Table of Contents

Lessons

04M-LM A

Appendix

Table of Contents

Table of Contents • MATH

Lesson 30

Using Place Value to Divide

CCSS 4.NBT.1 and 6
K–12.MP5–7

Objectives	Books & Materials	Assignments
Use models to regroup numbers for division. Find the quotient with regrouping.	*Math in Focus* 4A *Workbook* 4A counters place-value mat	☐ Complete Warm-up. ☐ Read and complete pp. 96–100 *Math in Focus* 4A. ☐ Complete pp. 49–54 *Workbook* 4A. ☐ Continue working on your Planning a Party Project. ☐ Complete Math Checkpoint.

Warm-up

First, show the following numbers with your counters and place-value mat.
Next divide the blocks into two equal groups. How many tens and how many
ones are in each group?

1. 82

2. 64

3. 28

4. 44

5. 86

Instruction

Read **Learn** on pp. 96–97 in *Math in Focus*. Model the problem with
your counters and place-value mat. Notice how you start by dividing the
hundreds into equal groups. This is different from multiplication. In vertical
multiplication, you start with the ones.

Pay attention as you regroup. After you place all of your hundreds counters into
equal groups, you may have some left over. Each leftover hundreds counter is
traded for 10 tens counters. Regroup any leftover hundreds to the tens column
with the tens that are already there. After you place all of your tens counters
into equal groups, you may have some leftover. Each leftover tens counter is
traded for 10 ones counters. Regroup any leftover tens to the ones column with
any ones that are already there.

Complete **Guided Practice** on pp. 98–100. Use your counters and your
place-value mat as you complete each step.

To the Learning Guide

Allow your student to use the counters and place value mat until he understands the concept. Your student may become frustrated with long division. There are multiple steps so he may feel lost in the problem.

The counters allow your student to visualize the problem and see how division works, step by step. Many students want to skip the tangible step of working with the counters. However, the more your student works with the manipulatives, the greater his understanding of the concept of division will be.

Watch For These Common Errors

! Some students may confuse the order to work through a division problem. This is because when you multiply numbers that are stacked vertically, you start with ones and move from right to left. In division, you start with the greatest place value and move from left to right. Remind your student to start with the greatest place value when dividing.

Practice

Complete **Let's Practice** on p. 100 in *Math in Focus*. Then complete pp. 49–54 in *Workbook*.

Project

Continue working on your **Planning a Party Project.**

Wrap-up

Today you learned how to divide using long division. Start with the hundreds place and work from left to right to find the answer.

$$
\begin{array}{r}
376 \\
2\overline{)752} \\
\underline{600} \\
152 \\
\underline{-140} \\
12 \\
\underline{-12} \\
0
\end{array}
$$

☑ Complete Math Checkpoint

3.3 Modeling Division with Regrouping

Lesson Objectives

- Model regrouping in division.
- Divide a 3-digit number by a 1-digit number with regrouping.

Learn Model division with regrouping in hundreds, tens, and ones.

A farmer sells his crops to 3 restaurants. He divides 525 heads of lettuce equally among the 3 restaurants. How many heads of lettuce does each restaurant receive?
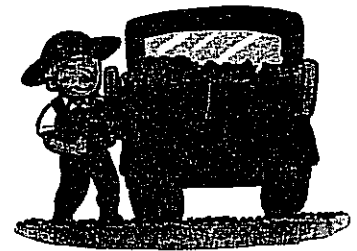
$525 \div 3 = ?$

Hundreds	Tens	Ones
● ● ●	● ●	● ● ● ● ●

Hundreds	Tens	Ones
● ● ● ●	(many)	● ● ● ● ●

Step 1
Divide the hundreds by 3.

5 hundreds $\div$ 3 = 1 hundred with 2 hundreds left over

$$\begin{array}{r} 1 \\ 3\overline{)525} \\ 300 \\ \hline 2 \end{array}$$

Regroup the hundreds.
2 hundreds = 20 tens

Add the tens.
20 tens + 2 tens = 22 tens

$$\begin{array}{r} 1 \\ 3\overline{)525} \\ 300 \\ \hline 225 \end{array}$$

Hundreds	Tens	Ones
◉	●●●● ●●●	◉ ◉ ◉ ◉ ◉
◉	●●●● ●●●	
◯	●●●● ●●●◌	

Hundreds	Tens	Ones
◯	●●●● ●●●	◉ ◉ ◉ ◉ ◉
◯	●●●● ●●●	◉ ◉ ◉ ◉ ◉
◯	●●●● ●●●	◉ ◉ ◉ ◉ ◉

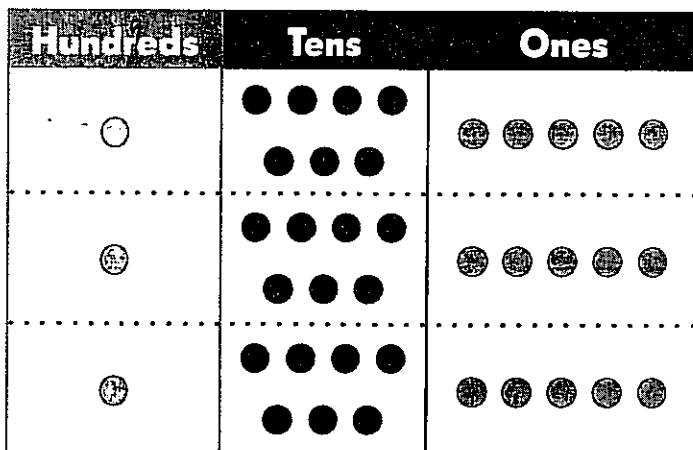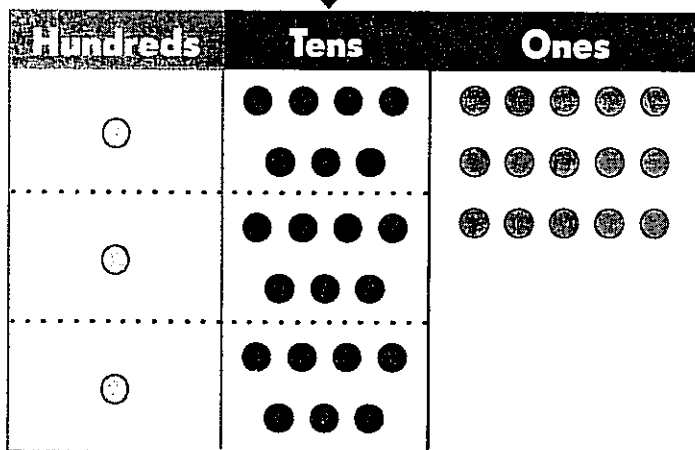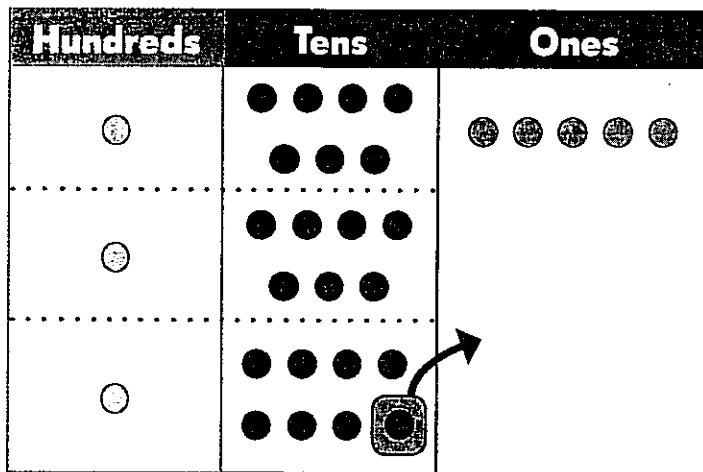| Hundreds	Tens	Ones
◯	●●●● ●●●	◉ ◉ ◉ ◉ ◉
◉	●●●● ●●●	◉ ◉ ◉ ◉ ◉
◉	●●●● ●●●	◉ ◉ ◉ ◉ ◉

So, $525 \div 3 = 175$.

Each restaurant receives 175 heads of lettuce.

Step 2

Divide the tens by 3.

$22 \text{ tens} \div 3 = 7 \text{ tens}$ with 1 ten left over

$$
\begin{array}{r}
1\ \ 7 \\
3\overline{)5\ \ 2\ \ 5} \\
3\ \ 0\ \ 0 \\
\hline
2\ \ 2\ \ 5 \\
2\ \ 1\ \ 0 \\
\hline
1
\end{array}
$$

Regroup the ten.
1 ten = 10 ones

Add the ones.
10 ones + 5 ones = 15 ones

$$
\begin{array}{r}
1\ \ 7 \\
3\overline{)5\ \ 2\ \ 5} \\
3\ \ 0\ \ 0 \\
\hline
2\ \ 2\ \ 5 \\
2\ \ 1\ \ 0 \\
\hline
1\ \ 5
\end{array}
$$

Step 3

Divide the ones by 3.

$15 \text{ ones} \div 3 = 5 \text{ ones}$

$$
\begin{array}{r}
1\ \ 7\ \ 5 \\
3\overline{)5\ \ 2\ \ 5} \\
3\ \ 0\ \ 0 \\
\hline
2\ \ 2\ \ 5 \\
2\ \ 1\ \ 0 \\
\hline
1\ \ 5 \\
1\ \ 5 \\
\hline
0
\end{array}
$$

Guided Practice

Complete each step.

1 The farmer divides 735 carrots equally among 3 restaurants. How many carrots does each restaurant receive?

$735 \div 3 = ?$

Hundreds	Tens	Ones
⊕ ⊕	● ● ●	● ● ●
		● ●
⊕ ⊕		
⊕ ⊕ ⬛➙		

↓

Hundreds	Tens	Ones
⊕ ⊕	● ● ●	
	● ● ●	
⊕ ⊕	● ●	
	● ● ●	
⊕ ⊕	● ●	

Step 1
Divide the hundreds by 3.

$$\begin{array}{r} 2 \\ 3\overline{)7\ \ 3\ \ 5} \\ 6\ \ 0\ \ 0 \\ \hline 1 \end{array}$$

7 hundreds $\div$ 3 = _____ hundreds
with _____ hundred left over

Regroup the hundred.

_____ hundred = _____ tens

Add the tens.

_____ tens + _____ tens

= _____ tens

$$\begin{array}{r} 2 \\ 3\overline{)7\ \ 3\ \ 5} \\ 6\ \ 0\ \ 0 \\ \hline 1\ \ 3\ \ 5 \end{array}$$

Step 2

Divide the tens by 3.

```
      2   4
3) 7  3   5
   6  0   0
   1  3   5
   1  2   0
      1
```

tens ÷ 3 =   tens

with   ten left over

Regroup the ten.

ten =   ones

Add the ones.

ones +   ones

=   ones

```
      2   4
3) 7  3   5
   6  0   0
   1  3   5
   1  2   0
      1   5
```


Step 3
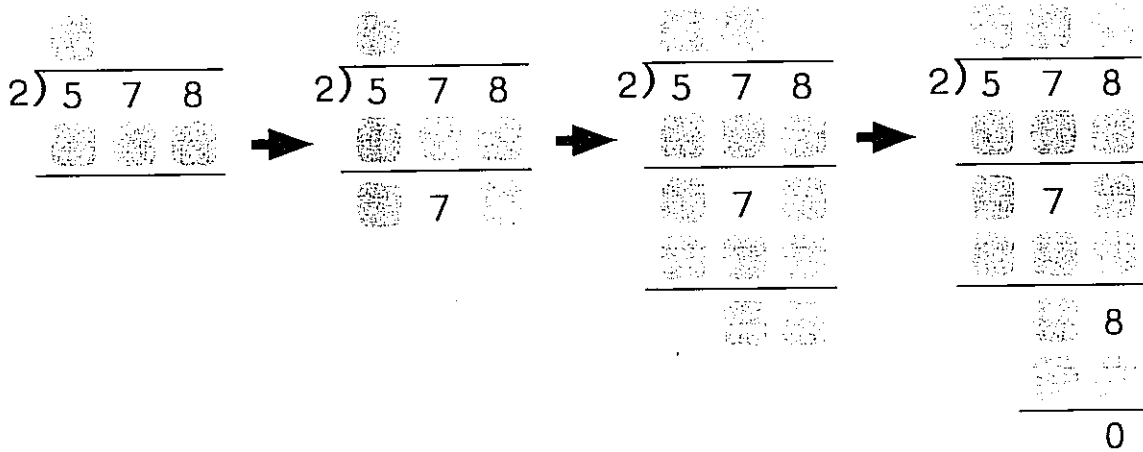
Divide the ones by 3.

ones ÷ 3 =   ones

```
      2   4   5
3) 7  3   5
   6  0   0
   1  3   5
   1  2   0
      1   5
      1   5
          0
```
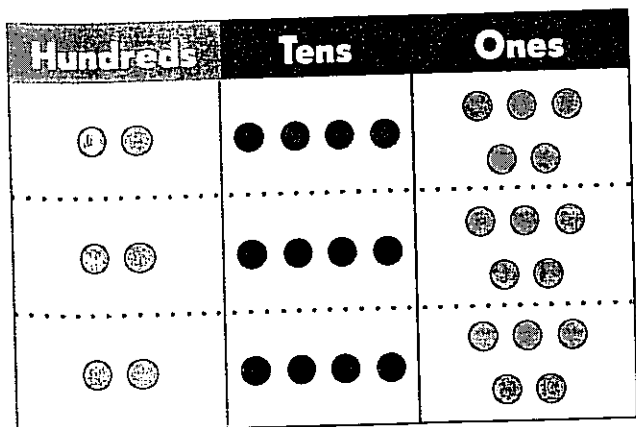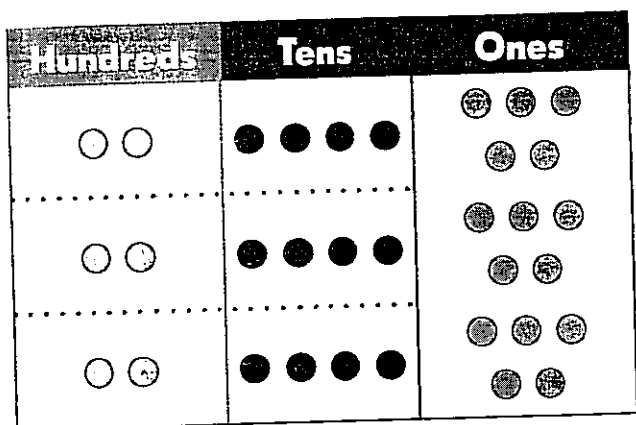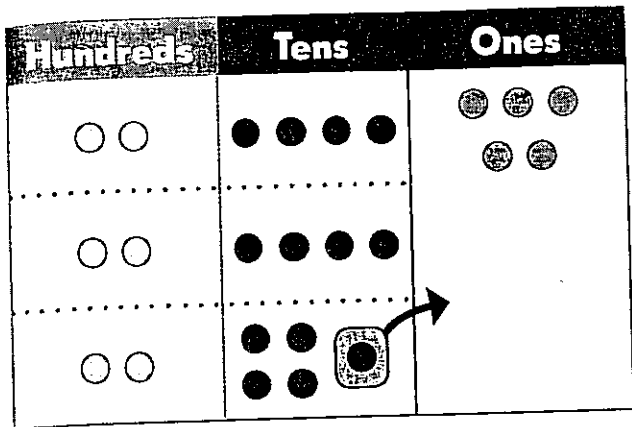
So, 735 ÷ 3 =

Each restaurant receives   carrots.

Find the missing numbers.

2 $578 \div 2 = $

$$
\begin{array}{r}
2\overline{)578} \\
\end{array}
\rightarrow
\begin{array}{r}
2\overline{)578} \\
\hline
7 \\
\end{array}
\rightarrow
\begin{array}{r}
2\overline{)578} \\
\hline
7 \\
\end{array}
\rightarrow
\begin{array}{r}
2\overline{)578} \\
\hline
7 \\
\hline
8 \\
\hline
0 \\
\end{array}
$$

Divide.

3 $338 \div 2 = $

4 $345 \div 5 = $

5 $656 \div 4 = $

6 $138 \div 3 = $

7 Mr. Young has 256 stickers. He gives each of his 8 grandchildren an equal number of stickers. How many stickers does each grandchild get?

Let's Practice

Divide.

1 $267 \div 3 = $

2 $528 \div 4 = $

3 $465 \div 5 = $

4 $714 \div 7 = $

5 $837 \div 9 = $

6 $952 \div 8 = $

Practice 3 Modeling Division with Regrouping

Lisa cannot remember the steps to divide.
Help her complete the steps.

1.

Example

```
        1
   3 ) 4  6  8
       3  0  0
```

→ model with boxes → model with boxes → model with boxes

2.

```
   4 ) 9  3  6
```

→ model with boxes → model with boxes → model with boxes

Divide. Then use the quotients to complete the number puzzle.

Down

3. $2 \overline{)7\ 9\ 8}$ **4.** $3 \overline{)8\ 4\ 9}$ **5.** $4 \overline{)6\ 9\ 6}$

Across

6. $5 \overline{)6\ 9\ 5}$ **7.** $2 \overline{)7\ 5\ 4}$ **8.** $4 \overline{)3\ 7\ 2}$
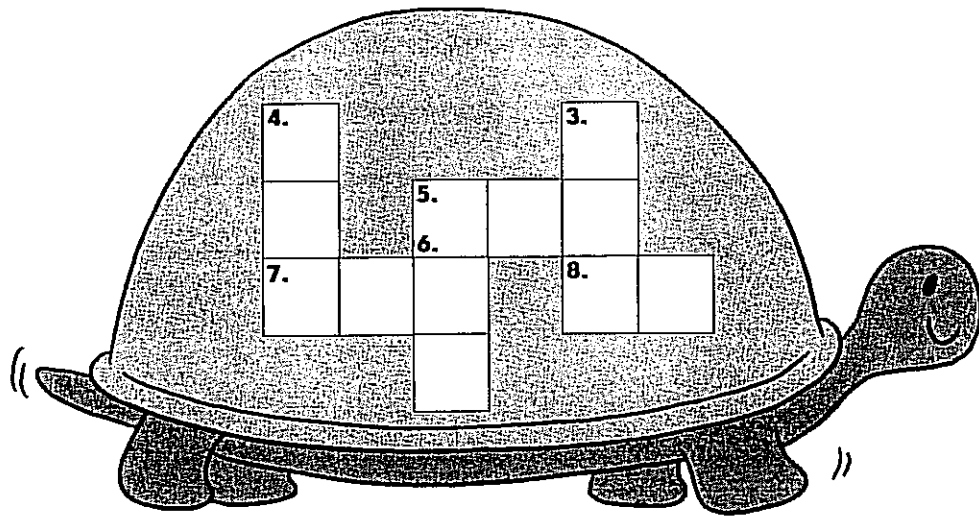
Divide. Then solve the riddle.

9.

$2\overline{)346}$

(S)

$4\overline{)760}$

(T)

$3\overline{)489}$

(U)

$5\overline{)855}$

(E)

$3\overline{)870}$

(M)

$4\overline{)528}$

(P)

$5\overline{)705}$

(K)

$3\overline{)375}$

(R)

Which pet makes the loudest noise?
Match the letters to the quotients below to find out.

| 190 | 125 | 163 | 290 | 132 | 171 | 190 |

Divide.

10. $516 \div 2 =$ _____

11. $144 \div 3 =$ _____

12. $396 \div 4 =$ _____

13. $885 \div 5 =$ _____

Look at the steps for dividing a 3-digit number by a 1-digit number.

Example

This shows the steps in division.

Step 1	Step 2	Step 3	Step 4	Step 5
1 5)6 9 5 5 0 0 —— 1	1 5)6 9 5 5 0 0 1 9 5	1 3 5)6 9 5 5 0 0 1 9 5 1 5 0 —— 4	1 3 5)6 9 5 5 0 0 1 9 5 1 5 0 —— 4 5	1 3 9 5)6 9 5 5 0 0 1 9 5 1 5 0 —— 4 5 4 5 —— 0

Write a number for each instruction box to match the instruction with the correct step for division. The first one has been done for you.

Divide the hundreds by 5. — **Step 1**

Divide the ones by 5. — Step ____

Divide the tens by 5. — Step ____

Regroup the remaining hundreds. Add the tens and ones. — Step ____

Regroup the remaining tens. Add the ones. — Step ____

Complete the division.

14.

Step 1	Step 2	Step 3	Step 4	Step 5
4)7 5 2	4)7 5 2	4)7 5 2	4)7 5 2	4)7 5 2

Then write the steps, using the exercise on page 53 as a guide.

Step 1 _____

_____

Step 2 _____

_____

Step 3 _____

_____

Step 4 _____

_____

Step 5 _____

_____