

Sharing and Grouping

GOAL

Use 2 meanings of division to solve problems.

1. Calculate.

a) $4\overline{)16}$

e) $5\overline{)35}$

b) $5\overline{)20}$

f) $9\overline{)27}$

c) $2\overline{)14}$

g) $6\overline{)36}$

d) $8\overline{)32}$

h) $12\overline{)24}$

2. Calculate.

a) $30 \div 3 = \underline{\hspace{2cm}}$

e) $24 \div 8 = \underline{\hspace{2cm}}$

b) $15 \div 5 = \underline{\hspace{2cm}}$

f) $40 \div 2 = \underline{\hspace{2cm}}$

c) $10 \div 2 = \underline{\hspace{2cm}}$

g) $25 \div 5 = \underline{\hspace{2cm}}$

d) $12 \div 4 = \underline{\hspace{2cm}}$

h) $36 \div 4 = \underline{\hspace{2cm}}$

3. Ken placed 42 beads in 6 equal groups.

How many beads are in each group?

Use a drawing or a number line to help you solve the problem.

4. Samia gave the same number of beads to each of 7 friends. She started with 56 beads. How many beads did she give to each friend?

At-Home Help

2 ways to think of division:

Sharing: when you have something to share in equal groups; for example, you have 20 coins to share among 4 friends.

Grouping: when you divide something into groups of equal size; for example, you have 20 coins to place in groups of 4.

You can solve both types of problems in the same way.

$$20 \div 4 = 5 \text{ or } 4\overline{)20}^5$$

Division

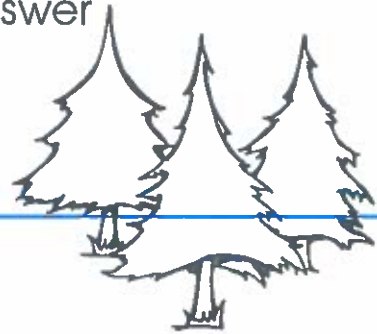
division is a way to find out how many times one number is contained in another number. The \div sign means "divided by." Another way to divide is to use $\overline{\hspace{1cm}}$. The dividend is the larger number that is divided by the smaller number, or divisor. The answer of a division problem is called the quotient.

Directions: Study the example. Divide.

Example:

$$\begin{array}{ccc} 20 & \div & 4 = 5 \\ \updownarrow & & \updownarrow \\ \text{dividend} & & \text{divisor} \quad \text{quotient} \end{array}$$

$$\begin{array}{r} \text{quotient} \\ 5 \\ 4 \overline{)20} \\ \updownarrow \quad \updownarrow \\ \text{divisor} \quad \text{dividend} \end{array}$$



$35 \div 7 = \underline{\hspace{1cm}}$

$7 \overline{)35}$

$42 \div 6 = \underline{\hspace{1cm}}$

$6 \overline{)42}$

$2 \overline{)12}$

$3 \overline{)18}$

$4 \overline{)36}$

$5 \overline{)50}$

$6 \overline{)24}$

$7 \overline{)21}$

$8 \overline{)32}$

$9 \overline{)27}$

$36 \div 6 = \underline{\hspace{1cm}}$

$28 \div 4 = \underline{\hspace{1cm}}$

$15 \div 5 = \underline{\hspace{1cm}}$

$12 \div 2 = \underline{\hspace{1cm}}$

A tree farm has 36 trees. There are 4 rows of trees.
How many trees are there in each row?

6.7 Sharing and Grouping Page 1

Student Book pages 188–190

GOAL

Use 2 meanings of division to solve problems.

Checking

1. a) This is a sharing problem.

Hari's family composted 42 kg of scraps in 7 weeks.
 How many kilograms of scraps did they compost each week?

$$\begin{array}{ccccccc}
 42 & \div & 7 & = & \underline{\hspace{2cm}} \\
 \text{total kilograms} & & \text{number} & & \text{kilograms of scraps} \\
 \text{of scraps} & & \text{of weeks} & & \text{in each week}
 \end{array}$$

Separate the 42 kg of scraps into the 7 weeks.
 Start by adding 1 piece at a time.



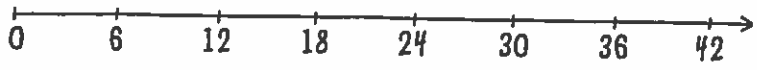
$42 \div 7 = \underline{\hspace{2cm}}$ kg
 Hari's family composted $\underline{\hspace{2cm}}$ kg of scraps each week.

b) This is a grouping problem.

Hari's family composted 6 kg of scraps each week.
 How many weeks did it take them to compost 42 kg?

$$\begin{array}{ccccccc}
 42 & \div & 6 & = & \underline{\hspace{2cm}} \\
 \text{total kilograms} & & \text{kilograms of scraps} & & \text{how many} \\
 \text{of scraps} & & \text{per week} & & \text{weeks}
 \end{array}$$

Use the number line below.
 Start at 42 and keep subtracting by 6 to get to 0.



There are $\underline{\hspace{2cm}}$ groups of 6 in 42.
 $42 \div 6 = \underline{\hspace{2cm}}$
 It took Hari's family $\underline{\hspace{2cm}}$ weeks to compost the 42 kg of scraps.

6.7 Sharing and Grouping Page 2**Practising**

4. Calculate. Show both sharing and grouping.

a) $6 \overline{)18}$



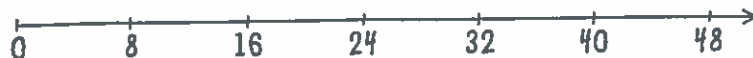
$18 \div 6 = \underline{\quad}$

b) $3 \overline{)21}$



$21 \div 3 = \underline{\quad}$

c) $8 \overline{)48}$



$48 \div 8 = \underline{\quad}$

d) $4 \overline{)28}$



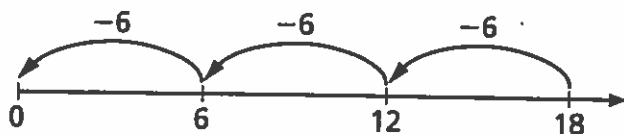
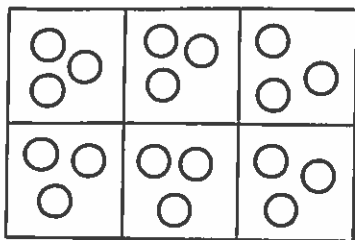
$28 \div 4 = \underline{\quad}$

Scaffolding for Lesson 7, Question 4 Page 1

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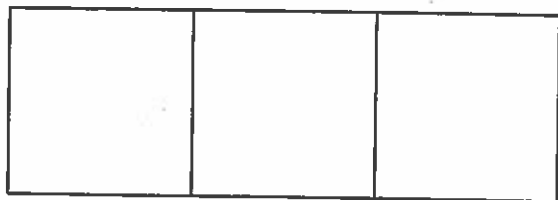
4. Calculate. Use sharing into equal groups and grouping on a number line. The first one is done for you.

a) $6 \overline{)18}$



$18 \div 6 = \underline{\quad} \quad 6 \overline{)18}$

b) $3 \overline{)21}$



$21 \div 3 = \underline{\quad} \quad 3 \overline{)21}$

Scaffolding for Lesson 7, Question 4 Page 2

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c) $8\overline{)48}$



$48 \div 8 = \underline{\quad} 8\overline{)48}$

d) $4\overline{)28}$

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$28 \div 4 = \underline{\quad} 4\overline{)28}$

Name: _____

Date: _____

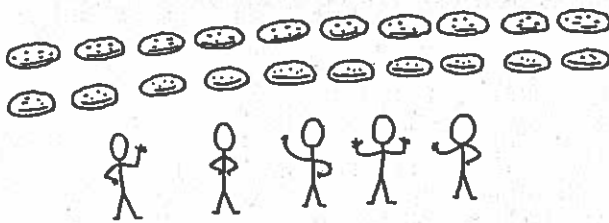
WORD PROBLEM

Maria has 4 friends coming over. She has a package of 20 cookies to share with them. How many cookies should each child, including Maria, get if they all share fairly?

BASICS BOX

Division is an operation that helps us to share an amount into equal groups. It is the opposite of multiplication. Multiplication helps us understand, solve, and even check division problems.

Maria has 20 cookies. She has to divide them among 5 people. We could solve with a picture:



We can write an equation like this:

$$\begin{array}{c} \text{divisor} \rightarrow 5 \overline{)20} \\ \swarrow \text{dividend} \end{array} \quad \text{OR} \quad \begin{array}{c} 20 \div 5 = ? \\ \swarrow \text{dividend} \quad \nwarrow \text{divisor} \end{array}$$

If we think about division with multiplication we think $20 \div 5 = \underline{\quad}$ is the same as $5 \times \underline{\quad} = 20$. We see that since $5 \times 4 = 20$ then $20 \div 5 = 4$. So each child would get 4 cookies.

PRACTICE

Find the quotients.

1. $18 \div 2 = \underline{\quad}$

2. $12 \div 6 = \underline{\quad}$

3. $42 \div 6 = \underline{\quad}$

4. $9 \overline{)27}$

5. $3 \overline{)24}$

6. $5 \overline{)45}$

JOURNAL

What multiplication fact would help you solve $56 \div 8 = ?$

Name: _____

Date: _____

Introducing Division: One-Digit Divisors Without Remainders

Find the quotients.

1. $1 \overline{)9}$

8. $20 \div 4 = \underline{\quad}$

2. $6 \overline{)48}$

9. $8 \overline{)64}$

3. $6 \div 6 = \underline{\quad}$

10. $6 \overline{)36}$

4. $21 \div 7 = \underline{\quad}$

11. $28 \div 7 = \underline{\quad}$

5. $5 \overline{)30}$

12. $14 \div 2 = \underline{\quad}$

6. $3 \overline{)15}$

13. $8 \overline{)56}$

7. $9 \div 3 = \underline{\quad}$

14. $5 \overline{)25}$

Review.

15. $3 \times 8 = \underline{\quad}$

18. $25 \times 10 = \underline{\quad}$

16. $7 \times 6 = \underline{\quad}$

19. $50 \times 50 = \underline{\quad}$

17. $4 \times 20 = \underline{\quad}$

20. $500 \times 50 = \underline{\quad}$

6.8 Division and Multiplication Page 1

Student Book pages 192–195

GOAL

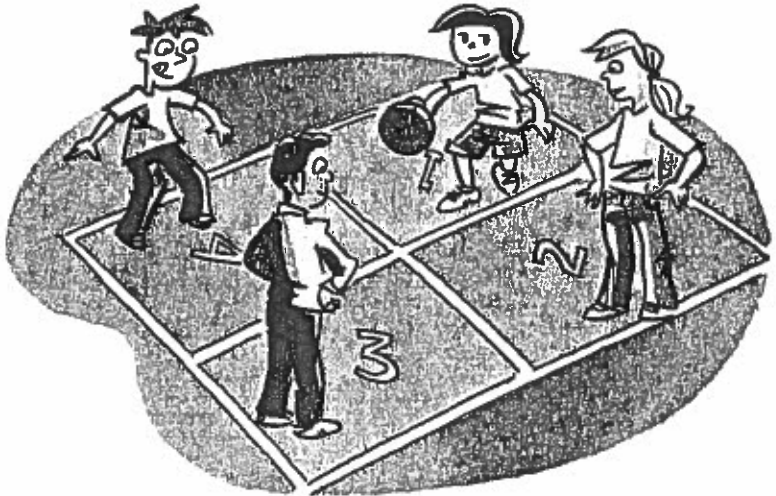
Divide by using related multiplication facts.

You will need

- counters 

Problem

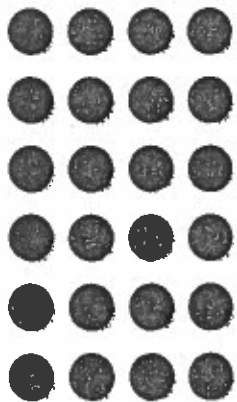
Some students want to play a game called Four Square.



There are 24 students who want to play.
4 students can play at a time.

 How many games will need to be played so that everyone gets a turn?

Use counters to make an array showing the 24 students in groups of 4.



Describe your array using both multiplication and division.
The students can make 6 groups of 4.
 $4 \times 6 = \underline{\hspace{2cm}}$
24 students divided into groups of 4 is the same as writing:
 $24 \div 4 = \underline{\hspace{2cm}}$

How many games will need to be played so that everyone gets a turn? _____

6.8 Division and Multiplication Page 2

Reflecting

In the division equation $27 \div 3 = 9$, 27 is the **dividend** and 3 is the **divisor**. The answer 9 is the **quotient**.

In the division equation $24 \div 4 = \underline{\hspace{2cm}}$, what is the dividend? $\underline{\hspace{2cm}}$

How could you use multiplication to check your answer when you divide? Use $20 \div 5$ to help you explain.

dividend

The starting number in a division operation

divisor

The number you divide by in a division operation

quotient

The whole number result you get when you divide

$$\begin{array}{ccccccc} 72 & \div & 9 & = & 8 \\ \text{dividend} & & \text{divisor} & & \text{quotient} \end{array}$$

6.8 Division and Multiplication Page 1

Student Book pages 192–195

GOAL

Divide by using related multiplication facts.

Checking

1. 45 students want to play Turtle Catcher in equal groups of 5.

Share 45 counters into circles of 5.

The first one is done for you.



How many circles did you make? _____

Write a division sentence for this problem:

$$\frac{\text{_____}}{\text{number of students}} \div \frac{\text{_____}}{\text{number in each group}} = \frac{\text{_____}}{\text{number of circles needed}}$$

Write a multiplication sentence to check your answer.

$$\frac{\text{_____}}{\text{number in a group}} \times \frac{\text{_____}}{\text{number of circles}} = \frac{\text{_____}}{\text{number of students}}$$

There are _____ groups of _____ in 45.

$$45 \div 5 = \underline{\hspace{2cm}}$$

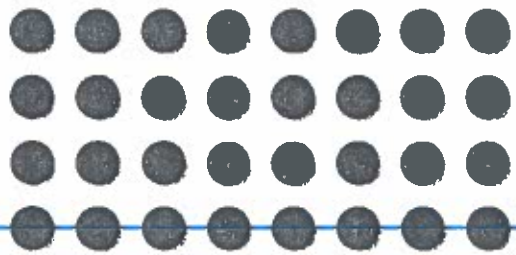
Check your answer by using multiplication.

$$\underline{\hspace{2cm}} \times 5 = 45$$

6.8 Division and Multiplication Page 2

Practising

2. Barrett used 32 counters to make this array.



How many counters are in each row? _____

How many rows are in the array? _____

What numbers will he probably write in each equation?

_____ \times _____ = 32

32 \div _____ = _____

4. 36 students are going on a guided nature walk at the Kerry Wood Nature Centre in Red Deer, Alberta.

They must have at least 1 adult supervisor for every 6 students.

Hint: Use 36 counters to represent the students.

There are _____ groups of _____ in _____.

Use division and multiplication sentences to show your work.

_____ \times _____ = _____

_____ \div _____ = _____

How many adults are needed to supervise the students? _____

Chapter 6
Lesson 8

Division and Multiplication

GOAL

Divide by using related multiplication facts.

1. Use each multiplication fact to calculate the quotient.

a) $4 \times 5 = 20$, so $20 \div 5 =$ _____

b) $3 \times 6 = 18$, so $18 \div 3 =$ _____

c) $10 \times 4 = 40$, so $40 \div 10 =$ _____

d) $2 \times 16 = 32$, so $32 \div 16 =$ _____

2. Calculate.

a) $15 \div$ _____ $= 3$

c) _____ $\div 6 = 4$

b) $6 \div 1 =$ _____

d) $49 \div 7 =$ _____

3. Calculate.

a) $5 \overline{)50}$

b) $9 \overline{)63}$

c) $8 \overline{)48}$

d) $8 \overline{)72}$

4. An airplane has 30 seats placed in rows of 5.
How many rows are there?

5. François organizes 28 students into 7 groups.
How many students are in each group?

6. Michael has \$36. He gives \$6 to each friend.
How many friends get \$6?

At-Home Help

The **dividend** is the starting amount in a division operation.

The **divisor** is the number you divide by in division.

The **quotient** is the result you get when you divide.

You can use multiplication facts to help you solve division facts. For example,

$35 \div 7 =$ ■

$5 \times 7 = 35$, so $35 \div 7 = 5$.

↑ ↑ ↑
 dividend divisor quotient

Name: _____

Date: _____

Matching Pairs Game Cards

Math Game: Matching Pairs

STUDENT BOOK PAGE 197

$$\square \times 9 = 9$$

$$\square \div 9 = \square$$

$$\square \div 6 = 0$$

$$7 \times 0 = \square$$

$$\square \times 9 = 27$$

$$24 \div 8 = \square$$

$$7 \times \square = 14$$

$$18 \div 9 = \square$$

$$9 \times \square = 45$$

$$35 \div 7 = \square$$

$$\square \times 9 = 36$$

$$20 \div \square = 5$$

$$\square \times 3 = 21$$

$$49 \div \square = 7$$

$$\square \times 8 = 48$$

$$36 \div \square = 6$$

$$6 \times \square = 54$$

$$45 \div 5 = \square$$

$$9 \times \square = 72$$

$$56 \div 7 = \square$$

$$\square \times 8 = 64$$

$$32 \div \square = 4$$

$$6 \times \square = 60$$

$$90 \div 9 = \square$$



6.9 Patterns in a Multiplication Table

Student Book page 196

GOAL

Use number patterns in a table to multiply and divide.

Problem



How can you use patterns in a multiplication table to help you multiply and divide?

	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50

Labels: 'row' with an arrow pointing to the second row, and 'column' with an arrow pointing to the fifth column.

a) Look across the row that begins with 2.

Describe patterns you see.

b) Look down the column that begins with 5.

Describe patterns you see.

c) Look down the column that begins with 8.

Describe patterns you see.

6.9 Patterns in a Multiplication Table

Student Book page 196

GOAL

Use number patterns in a table to multiply and divide.

 How can you use patterns in a multiplication table to multiply and divide?

\times	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0			
1	0	1	2	3	4	5	6			

Pattern 1: What do you notice when you multiply numbers by 0?

Pattern 2: What do you notice when you multiply numbers by 1?

Pattern 3: What happens when you divide a number by 1? Why?

Pattern 4: What happens when you divide a number by itself? Why?

Chapter 6
Lesson 9

Patterns in a Multiplication Table

GOAL

Use number patterns in a table to multiply and divide.

1. Fill in the blanks in the multiplication table.
 Look for patterns to help you.

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

2. Describe one pattern you noticed.
-

Division: Zero And One

Directions: Study the rules of division and the examples. Divide, then write the number of the rule you used to solve each problem.

Examples:

Rule 1: $1 \overline{)5}$ Any number divided by 1 is that number.

Rule 2: $5 \overline{)5}$ Any number except 0 divided by itself is 1.

Rule 3: $7 \overline{)0}$ Zero divided by any number is zero.

Rule 4: $0 \overline{)7}$ You cannot divide by zero.

$1 \overline{)6}$ Rule 1 $1 \overline{)4}$ $4 \div 1 = \underline{\quad}$ Rule

$7 \overline{)7}$ Rule **ZERO** $9 \div 9 = \underline{\quad}$ Rule

$9 \overline{)0}$ Rule **ONE** $9 \overline{)9}$ $7 \div 1 = \underline{\quad}$ Rule

$1 \overline{)4}$ Rule $0 \overline{)6}$ $6 \div 0 = \underline{\quad}$ Rule


6.10 Solving Problems by Working Backwards Page 1

Student Book pages 198–199

GOAL

Work backwards to solve a problem.

You will need

- counters 

Problem

Annie shared some baseball cards with 6 friends.
Each friend got 5 cards.

 **How many baseball cards did Annie start with?**

Understand the Problem

You need to figure out how many cards Annie started with.

Make a Plan

Draw a picture to show the parts of the problem you know.

How many friends got cards? _____

Draw circles to represent the friends.



How many cards did each friend get? _____

Put Xs in the circles to show the number of cards one friend got.



one friend

Carry Out the Plan

Use what you know about how many cards each friend got to figure out the cards Annie started with.

6 friends \times 5 cards = _____

How many cards did Annie start with? _____

6.10 Solving Problems by Working Backwards Page 2

Reflecting

How can you check the answer?

How did starting with what you know about how many cards each friend had at the end help you to solve the problem?

6.10 Solving Problems by Working Backwards Page 1

Student Book pages 198–199

GOAL

Work backwards to solve problems.

Checking

- Taylor sorted some stickers into 7 equal groups.
Then she sorted each group into 4 piles of 2 stickers.

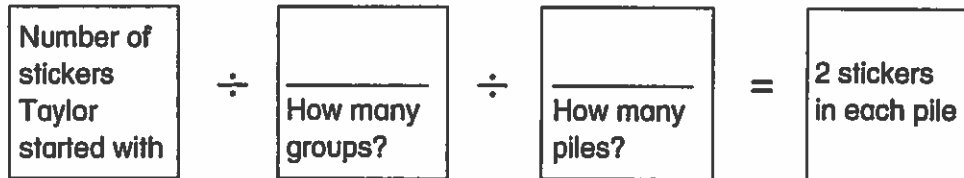
a) Show the steps of the problem.

Understand the Problem

Figure out how many stickers Taylor started out with.

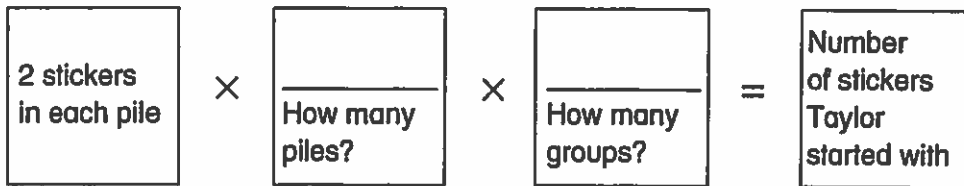
Make a Plan

Fill in the blanks in the diagram.



b) Now work backwards.

Carry Out the Plan



$$2 \times \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Taylor had _____ stickers altogether.

c) Look Back

Use the first diagram.

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = 2$$

6.10 Solving Problems by Working Backwards Page 2

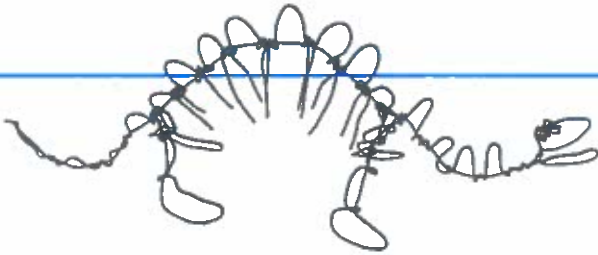
Practising

2. Ryan is making a wire sculpture.

He cut a wire into 4 equal pieces.

Then he cut 2 cm from each piece so each piece was 7 cm long.

How long was the wire he started with?



Understand the Problem

I need to figure out _____

Make a Plan

Use a diagram to show every step of the problem.

Length of wire	÷	<table border="1" style="width: 100%; height: 40px; border-collapse: collapse;"> <tr><td style="border: none;"> </td></tr> <tr><td style="border: none;">_____</td></tr> <tr><td style="border: none;"> </td></tr> </table>		_____		-	<table border="1" style="width: 100%; height: 40px; border-collapse: collapse;"> <tr><td style="border: none;"> </td></tr> <tr><td style="border: none;">_____</td></tr> <tr><td style="border: none;"> </td></tr> </table>		_____		=	Each piece was ___ cm long in the end

Carry Out the Plan

Now work backwards to solve the problem.

Each piece was ___ cm long in the end	+	<table border="1" style="width: 100%; height: 40px; border-collapse: collapse;"> <tr><td style="border: none;"> </td></tr> <tr><td style="border: none;">_____</td></tr> <tr><td style="border: none;"> </td></tr> </table>		_____		×	<table border="1" style="width: 100%; height: 40px; border-collapse: collapse;"> <tr><td style="border: none;"> </td></tr> <tr><td style="border: none;">_____</td></tr> <tr><td style="border: none;"> </td></tr> </table>		_____		=	Length of wire

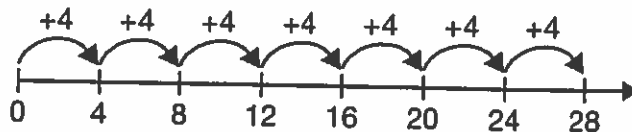
_____ + _____ × _____ = _____

The wire was _____ cm when Ryan started.

Chapter 6**Test Yourself**

Circle the correct answer.

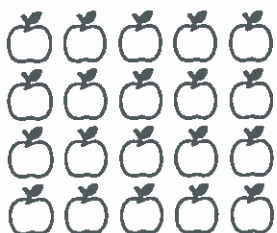
1. Diane skip counted on a number line to multiply. What 2 numbers did she multiply?



- A. 4 and 4 B. 4 and 6 C. 4 and 7 D. 4 and 8
2. Which multiplication fact helps you to calculate 6×9 ?
- A. $6 \times 8 = 48$ B. $9 \times 9 = 81$ C. $6 \times 5 = 30$ D. $6 \times 2 = 12$
3. If you double $3 \times 6 = 18$, what new multiplication fact do you get?
- A. $6 \times 3 = 18$ B. $9 \times 6 = 54$ C. $3 \times 3 = 9$ D. $6 \times 6 = 36$
4. There are 60 cookies in 5 packages of 12 cookies. How many cookies are in 5 packages of 6 cookies?
- A. 15 B. 30 C. 45 D. 60
5. Which $10 \times$ fact helps you to calculate 9×5 ?
- A. $10 \times 8 = 80$ B. $10 \times 4 = 40$ C. $10 \times 5 = 50$ D. $10 \times 10 = 100$
6. What is the missing number in this division sentence?
 $32 \div 8 = \square$
- A. 5 B. 3 C. 7 D. 4
7. Annie has \$40. She wants to buy T-shirts that cost \$10 each. How many T-shirts can she buy?
- A. 4 B. 3 C. 5 D. 2
8. Cory cut a piece of string into 3 equal parts. He cut each piece of string into 2 equal parts so each piece was 2 cm long. How long was Cory's string to start with?
- A. 6 cm B. 12 cm C. 15 cm D. 9 cm

Division Concepts

Name _____



4 rows of 5 apples are 20 apples altogether.

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

$$20 \div 4 = 5 \quad 20 \div 5 = 4$$

Complete the sentences.

1.  _____ rows of _____ pears are

_____ pears altogether.

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \quad \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \quad \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

2.  _____ rows of _____ bananas are

_____ bananas altogether.

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \quad \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \quad \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

If we share 20 apples among 4 people, each person gets 5 apples.

$$20 \div 4 = 5$$

If we share 20 apples among 5 people, each person gets 4 apples.

$$20 \div 5 = 4$$

Complete.

3. If we share 32 bananas among 8 people, each person gets _____ bananas.

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Write a division sentence to show the sharing.

4. Share 45 oranges among 9 people. _____

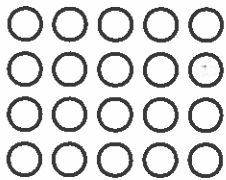
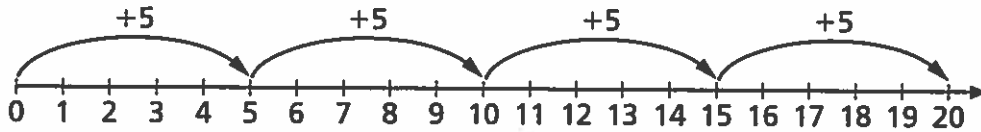
Chapter 6: Multiplication and Division Facts

Multiplication as Repeated Addition

You can use repeated addition, skip counting, a number line, or arrays to multiply.

$5 + 5 + 5 + 5$ is **repeated addition**.

5, 10, 15, 20 is **skip counting**.



4 groups of 5 is 20.

$4 \times 5 = 20$

1. Write the next 2 numbers in each skip counting pattern.

a) 4, 8, 12, _____, _____

b) 3, 6, 9, _____, _____

2. Calculate.

a) $2 + 2 + 2 + 2 + 2 =$ _____

b) $4 + 4 + 4 + 4 =$ _____

3. Write an addition sentence for each multiplication. Then calculate.

a) 3×5 _____

d) 1×4 _____

b) 5×4 _____

e) 2×3 _____

c) 5×5 _____

f) 4×2 _____

4. Write an addition sentence and a multiplication sentence for each picture.



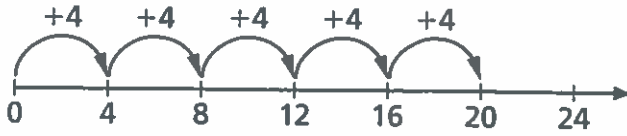
_____ + _____ + _____ + _____ = _____

_____ \times _____ = _____



Name: _____ Date: _____

5. Write the multiplication sentence.



_____ × _____ = _____

6. Draw an array for 15.

Complete the multiplication sentences.

5 × _____ = _____

3 × _____ = _____

Division as Equal Sharing

You can use division to share. For example, 20 books can be shared among 5 groups. $20 \div 5 = 4$, so there are 4 books in each group.

7. 15 students need to be divided into 3 groups.

How many students will be in each group?

_____ ÷ _____ = _____

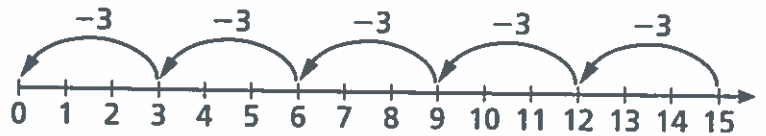


Division as Equal Grouping

You can use division to figure out the number of groups. For example, 20 books are in groups of 4. $20 \div 4 = 5$, so there are 5 groups.

8. 15 students need to be divided into groups of 3 for an activity. How many groups will there be?

_____ ÷ _____ = _____



9. Calculate.

a) $9 \div 3 =$ _____ c) $25 \div 5 =$ _____ e) $5 \div 1 =$ _____ g) $8 \div 2 =$ _____

b) $20 \div 4 =$ _____ d) $12 \div 3 =$ _____ f) $8 \div 4 =$ _____ h) $10 \div 5 =$ _____

10. Write a division sentence for each.

a) 20 cookies shared by 5 people _____

b) 12 toys shared by 4 children _____

10.1 Exploring Division

Student Book page 350

GOAL

Solve division problems using models.

Problem

Aneela and Julia are making kaleidoscopes in the Science Club.

Each kaleidoscope needs 3 plastic rectangles.

Aneela and Julia have 27 plastic rectangles.

You will need

- a 100 chart (blackline master)

1	2	3	4
11	12	13	14
21	22	23	24
31	32	33	34

- counters



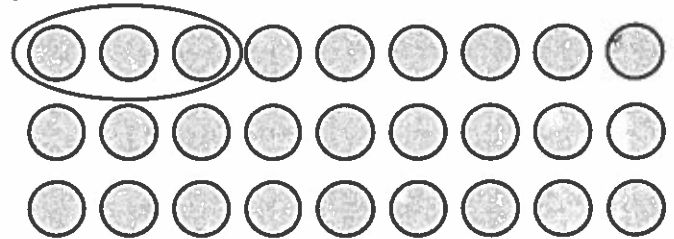
How many kaleidoscopes can Aneela and Julia make?

Step 1: They need 3 rectangles for each kaleidoscope. Count by 3s by shading on the 100 chart shown at the right (the 100 chart is only shown up to 50).

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Step 2: Count the numbers you have shaded. There are _____ shaded numbers.

Step 3: Use 27 counters to see if the number of shaded squares is the same as the number of groups of 3 you can make.



Circle groups of 3.

The first group has been circled for you.

Count the number of circled groups.

How many groups of 3 are there? _____

How many kaleidoscopes can Aneela and Julia make? _____

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

10.1 Exploring Division

Student Book page 350

GOAL

Solve division problems using models.



How many reflectors can Aneela and Julia make so that no rectangles are left over?

You will need

- a 100 chart (blackline master)

1	2	3	4
11	12	13	14
21	22	23	24
31	32	33	34

- counters



Step 1: Put a counter on 3 and then on every 3rd square on a hundreds chart.

Stop at 90.

Step 2: How many counters did you use from 1 to 70? _____

Step 3: How many counters did you use from 71 to 90? _____

Step 4: How many reflectors can they make without leftovers?

Explain how you know.

Step 5: Show another way you could solve this problem.

Chapter 10
Lesson 1**Exploring Division****GOAL**

Solve division problems using models.

You will need 40 toothpicks, coins, buttons, or something else to use as counters.

1. Use counters to show 40 band members in equal rows.

Then sketch the rows.

a) 2 equal rows

b) 4 equal rows

c) 5 equal rows

2. Can 40 band members march in equal rows if they march each way? How do you know?

a) 6 rows _____

b) 7 rows _____

c) 8 rows _____

3. Between 25 and 35 students are working in groups planting trees.

a) How many students might there be if they are working in groups of 5? _____

b) How many students might there be if they are working in groups of 4? _____

c) How many students might there be if they are working in groups of 3? _____

10.2 Relating Division to Multiplication

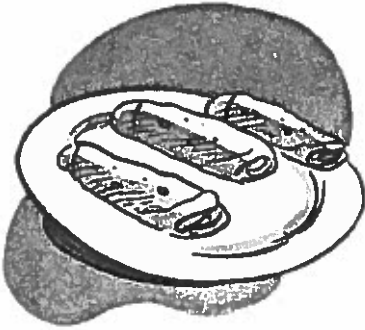
Student Book page 351

GOAL

Solve division problems by multiplying.

Problem

Some students are packaging spring rolls.
They have 54 spring rolls to put into 6 packages.



You will need

- a 100 chart (blackline master)

1	2	3	4
11	12	13	14
21	22	23	24
31	32	33	34

- counters



 How many spring rolls will be in each package?

Step 1: Use multiplication to help you make a prediction.

If there were 10 spring rolls in each package, how many spring rolls would there be altogether?

$$10 \times 6 = \underline{\hspace{2cm}}$$

Step 2: Are 10 spring rolls too many or too few? _____

Step 3: Try fewer spring rolls.

Draw pictures to help you figure out the answer.

10.2 Relating Division to Multiplication

Student Book page 351

GOAL

Solve division problems by multiplying.



How can you multiply to decide how many packages each student should pack?

You will need

- a 100 chart (blackline master)

1	2	3	4
11	12	13	14
21	22	23	24
31	32	33	34

- counters



Step 1: Put a counter on 6 and then on every 6th square on a 100 chart.

Stop at 90.

Step 2: There are _____ groups of 6 in 90.

$$90 \div 6 = \underline{\hspace{2cm}}$$

Use multiplication to double check.

$$6 \times \underline{\hspace{2cm}} = 90$$

Step 3: There are 5 students.

Use multiplication to figure out how many packages each of them gets.

$$5 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Hint: Use your answer from Step 2.

Step 5: Show another way you could solve this problem.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Chapter 10
Lesson 2

Relating Division to Multiplication

GOAL

Solve division problems by multiplying.

1. Use each multiplication sentence to complete each division sentence.

a) $3 \times 8 = 24$, so $24 \div 3 =$ _____

b) $9 \times 8 = 72$, so $72 \div 8 =$ _____

c) $5 \times 12 = 60$, so $60 \div 5 =$ _____

d) $2 \times 11 = 22$, so $22 \div 2 =$ _____

e) $13 \times 6 = 78$, so $78 \div 6 =$ _____

f) $4 \times 17 = 68$, so $68 \div 4 =$ _____

2. Use multiplication to complete each division sentence.

a) $72 \div 4 =$ _____ b) $80 \div 5 =$ _____

$4 \times 15 =$ 60 $5 \times 12 =$ 60

$4 \times 16 =$ _____ $5 \times 13 =$ _____

$4 \times 17 =$ _____ $5 \times 14 =$ _____

$4 \times 18 =$ _____ $5 \times 15 =$ _____

$5 \times 16 =$ _____

3. Kate put 80 cookies into 5 equal groups.

How many cookies are in each group? Explain your thinking.

At-Home Help

Multiplying can help you to solve a division problem.

For example:

What is $84 \div 6$?

I will multiply numbers by 6 until I reach 84. I will start at $6 \times 10 = 60$. Each answer goes up by 6.

$6 \times 10 = 60$

$6 \times 11 = 66$

$6 \times 12 = 72$

$6 \times 13 = 78$

$6 \times 14 = 84$

$84 \div 6 = 14$

10.3 Using Subtraction to Divide Page 1

Student Book pages 352–355

GOAL

Solve division problems by subtracting.

You will need

- counters



Problem

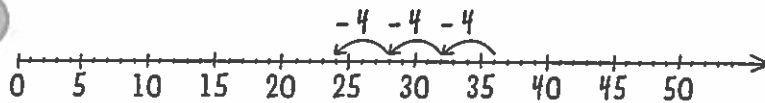
Kate is making decorations for a banquet.
 She is tying balloons together in bunches of 4.
 She has 36 balloons.

How many bunches of balloons can Kate make?

Step 1: Use a number line to keep track of all the bunches of balloons.

Start at 36.

Subtract 4 balloons to show each bundle.



$$\begin{array}{r}
 4 \overline{)36} \\
 \underline{-4} \quad 1 \text{ bundle} \\
 32 \\
 \underline{-4} \quad 1 \text{ bundle} \\
 28 \\
 \underline{-4} \quad 1 \text{ bundle} \\
 \hline
 \end{array}$$

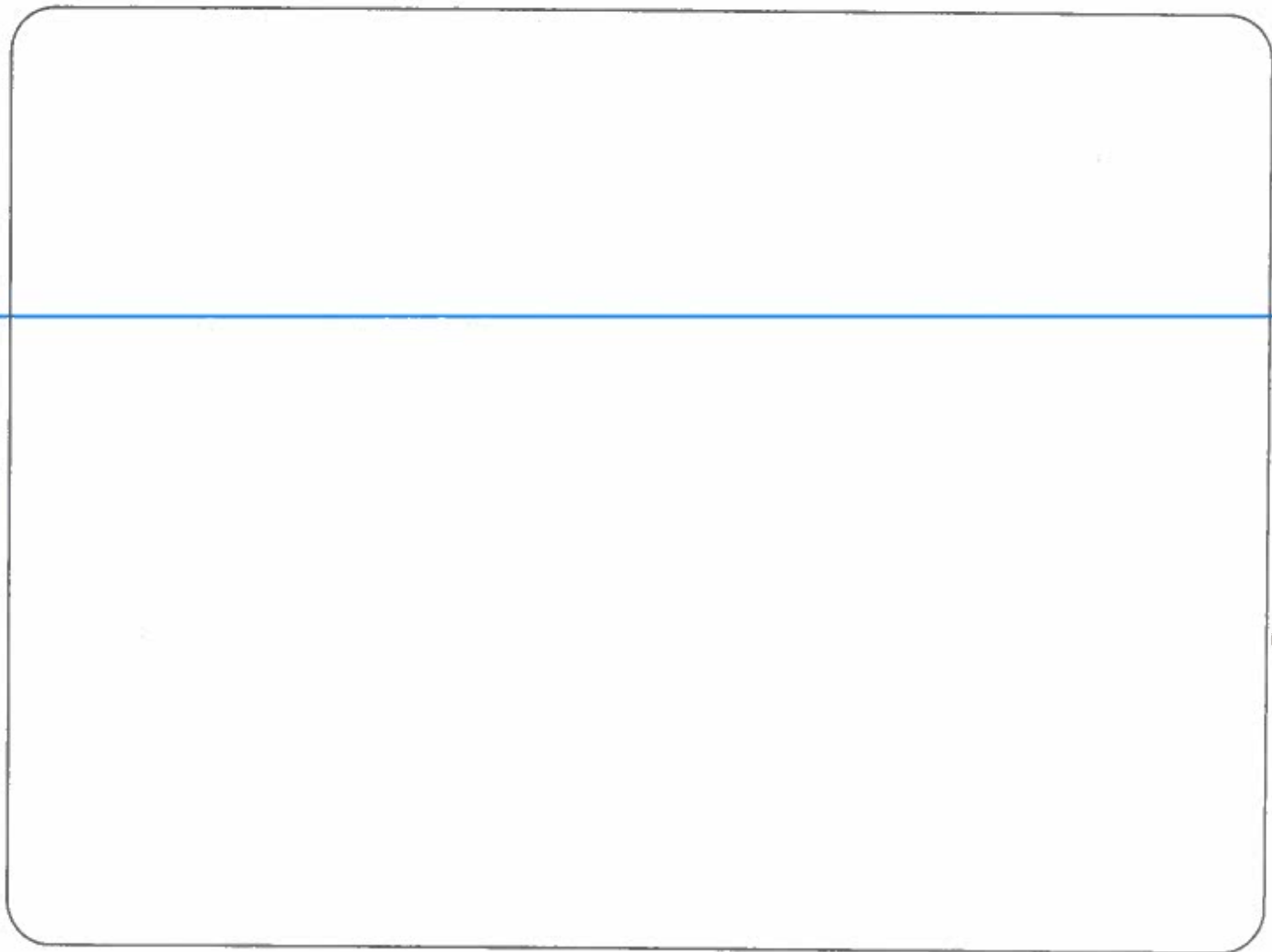
Step 2: Count how many bundles can be made.

Hint: You can count the bumps on your number line.

10.3 Using Subtraction to Divide Page 2

Step 3: Check your work.

Draw a picture that shows 36 balloons in bundles of 4.



Reflecting

How does knowing subtraction help you to divide?



10.3 Using Subtraction to Divide Page 1

Student Book pages 352–355

GOAL

Solve division problems by subtracting.

You will need

- a number line

Checking

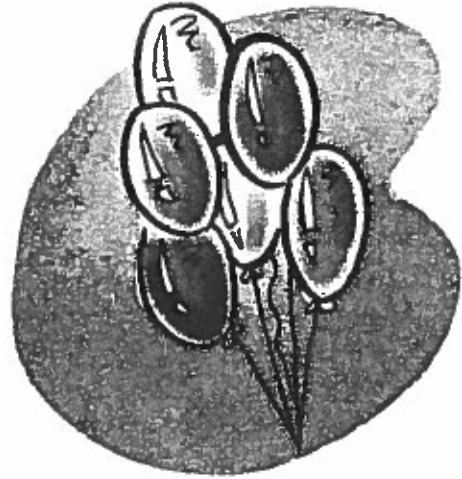
1. Kate has 99 balloons to put in bunches of 6.

a) First make 10 bunches of 6.

That's 60 balloons.

$$\begin{array}{r} 6 \overline{) 99} \\ - 60 \\ \hline \end{array} \quad \text{10 bunches}$$

How many are left? _____ balloons



Take away 5 bunches of 6.

That's 30 balloons

$$\begin{array}{r} 6 \overline{) 99} \\ - 60 \\ \hline - 30 \\ \hline \end{array} \quad \begin{array}{l} \text{10 bunches} \\ \text{5 bunches} \end{array}$$

How many are left? _____ balloons

How many more bunches of 6 can you take away?

Show your work.

How many are left now? _____ balloons

How many bunches can Kate make in all? $10 + 5 + \underline{\quad} = \underline{\quad}$

b) How many balloons will be left over? _____

10.3 Using Subtraction to Divide Page 2

Practising

2. Kate has 62 balloons to put in bunches of 5.

First, make 10 bunches of 5.

That's _____ balloons.

$$\begin{array}{r} 5 \overline{) 62} \\ - \\ \hline \end{array}$$

10 bunches



How many are left? _____ balloons

How many more bunches of 5 can you take away?

Show your work.

How many are left now? _____ balloons

How many bunches can Kate make in all?

$$10 + \underline{\quad} = \underline{\quad}$$

b) How many balloons will be left over? _____

6. Olena cut out the dough for 51 perogies.

She cut out 3 circles in each row of the dough.

How many rows were there?

Show your work.

$$\begin{array}{r} 3 \overline{) 51} \\ - \\ \hline \end{array}$$

There were _____ rows.

Scaffolding for Lesson 3, Question 2

STUDENT BOOK PAGE 353

2. Kate has 62 balloons to put in bunches of 5.

a) How many bunches can she make?

Use a number line to divide 62 by 5.



First make 10 bunches of 5. That uses 50 balloons.

$$\begin{array}{r}
 5 \overline{)62} \\
 \underline{-50} \quad 10 \text{ bunches} \\
 12 \\
 \underline{-10} \quad 2 \text{ bunches} \\
 \hline
 2
 \end{array}$$

How many are left? _____ balloons

How many more bunches of 5 can you take away? _____ bunches

How many are left now? _____ balloons

How many bunches can Kate make? _____ bunches

b) How many balloons will be left over? _____ balloons

Chapter 10
Lesson 3

Using Subtraction to Divide

GOAL

Solve division problems by subtracting.

1. Joshua was putting 102 muffins in packages of 8 muffins each. To find out how many packages he needed, he divided.

$$\begin{array}{r} 8 \overline{)102} \\ - 80 \\ \hline 22 \\ - 16 \\ \hline 6 \end{array}$$

10 I need at least 10 packages.
 2 I need 2 more packages.
 6 I have 6 muffins left.

I need $10 + 2 = 12$ packages.

I have 6 muffins left over.

- a) How many muffins did Joshua have?

- b) How many muffins were left over after the muffins were put in packages?

- c) How did Joshua know that he needed at least 10 packages? _____

2. Use subtraction to divide. Show your steps.

a) $4 \overline{)49}$

b) $7 \overline{)85}$

c) $3 \overline{)39}$

d) $6 \overline{)98}$

At-Home Help

The **remainder** is the amount left over after a number is divided into a whole number of equal parts.

For example: $44 \div 7 = 6 \text{ R}2$

You can use subtraction to help you divide greater numbers. For example:

What is $102 \div 8$?

I know that $80 \div 8 = 10$, so $102 \div 8$ must be more than 10. I will subtract to see how many more are needed.

(See Question 1 for the rest of the solution.)

10.4 Dividing By Renaming Page 1

Student Book pages 356–357

GOAL

Divide by renaming the dividend.

You will need

- base ten blocks

**Problem**

Lang and Aneela both collect postcards.

Lang has 3 times as many postcards as Aneela.

**If Lang has 36 postcards, how many postcards does Aneela have?****Step 1:** You have to calculate $36 \div 3$.

Use base ten blocks to show the number 36.

There are 3 tens blocks and 6 ones blocks.

**Step 2:** Divide the tens blocks into 3 rows.

There are 3 tens blocks.

$$3 \times 10 = 30$$

$$30 \div 3 = 10$$

Put 1 tens block in each row.

Step 3: Divide the ones blocks into 3 rows.

There are 6 ones blocks

$$6 \times 1 = \underline{\hspace{2cm}}$$

$$6 \div 3 = \underline{\hspace{2cm}}$$

Put ones blocks in each row.

10.4 Dividing By Renaming Page 2

Step 4: 36 can be shown as 3 rows of 1 tens block and 2 ones blocks.



You can rename the dividend 36 as $30 + 6$.

$36 \div 3$ is the same as $30 \div 3$ added to $6 \div 3$.

$$36 \div 3 = 30 \div 3 + 6 \div 3$$

$$36 \div 3 = \underline{\quad\quad} + \underline{\quad\quad}$$

$$36 \div 3 = \underline{\quad\quad}$$

Aneela has _____ postcards.

Reflecting

How did renaming the dividend help you to divide 36 by 3?

10.4 Dividing by Renaming Page 1

Student Book pages 356–357

GOAL

Divide by renaming the dividend.

You will need

- base ten blocks



Checking

1. Tracy and Aaron both collect hockey cards.

Tracy has 4 times as many cards as Aaron.

Tracy has 92 cards.

a) Write the division expression for the problem.

_____ ÷ _____

b) Model 92 with 8 tens blocks and 12 ones blocks.

Draw the blocks below.

Tens	Ones

8 tens is _____.

12 ones is _____.

92 can be renamed as _____ + _____.

c) $92 \div 4 = \underline{\hspace{2cm}} \div 4 + \underline{\hspace{2cm}} \div 4$
 $= \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

Aaron has _____ cards.

10.4 Dividing by Renaming Page 2

Practising

3. Divide by renaming. Explain your strategy for one division.

a) $75 = \underline{\quad\quad} + \underline{\quad\quad}$
 $75 \div 5 = \underline{\quad\quad} \div 5 + \underline{\quad\quad} \div 5$
 $= \underline{\quad\quad} + \underline{\quad\quad}$
 $= \underline{\quad\quad}$

$5 \overline{)75} = \underline{\quad\quad}$

b) $58 = \underline{\quad\quad} + \underline{\quad\quad}$
 $58 \div 4 = \underline{\quad\quad} \div 4 + \underline{\quad\quad} \div 4$
 $= \underline{\quad\quad} + \underline{\quad\quad} \text{ R } \underline{\quad\quad}$
 $= \underline{\quad\quad} \text{ R } \underline{\quad\quad}$

$4 \overline{)58} = \underline{\quad\quad} \text{ R } \underline{\quad\quad}$

c) $92 = \underline{\quad\quad} + \underline{\quad\quad}$
 $92 \div 7 = \underline{\quad\quad} \div 7 + \underline{\quad\quad} \div 7$
 $= \underline{\quad\quad} + \underline{\quad\quad} \text{ R } \underline{\quad\quad}$
 $= \underline{\quad\quad} \text{ R } \underline{\quad\quad}$

$7 \overline{)92} = \underline{\quad\quad} \text{ R } \underline{\quad\quad}$

d) $94 = \underline{\quad\quad} + \underline{\quad\quad}$
 $94 \div 9 = \underline{\quad\quad} \div 9 + \underline{\quad\quad} \div 9$
 $= \underline{\quad\quad} + \underline{\quad\quad} \text{ R } \underline{\quad\quad}$
 $= \underline{\quad\quad} \text{ R } \underline{\quad\quad}$

$9 \overline{)94} = \underline{\quad\quad} \text{ R } \underline{\quad\quad}$

Name: _____

Date: _____

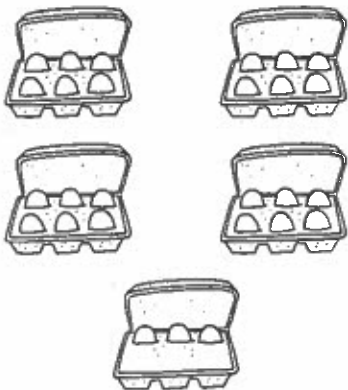
WORD PROBLEM

Max is putting eggs into cartons. He has 27 eggs. Each carton holds 6 eggs.
How many cartons will he fill? Will there be any eggs left over?

BASICS BOX

Sometimes when we divide we don't end up with completely equal groups. We have extras or leftovers. These extras are called the *remainder*.

Max has 27 eggs. If he puts them in containers of 6, it would look like this.



We see he can fill 4 cartons, but he will have 3 extra eggs.

$$\begin{array}{r} 4 \text{ r}3 \\ 6 \overline{) 27} \\ \underline{24} \\ 3 \end{array} \quad \rightarrow \text{ This is how we write the remainder.}$$

Remember: The remainder should always be less than the divisor.

PRACTICE

Find the quotients.

1. $4 \overline{) 23}$

5. $4 \overline{) 15}$

2. $5 \overline{) 27}$

6. $3 \overline{) 26}$

3. $6 \overline{) 47}$

7. $8 \overline{) 79}$

4. $2 \overline{) 13}$

8. $4 \overline{) 29}$

JOURNAL

List and explain all the steps for dividing 17 by 3.

Chapter 10
Lesson 4

Dividing by Renaming

GOAL

Divide by renaming the dividend.

1. Jade wants to calculate $39 \div 3$.
 Fill in the blanks to complete her solution.

I will rename 39 as _____ + _____.

I will divide each new number by 3.

$$\underline{\hspace{2cm}} \div 3 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \div 3 = \underline{\hspace{2cm}}$$

I will calculate $39 \div 3 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

2. To calculate $63 \div 3$, rename 63 as _____ + _____.

Make sure both new numbers can be divided by 3.

$$\underline{\hspace{2cm}} \div 3 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \div 3 = \underline{\hspace{2cm}}$$

$$63 \div 3 = \underline{\hspace{2cm}}$$

3. Divide by renaming. Show your steps.

a) $28 \div 2$

b) $45 \div 3$

c) $56 \div 4$

At-Home Help

The **dividend** is the number you divide into parts.

For example: $8 \div 4 = 2$

↑
dividend

You can divide by **renaming** the dividend.

For example:

What is $72 \div 4$?

I will rename 72 as $60 + 12$.

$72 \div 4$ is the same as $60 \div 4$ added to $12 \div 4$.

$$60 \div 4 = 15$$

$$12 \div 4 = 3$$

$$15 + 3 = 18, \text{ so } 72 \div 4 = 18$$

10.5 Estimating Quotients Page 1

Student Book pages 360–362

GOAL

Use multiplication and division facts to estimate quotients.

Problem

Julie wants to read the book *Sarah, Plain and Tall* in 3 days.

The book has 58 pages.

She wants to read about the same number of pages every night.



About how many pages will Julia read each night?

Step 1: Think about how many pages Julia would read if she read 10 pages for 3 nights.

$$10 \times 3 = \underline{\hspace{2cm}}$$

You know Julia will read more than 10 pages each night.

Step 2: Think about how many pages Julia would read if she read 20 pages each night.

$$20 \times 3 = \underline{\hspace{2cm}}$$

You know Julia will read less than 20 pages each night.

Step 3: Think of an easier number that you could use to divide.

58 is close to 60.

$$60 \div 3 = \underline{\hspace{2cm}}$$



Hint: Use the number line to help you.

10.5 Estimating Quotients Page 2

You know that Julia will read more than 10 pages each night.
And you know that Julia will read less than 20 pages each night.
About how many pages do you estimate she will read each night?
Explain your thinking.

Reflecting

How did thinking about easier numbers help you to estimate?

Why might it be helpful for Julia to think of 58 as 6 tens?

Estimate by rounding the dividends to the nearest ten or hundred. Then do the division.

15

$$3 \overline{)747}$$

estimate

$$3 \overline{)750}$$

16

$$5 \overline{)695}$$

estimate

$$\overline{\hspace{1cm}}$$

17

$$8 \overline{)792}$$

estimate

$$\overline{\hspace{1cm}}$$

18

$$6 \overline{)906}$$

estimate

$$\overline{\hspace{1cm}}$$



19 $686 \div 7 = \underline{\hspace{2cm}}$

estimate

$$\underline{\hspace{1cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

20 $326 \div 2 = \underline{\hspace{2cm}}$

estimate

$$\underline{\hspace{1cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

21 $788 \div 4 = \underline{\hspace{2cm}}$

estimate

$$\underline{\hspace{1cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

22 $915 \div 5 = \underline{\hspace{2cm}}$

estimate

$$\underline{\hspace{1cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

23 $294 \div 6 = \underline{\hspace{2cm}}$

estimate

$$\underline{\hspace{1cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

24 $416 \div 8 = \underline{\hspace{2cm}}$

estimate

$$\underline{\hspace{1cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

25 $567 \div 3 = \underline{\hspace{2cm}}$

estimate

$$\underline{\hspace{1cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

26 $891 \div 9 = \underline{\hspace{2cm}}$

estimate

$$\underline{\hspace{1cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$



Chapter 10
Lesson 5

Estimating Quotients

GOAL

Use multiplication and division facts to estimate quotients.

1. Write a fact that is useful to solve the division problem.

- a) I want to know $80 \div 4$. I know _____
- b) I want to know $60 \div 2$. I know _____
- c) I want to know $100 \div 5$. I know _____

2. Tien wants to estimate the quotient for $88 \div 3$. She says, "88 is close to 90. I know that $9 \div 3 = 3$."

Use Tien's fact to estimate the quotient.

3. Lang wants to estimate the quotient for $43 \div 9$. He says, "43 is close to 45. I can divide 45 into 9 equal parts." Use Lang's fact to estimate the quotient.

4. Estimate each quotient.

a) $33 \div 8$

b) $25 \div 6$

c) $80 \div 9$

At-Home Help

The **quotient** is the answer to a division problem.

For example: $8 \div 4 = 2$

quotient

You can use facts you know to estimate the quotient. For example:

What is $58 \div 3$?

58 is close to 60. It is easier to divide $60 \div 3$ than $58 \div 3$.

I know $6 \div 3 = 2$, so

$60 \div 3 = 20$.

$58 \div 3$ is close to $60 \div 3 = 20$, so the quotient is about 20.

Chapter 10
Lesson 5

Estimating Quotients

GOAL

Use multiplication and division facts to estimate quotients.

1. Write a fact that is useful to solve the division problem.

a) I want to know $80 \div 4$. I know _____

b) I want to know $60 \div 2$. I know _____

c) I want to know $100 \div 5$. I know _____

2. Tien wants to estimate the quotient for $88 \div 3$.

She says, "88 is close to 90. I know that

$9 \div 3 = 3$."

Use Tien's fact to estimate the quotient.

3. Lang wants to estimate the quotient for $43 \div 9$.

He says, "43 is close to 45. I can divide 45 into

9 equal parts." Use Lang's fact to estimate the quotient.

4. Estimate each quotient.

a) $33 \div 8$

b) $25 \div 6$

c) $80 \div 9$

At-Home Help

The **quotient** is the answer to a division problem.

For example: $8 \div 4 = 2$

quotient

You can use facts you know to estimate the quotient. For example:

What is $58 \div 3$?

58 is close to 60. It is easier to divide $60 \div 3$ than $58 \div 3$.

I know $6 \div 3 = 2$, so

$60 \div 3 = 20$.

$58 \div 3$ is close to $60 \div 3 = 20$, so the quotient is about 20.

Estimate by rounding the dividends to the nearest ten or hundred. Then do the division.

15

$$\begin{array}{r} 200 \\ 3 \overline{) 747} \end{array}$$

estimate

$$\begin{array}{r} 200 \\ 3 \overline{) 750} \end{array}$$

$$\begin{array}{r} 200 \\ 3 \overline{) 600} \end{array}$$

16

$$\begin{array}{r} 100 \\ 5 \overline{) 695} \end{array}$$

estimate

$$\begin{array}{r} 100 \\ 5 \overline{) 650} \end{array}$$

17

$$8 \overline{) 792}$$

estimate

$$\square$$

18

$$6 \overline{) 906}$$

estimate

$$\square$$



19 $686 \div 7 =$ _____

estimate

_____ \div _____ = _____

20 $326 \div 2 =$ _____

estimate

_____ \div _____ = _____

21 $788 \div 4 =$ _____

estimate

_____ \div _____ = _____

22 $915 \div 5 =$ _____

estimate

_____ \div _____ = _____

23 $294 \div 6 =$ _____

estimate

_____ \div _____ = _____

24 $416 \div 8 =$ _____

estimate

_____ \div _____ = _____

25 $567 \div 3 =$ _____

estimate

_____ \div _____ = _____

26 $891 \div 9 =$ _____

estimate

_____ \div _____ = _____



10.6 Dividing by Sharing Page 1

Student Book pages 364–366

GOAL

Solve division problems using base ten blocks.

You will need

- base ten blocks



Problem

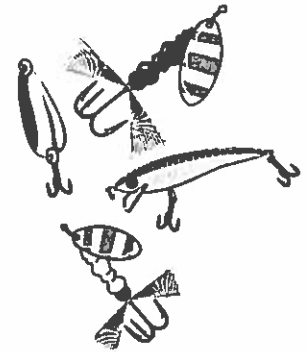
Cole has 44 fishing lures.

He plans to give them to his 4 uncles.

He wants to give the same number of fishing lures to each uncle.

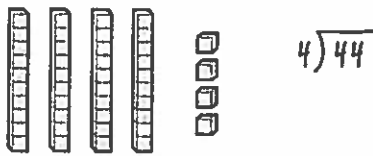


How many fishing lures will each uncle get?

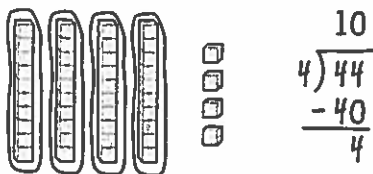


Step 1: You need to divide 44 by 4.

Use base 10 blocks to show the number 44.



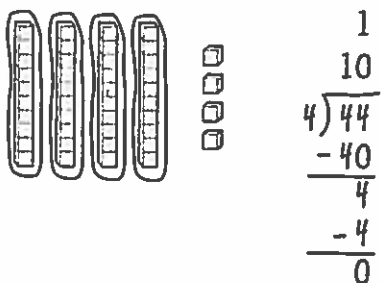
Step 2: There are 4 tens.



So Cole can give at least 10 lures to each of his uncles.

Step 3: There are 4 more lures to share.

Show how Cole could share the 4 lures.



10.6 Dividing by Sharing Page 2

Step 4: Answer the question.

How many lures can Cole give to each of his uncles?

Reflecting

How is this method like other division methods you know?

How is it different?

How can you use multiplying to check your answer?

10.6 Dividing by Sharing Page 1

Student Book pages 364–366

GOAL

Solve division problems using base ten blocks.

You will need

- base ten blocks



Checking

- The people in 6 fishing boats caught 72 fish.
Each boat caught the same amount of fish.

a) How many fish did each boat catch?

Step 1: Model 72 fish with base ten blocks.

_____ tens _____ ones

$$6 \overline{)72}$$

Step 2: Divide the tens in 6 equal groups.

Draw the groups below.

$$\begin{array}{r} 10 \\ 6 \overline{)72} \\ - 60 \\ \hline 12 \end{array}$$

How many tens are in each group? _____

Step 3: How many tens are left over? _____

Regroup the leftover tens into ones.

How many ones are there in total? _____

Divide the ones into 6 equal groups.

Draw the groups below.

10.6 Dividing by Sharing Page 2

How many ones are in each group? _____

How many tens and ones are in each group? _____ tens _____ ones

Each boat caught _____ fish.

b) How would the answer change if there had been 75 fish?

Hint: $75 - 72 = 3$.

Practising

4. The video store has 85 cartoon DVDs for rent.

They are displayed in 5 sections.

a) What division sentence would you use to figure out how many DVDs are in each section?

_____ \div _____ = _____

b) Solve the division problem.

Hint: Use base ten blocks to share the DVDs.

Explain your solution.

There are _____ DVDs in each section.

c) How do you know your answer is reasonable?

Scaffolding for Lesson 6, Question 4

STUDENT BOOK PAGE 366

4. The video store has 85 cartoon DVDs for rent.

They are displayed in 5 sections with about the same number of DVDs in each section.

- a) What equation can you use to figure out how many DVDs are in each section?

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

↑ ↑ ↑

total number of DVDs	number of sections	number of DVDs in each section
-------------------------	-----------------------	-----------------------------------

- b) Solve your equation.

How many equal groups will you put the DVDs into? _____

How many DVDs are in each group? _____

Do you have any DVDs left over? _____

- c) Is your answer reasonable? How do you know?

Hint: Check by multiplying.

Chapter 10
Lesson 6

Dividing by Sharing

GOAL

Solve division problems using base ten blocks.

You will need pennies and dimes to use as ones and tens.

1. Use pennies and dimes to model $64 \div 3$.
Divide the coins into 3 equal groups.

How many dimes are in each group? _____

How many pennies are in each group? _____

What is left over? _____

$64 \div 3 =$ _____ R _____

2. Calculate.

a) $35 \div 3 =$ _____ R _____

b) $71 \div 5 =$ _____ R _____

c) $29 \div 2 =$ _____ R _____

d) $41 \div 7 =$ _____ R _____

e) $55 \div 4 =$ _____ R _____

f) $92 \div 3 =$ _____ R _____

3. 5 people share 68 strawberries equally.
A few strawberries are left over.

a) What equation can you use to figure out how many strawberries each person eats? _____

b) Solve your equation.

At-Home Help

You can group pennies and dimes to help you divide.

For example:

What is $77 \div 3$?

I used pennies and dimes to show 77. I divided the coins into 3 groups.



I had 1 dime and 1 penny left. I regrouped the dime as 10 pennies. I shared the pennies among the 3 groups. There are 2 pennies left over.



$77 \div 3 = 25 \text{ R}2$

10.7 Solving Problems by Guessing and Testing Page 2

Practising

2. A number is divided by 3. The remainder is 1.

When the quotient without the remainder is divided by 5, the remainder is 2.

What might the original number be?

Understand the Problem

The number has a remainder of _____ when you divide by _____.

The quotient (answer) without the remainder divided by 5 has a remainder of _____.

Make a Plan

I will try _____

Carry Out the Plan

Show the numbers you guessed and tested.

The original number might be _____.

3. Use only odd numbers for all the missing digits to make this division calculation true.

$$\begin{array}{r} \square \square \square \\ \square \square \square \overline{) \square \square \square \square} \\ \square \square \square \square \\ \hline \square \square \square \square \end{array}$$

Hint: Odd numbers end with 1, 3, 5, 7, and 9.

Show all your work.

10.7 Solving Problems by Guessing and Testing Page 1

Student Book pages 368–370

GOAL

Use guessing and testing to solve problems.

Checking

1. Shilpa was putting samosas into bags.

When she put them into bags of 6, she had 1 left over.

When she put them into bags of 8, she had 1 left over.

How many samosas might she have?

Understand the Problem

I know the number has a remainder of _____ when I divide by _____ and _____.

I need to find out how many samosas Shilpa might have.

Make a Plan

I will try the number _____ first.

Then I will guess and test other numbers.

Carry Out the Plan

Use the number you chose.

$$\underline{\hspace{2cm}} \div 6 = \underline{\hspace{2cm}} \text{ R } \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \div 8 = \underline{\hspace{2cm}} \text{ R } \underline{\hspace{2cm}}$$

Did your number fit the clues? _____

If no, guess and test another number. _____

$$\underline{\hspace{2cm}} \div 6 = \underline{\hspace{2cm}} \text{ R } \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \div 8 = \underline{\hspace{2cm}} \text{ R } \underline{\hspace{2cm}}$$

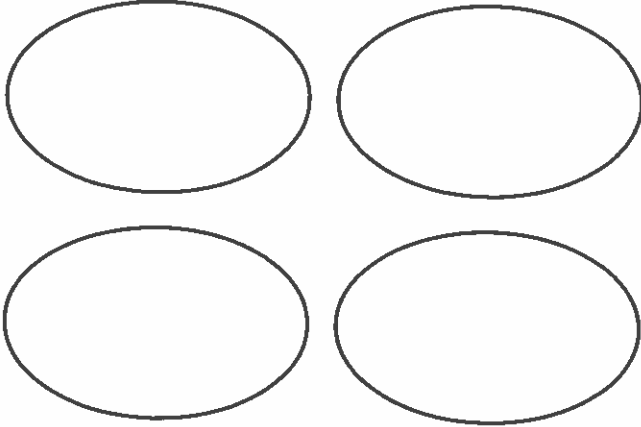
Keep on guessing numbers until you find a number that fits the clues.

Remember: Use what you learn from your testing in your new guesses.

Shilpa might have _____ or _____ samosas.

10.7 Solving Problems by Making a Model Page 2

Step 2: Use counters to make groups to show the candies for Aneela and 3 friends.



Show the 1 candy that is left over.

Step 3: Look at your groups.

How can you figure out how many candies Aneela has?

Reflecting

Why was making a model a good strategy for solving this problem?

10.7 Solving Problems by Making a Model Page 1

Student Book pages 368–370

GOAL

Make a model to solve a problem.

You will need

- counters



Problem

Aneela has some candies to share.

If she shares her candies with 2 friends and herself, they each get 8 candies and there is 1 candy left over.

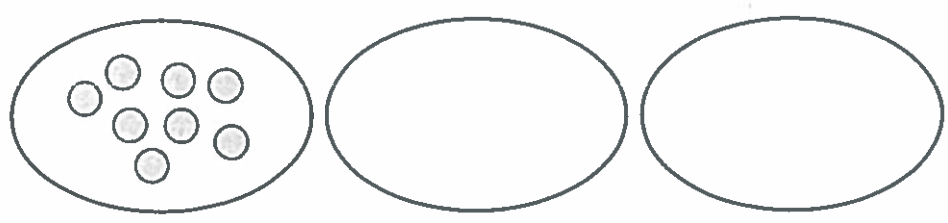
~~If she shares her candies with 3 friends and herself, they each get 6 candies and there is 1 candy left over.~~

 **How many candies does Aneela have?**

Step 1: Use counters to make groups to show the candies.

Start with showing the candies for Aneela and 2 friends.

The first group is done for you.



Show the 1 candy that is left over.

Solving Problems by Guessing and Testing

GOAL

Use guessing and testing to solve problems.

- Joshua has a mystery number. When he divides his number by 3, the answer is 14 and the remainder is 2. What is the mystery number?
- Emily has a mystery number between 15 and 20. When she divides her number by 3, the remainder is 2. What is the mystery number?
- Jade has 66 chairs to arrange for a show. She makes 5 equal rows and has 1 chair left over. How many chairs are in each row?
- Ken has 87 books to place on 7 shelves. How many more books does he need if he wants an equal number of books on each shelf?
- Use only even numbers for all the missing digits to make this division calculation true. There is more than one correct answer.

$$\begin{array}{r} \underline{\quad} \underline{\quad} \\ \underline{\quad} \overline{) \underline{\quad} \underline{\quad} \underline{\quad} \underline{\quad} \\ \underline{\quad} \underline{\quad} \underline{\quad} \underline{\quad} \\ \hline \end{array}$$

At-Home Help

Guessing and testing is a useful strategy for solving problems. For example:

A number between 26 and 36 is divided by 7 and the remainder is 3. To figure out the number, try some possibilities.

$35 \div 7 = 5$, but there is no remainder.

$28 \div 7 = 4$, but there is no remainder.

To have a remainder of 3, use $28 + 3 = 31$.

$31 \div 7 = 4 \text{ R}3$

The number is 31.

Chapter 10 Test Yourself

Circle the correct answer.

1. Calculate $77 \div 4$.

- A. 19 R1 B. 18 R5 C. 20 D. 16 R3

2. Calculate $80 \div 5$.

- A. 12 B. 14 C. 16 D. 18

3. What is the missing number in this calculation? $5 \times \square = 60$

- A. 10 B. 12 C. 14 D. 16

4. Jade has 62 bottles of water to pack in boxes of 6.
How many bottles will be left over?

- A. 2 bottles B. 4 bottles C. 6 bottles D. 10 bottles

5. Which calculation has the greatest remainder?

- A. $53 \div 5$ B. $28 \div 3$ C. $86 \div 4$ D. $66 \div 10$

6. Which quotient is about 30?

- A. $5 \overline{)80}$ B. $3 \overline{)94}$ C. $2 \overline{)85}$ D. $3 \overline{)64}$

7. Aneela made 81 invitation cards.

She made 3 cards every day.

How many days did Aneela make cards?

- A. 9 days B. 18 days C. 27 days D. 36 days

8. Matt used between 55 and 60 cards to make an array with 4 rows. He has 3 cards left over. How many cards did he start with?

- A. 56 B. 57 C. 58 D. 59

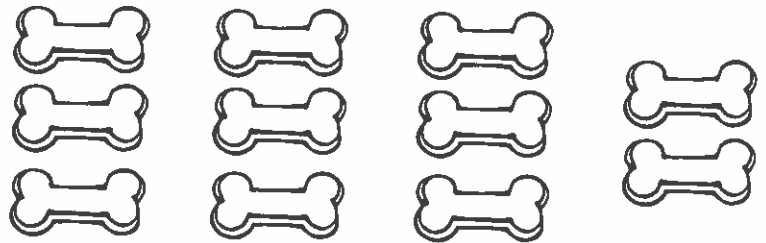
Division: Remainders

Division is a way to find out how many times one number is contained in another number. For example, $28 \div 4 = 7$ means that there are seven groups of four in 28. The dividend is the larger number that is divided by the smaller number, or divisor. The quotient is the answer in a division problem. The remainder is the amount left over. The remainder is always less than the divisor.

Directions: Study the example. Find each quotient and remainder.

Example:

There are 11 dog biscuits.
Put them in groups of 3.
There are 2 left over.



$$\begin{array}{r} 3 \\ 3 \overline{)11} \\ \underline{-9} \\ 2 \text{ remainder} \end{array} \quad \begin{array}{r} 3 \text{ r } 2 \\ 3 \overline{)11} \end{array}$$

Remember: The remainder must be less than the **divisor**!

$$3 \overline{)13}$$

$$4 \overline{)17}$$

$$6 \overline{)32}$$

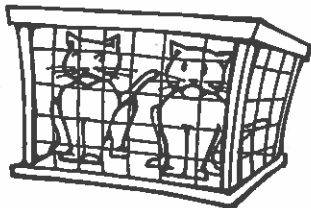
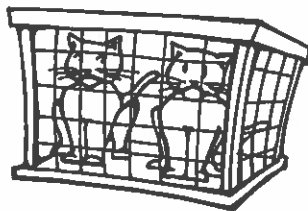
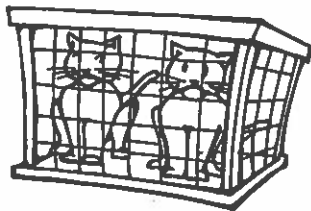
$$5 \overline{)26}$$

$9 \div 4 = \underline{\quad}$

$12 \div 5 = \underline{\quad}$

$26 \div 4 = \underline{\quad}$

$49 \div 9 = \underline{\quad}$



The pet store has 7 cats.
Two cats go in each cage.
How many cats are left over?

Divisibility Rules

A number is divisible...
by 2 if the last digit is 0 or even (2, 4, 6, 8).
by 3 if the sum of all digits is divisible by 3.
by 4 if the last two digits are divisible by 4.
by 5 if the last digit is a 0 or 5.
by 10 if the last digit is 0.

Example: 250 is divisible by 2, 5, 10

Directions: Tell what numbers each of these numbers is divisible by.

3,732 _____

439 _____

50 _____

444 _____

7,960 _____

8,212 _____

104,924 _____

2,345 _____

Dividing with Remainders

Sometimes when you try to divide a number of objects into groups of equal size, you have some objects left over. The number of objects left over is called the remainder.

Example:

$$\begin{array}{r} 5 \\ 4 \overline{)20} \\ \underline{-20} \\ 0 \end{array}$$

No remainder

$$\begin{array}{r} 5 \text{ r}2 \\ 4 \overline{)22} \\ \underline{-20} \\ 2 \end{array}$$

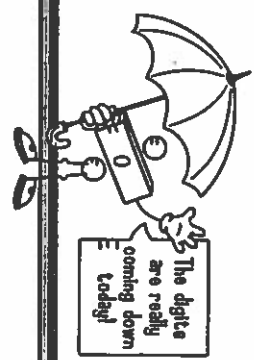
A remainder

Example: $4 \overline{)6}$



2 hearts are left over

So:
$$\begin{array}{r} 1 \text{ r}2 \\ 4 \overline{)6} \\ \underline{-4} \\ 2 \end{array}$$



/ some on your own.

1. $8 \overline{)9}$

2. $3 \overline{)8}$

3. $3 \overline{)10}$

4. $2 \overline{)7}$

5. $5 \overline{)9}$

6. $9 \overline{)20}$

7. $5 \overline{)11}$

8. $6 \overline{)14}$

9. $4 \overline{)18}$

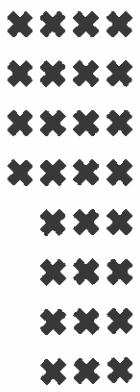
Basic Facts with Remainders

Try some more basic facts with remainders.

1. $3 \overline{)8}$



2. $6 \overline{)28}$



3. $5 \overline{)18}$



4. $6 \overline{)15}$



5. $7 \overline{)20}$

6. $4 \overline{)13}$

7. $6 \overline{)27}$

8. $2 \overline{)19}$

9. $3 \overline{)25}$

10. $4 \overline{)9}$

11. $5 \overline{)11}$

12. $7 \overline{)16}$

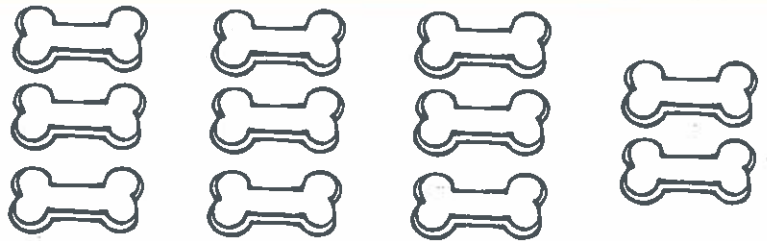
Division: Remainders

Division is a way to find out how many times one number is contained in another number. For example, $28 \div 4 = 7$ means that there are seven groups of four in 28. The dividend is the larger number that is divided by the smaller number, or divisor. The quotient is the answer in a division problem. The remainder is the amount left over. The remainder is always less than the divisor.

Directions: Study the example. Find each quotient and remainder.

Example:

There are 11 dog biscuits.
Put them in groups of 3.
There are 2 left over.



$$\begin{array}{r} 3 \\ 3 \overline{)11} \\ \underline{-9} \\ 2 \text{ remainder} \end{array} \quad \begin{array}{r} 3 \text{ r } 2 \\ 3 \overline{)11} \end{array}$$

Remember: The remainder must be less than the **divisor**!

$$3 \overline{)13}$$

$$4 \overline{)17}$$

$$6 \overline{)32}$$

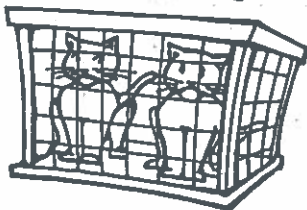
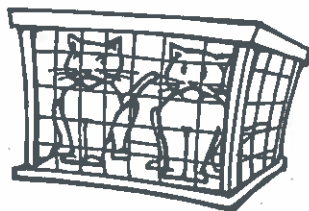
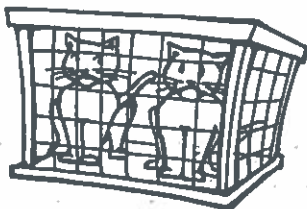
$$5 \overline{)26}$$

$$9 \div 4 = \underline{\quad}$$

$$12 \div 5 = \underline{\quad}$$

$$26 \div 4 = \underline{\quad}$$

$$49 \div 9 = \underline{\quad}$$



The pet store has 7 cats.
Two cats go in each
cage. How many cats
are left over?

5. How can you use $48 = 40 + 8$ to calculate $48 \div 4$? (Use expanded form).

2

6. Carla has 5 times as many pennies as Jordan. (Use base 10 division) or chunking
If Carla has 80 pennies, how many does Jordan have?

2

7. Which quotients are about 10? Explain how you estimated. Show your work

A. $6 \overline{)62}$

B. $3 \overline{)71}$

C. $5 \overline{)68}$

D. $9 \overline{)85}$

5

8. Calculate. Check your answers by using multiplication. Show all your work!

12

a) $87 \div 7 = \square$

b) $92 \div 8 = \square$

c) $67 \div 5 = \square$

d) $75 \div 3 = \square$

21

Name: _____ Date: _____

Chapter 10 Test

Page 1

Grade 4

36

1. How can you use multiplication to solve $57 \div 3$? Give an example.

12

2. Michael is making paper airplanes with 4 decals on each plane.

~~a) If he has 63 decals, how many paper airplanes can he make? Show your work.~~

b) How many decals are left over? _____

12

3. a) How many jumps of 4 can you make on a number line like this? _____
Show your work.



b) What calculation did you represent? _____
(what division sentence)

3

4. Which calculation gives the greatest remainder? Show work for each.

A. $37 \div 6$

B. $60 \div 8$

C. $43 \div 7$

D. $85 \div 3$

8

15