Name _____

Place the First Digit

Essential Question How can you use place value to know where to place the first digit in the quotient?

Common Core **Number and Operations in Base Ten—4.NBT.B.6**

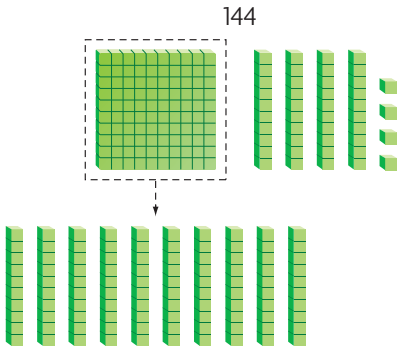
MATHEMATICAL PRACTICES
MP2, MP7, MP8

Unlock the Problem

Victor took 144 photos on a digital camera.
The photos are to be placed equally in 6 photo albums.
How many photos will be in each album?

- Underline what you are asked to find.
- Circle what you need to use.

Example 1 Divide. 144 ÷ 6



STEP 1 Use place value to place the first digit.
Look at the hundreds in 144.
1 hundred cannot be shared among 6 groups without regrouping.
Regroup 1 hundred as 10 tens.

Now there are _____ tens to share among 6 groups.

The first digit of the quotient will be in the _____ place.

STEP 2 Divide the tens.

$$\begin{array}{r} 2 \\ 6\overline{)144} \\ -\square \\ \hline \square \end{array}$$

Divide. 14 tens ÷ 6

Multiply. 6 × 2 tens

Subtract. 14 tens − 12 tens

Check. 2 tens cannot be shared among 6 groups without regrouping.

STEP 3 Divide the ones.
Regroup 2 tens as 20 ones.

Now there are _____ ones to share among 6 groups.

$$\begin{array}{r} 24 \\ 6\overline{)144} \\ -12\downarrow \\ \hline 24 \\ -\square \\ \hline \square \end{array}$$

Divide. _____ ones ÷ _____

Multiply. _____ × _____ ones

Subtract. _____ ones − _____ ones

Check. 0 ones cannot be shared among 6 groups.

So, there will be _____ photos in each album.

Math Idea

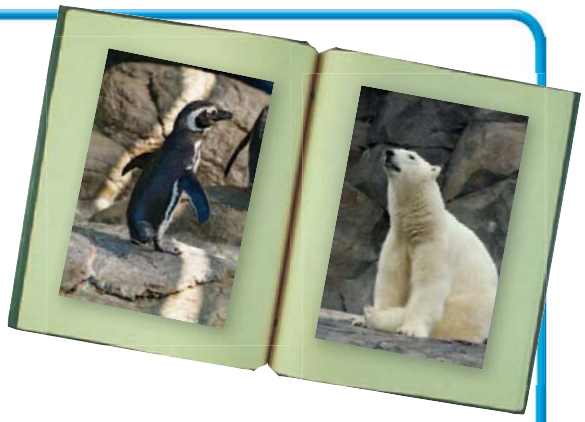
After you divide each place, the remainder should be less than the divisor.

Math Talk

MATHEMATICAL PRACTICES 3

Apply How would the answer change if Jaime had 146 photos?

Example 2 Divide. 287 ÷ 2



Omar has 287 photographs of animals. If he wants to put the photos into 2 groups of the same size, how many photos will be in each group?

STEP 1

Use place value to place the first digit.
Look at the hundreds in 287.
2 hundreds can be shared between 2 groups.

So, the first digit of the quotient will be in the _____ place.

STEP 2

Divide the hundreds.

$$\begin{array}{r} 1 \\ 2\overline{)287} \\ -\square \\ \hline \square \end{array}$$

Divide. 2 hundreds ÷ 2

Multiply. 2 × 1 hundred

Subtract. 2 hundreds − 2 hundreds.

0 hundreds are left.

STEP 3

Divide the tens.

$$\begin{array}{r} 14 \\ 2\overline{)287} \\ -2\downarrow \\ \hline 0\square \\ -\square \\ \hline \square \end{array}$$

Divide. _____ tens ÷ _____

Multiply. _____ × _____ tens

Subtract. _____ tens − _____ tens 0 tens are left.

STEP 4

Divide the ones.

$$\begin{array}{r} 143\ r1 \\ 2\overline{)287} \\ -2 \\ \hline 08 \\ -8\downarrow \\ \hline 07 \\ -\square \\ \hline \square \end{array}$$

Divide. _____ ones ÷ _____

Multiply. _____ × _____ ones

Subtract. _____ ones − _____ ones
1 one cannot be equally shared between 2 groups.

So, there will be _____ photos in each group with 1 photo left.

Name _____

Share and Show MATH BOARD

1. There are 452 pictures of dogs in 4 equal groups. How many pictures are in each group? Explain how you can use place value to place the first digit in the quotient.

$4\overline{)452}$

Divide.

2. $4\overline{)166}$

3. $5\overline{)775}$

Math Talk MATHEMATICAL PRACTICES 7

Look for Structure How did you know where to place the first digit of the quotient in Exercise 2?

On Your Own

Divide.

4. $4\overline{)284}$

5. $5\overline{)394}$

6. $3\overline{)465}$

7. $8\overline{)272}$

Practice: Copy and Solve **Divide.**

8. $516 \div 2$

9. $516 \div 3$

10. $516 \div 4$

11. $516 \div 5$

12. MATHEMATICAL PRACTICE 6 Look back at your answers to Exercises 8–11. What happens to the quotient when the divisor increases? **Explain**.

13. GO DEEPER Reggie has 192 pictures of animals. He wants to keep half and then divide the rest equally among three friends. How many pictures will each friend get?

14. GO DEEPER There are 146 students, 5 teachers, and 8 chaperones going to the theater. To reserve their seats, they need to reserve entire rows. Each row has 8 seats. How many rows must they reserve?

Unlock the Problem Real World

15. THINK SMARTER Nan wants to put 234 pictures in an album with a blue cover. How many full pages will she have in her album?

Math on the Spot

Photo Albums

Color of cover	Pictures per page
Blue	4
Green	6
Red	8

a. What do you need to find?

_____

b. How will you use division to find the number of full pages?

_____

_____

_____

c. Show the steps you will use to solve the problem.

d. Complete the following sentences.

Nan has _____ pictures.

She wants to put the pictures in an album with pages that each hold _____ pictures.

She will have an album with _____ full pages and _____ pictures on another page.

16. GO DEEPER Mr. Parsons bought 293 apples to make pies for his shop. Six apples are needed for each pie. If Mr. Parsons makes the greatest number of apple pies possible, how many apples will be left?

_____

17. THINK SMARTER Carol needs to divide 320 stickers equally among 4 classes. In which place is the first digit of the quotient? Choose the word that completes the sentence.

The first digit of the quotient is in the [ones / tens / hundreds / thousands] place.

Name _____

Place the First Digit

COMMON CORE STANDARD—4.NBT.B.6
Use place value understanding and properties of operations to perform multi-digit arithmetic.

Divide.

1.
$$\begin{array}{r} 62 \\ 3\overline{)186} \\ -18\downarrow \\ \quad 06 \\ \quad -6 \\ \quad\ 0 \end{array}$$

2. $4\overline{)298}$

3. $3\overline{)461}$

4. $9\overline{)315}$

5. $2\overline{)988}$

6. $4\overline{)604}$

7. $6\overline{)796}$

8. $5\overline{)449}$

Problem Solving Real World

9. There are 132 projects in the science fair. If 8 projects can fit in a row, how many full rows of projects can be made? How many projects are in the row that is not full?

_____

10. There are 798 calories in six 10-ounce bottles of apple juice. How many calories are there in one 10-ounce bottle of apple juice?

_____

11. WRITE Math Write a division problem that will have a 2-digit quotient and another division problem that will have a 3-digit quotient. Explain how you chose the divisors and dividends.

_____

_____

_____

Lesson Check (4.NBT.B.6)

1. To divide 572 ÷ 4, Stanley estimated to place the first digit of the quotient. In which place is the first digit of the quotient?

2. Onetta biked 325 miles in 5 days. If she biked the same number of miles each day, how far did she bike each day?

Spiral Review (4.NBT.B.5, 4.NBT.B.6)

3. Mort makes beaded necklaces that he sells for $32 each. About how much will Mort make if he sells 36 necklaces at the local art fair?

4. Estimate the product of 54 × 68.

5. Ms. Eisner pays $888 for 6 nights in a hotel. How much does Ms. Eisner pay per night?

6. What division problem does the model show?