The answers are shown under the photos.



Dancing
Four third graders said dancing.

Photography
Eight more than dancing said photography.

Reading
Six less than photography said reading.

Games
Eight third graders said games.

3. Use the information above to complete the chart below.

What is Your Hobby?

Hobby	Number of Students
Dancing	
Photography	
Games	
Reading	

4. Use the chart to complete the pictograph below.

Hobbies

Dancing	
Photography	
Games	
Reading	

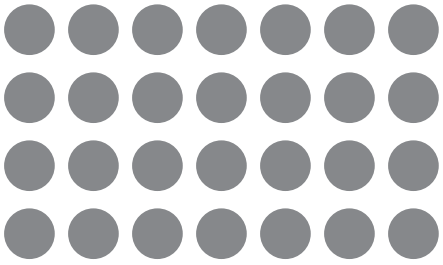
Each ☐ stands for 2 third graders.

5. How many third graders answered Carina's question?

_____

Name _____ Date _____

1. Write a multiplication equation for the array.



_____

2. Write the numbers that complete the pattern.

6	7	8	9	72	81

4 × 9 = 36

5 × 9 = 45

☐ × 9 = 54

7 × ☐ = 63

8 × 9 = ☐

Name _____ Date _____

3. Read the problem. Choose the type of problem it is. Then write an equation to solve the problem.

Pala is drawing tulips on posters. She draws 4 tulips each on 9 posters. How many tulips does Pala draw on the posters?

The type of problem is

array multiplication
array division
equal groups multiplication

.

Equation: _____

_____ stickers

4. Draw a line to match the equation on the left with the unknown number on the right.

$\frac{45}{5} = \square$	0
$9 \times \square = 0$	5
$\square \times 3 = 15$	8
$\square \div 3 = 7$	9
$72 \div \square = 9$	14
$7 \times 2 = \square$	21

Name _____ Date _____

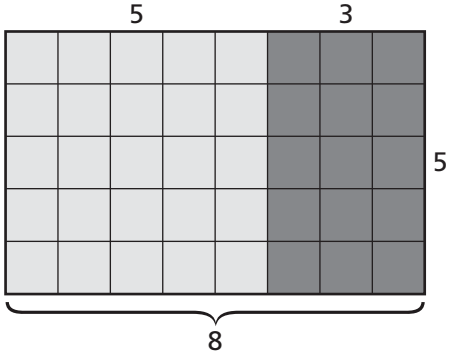
5. Write the number that completes the multiplication equation.

$6 \times 4 = \square \times 6$

$7 \times 3 = (4 + 3) \times \square$

$5 \times (2 \times 4) = (\square \times \square) \times 4$

6. Sydney wants to find the area of the large rectangle by adding the areas of the two small rectangles.



For numbers 6a–6d, choose Yes or No to tell whether or not Sydney could use the expression to find the area of the large rectangle.

6a. $(8 \times 5) + (5 \times 5)$ ○ Yes ○ No

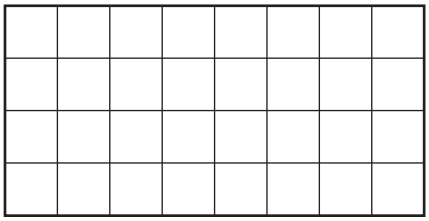
6b. $25 + 15$ ○ Yes ○ No

6c. $(5 \times 5) + (3 \times 5)$ ○ Yes ○ No

6d. $(5 \times 5) + (5 \times 3)$ ○ Yes ○ No

Name _____ Date _____

7. Look at the rectangle drawing.



Part A

Write a word problem that can be solved using the drawing.

Part B

Solve the problem. Explain how to use the rectangle drawing to check your answer.

Name _____ Date _____

8. Select the situation which could be represented by the multiplication expression 5×7. Mark all that apply.

   Ⓐ total number of stamps on 5 pages with 7 stamps on each page

   Ⓑ total number of stamps when there are 5 stamps on each of 7 pages

   Ⓒ 5 stamps divided evenly onto 7 pages

   Ⓓ 5 more stamps than on a page with 7 stamps

Make a drawing for the problem. Then write an equation and solve it.

9. The 28 desks in Mr. Becker's class are arranged in 7 equal rows. How many desks are in each row?

10. Michelle's bookcase has 3 shelves. It holds 9 books on each shelf. How many books will fit in the bookcase?

11. Rami counts 6 birds sitting on each of 5 different wires. How many birds does Margaret count?

Name _____ Date _____

12. Write the equation in the box for the multiplication property it shows.

$9 \times 6 = 6 \times 9$ $1 \times 10 = 10$

$0 \times 2 = 0$ $(3 \times 4) \times 5 = 3 \times (4 \times 5)$

Associative Property	Commutative Property	Identity Property	Zero Property

13. Chloe buys 10 balloons for her sisters. She gives 5 balloons to each sister and has none left.

Part A

How many sisters does Chloe have? Write an equation and solve the problem.

Equation: _____

_____ sisters

Part B

Solve the problem in a different way. Tell how the ways are alike and different.