

## 9.5 Estimating Products Page 1

Student Book pages 322–324

### GOAL

Choose when and how to estimate.

## Checking

1. Natasha's school has 2 Grade 5 teams.

Each team has 31 players.

Estimate to answer the following question:

Are there more than 50 Grade 5 players?

I can use a number close to 31, such as 30.

$30 + 30$  is the same as  $30 \times$  \_\_\_\_\_.

I can multiply \_\_\_\_\_  $\times$  \_\_\_\_\_ to get an estimate.

2. How would you estimate each product?

a)  $9 \times 48$

(Circle) the number closest to 48.      40      50

I would estimate by multiplying  $9 \times$  \_\_\_\_\_.

Explain another way you would estimate  $9 \times 48$ .

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b)  $4 \times 355$

(Circle) the number closest to 355.      350      360

I would estimate by multiplying \_\_\_\_\_  $\times$  \_\_\_\_\_.

Explain another way you would estimate  $4 \times 355$ .

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**Practising**

**9.5 Estimating Products** Page 2

C&P Name: \_\_\_\_\_ Date: \_\_\_\_\_

6. Decide whether you can estimate to answer or if you need to calculate the exact answer. Then answer.

a) 1 CD can hold 72 minutes of music.

Are 7 CDs enough to burn 500 minutes of music?

I will have to burn my CDs all over again if my estimate is off,

so I will \_\_\_\_\_.

$7 \times 70 =$  \_\_\_\_\_

$7 \times 2 =$  \_\_\_\_\_

$7 \times 72 =$  \_\_\_\_\_ minutes

7 CDs \_\_\_\_\_ enough.

b) There are 3 plates with 76 dumplings on each plate.

Are there at least 200 dumplings?

I don't need to know the \_\_\_\_\_ number, so I will \_\_\_\_\_.

76 is close to \_\_\_\_\_, so  $3 \times$  \_\_\_\_\_ = \_\_\_\_\_.

There are \_\_\_\_\_ 200 dumplings.

c) Jonah has \$287 in his bank account.

His brother saved 3 times as much money.

Did his brother save at least \$900?

I will \_\_\_\_\_ because \_\_\_\_\_  $\times 3 =$  \_\_\_\_\_.

Jonah's brother \_\_\_\_\_ save at least \$900 because \_\_\_\_\_.

# 9.5 Estimating Products Page 1


Student Book pages 322–324

## GOAL

Develop strategies for estimating.

**You will need**

- counters



## Problem

8 soccer teams were playing in a tournament.  
There were 9 players on each team.

 **About how many players were playing in the tournament?**

There are different strategies for estimating.

### Practise using easier numbers.

There are 8 teams with 9 players.  
You are trying to estimate  $8 \times 9$ .

Think about easier numbers to use.

9 is close to 10.

Think about  $8 \times 10$ .

You can count by 10s.

$8 \times 10 =$  \_\_\_\_\_

Since you changed 9 to 10, there are a few less than \_\_\_\_\_ players altogether.

### Try the strategy again.

What if there were 6 teams with 7 players on each team?

Think about easier numbers to use.

6 is close to 5.

Think about  $5 \times 7$ .

You can count by 5s.

$5 \times 7 =$  \_\_\_\_\_

Since you changed the 6 to 5, there are a few more than \_\_\_\_\_ players altogether.

## 9.5 Estimating Products Page 2

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Use easier numbers to estimate the products.

$7 \times 9 = \underline{\hspace{2cm}}$

Change the fact to  $7 \times 10 = \underline{\hspace{2cm}}$ . $7 \times 9$  is a little less than  $\underline{\hspace{2cm}}$ .

$8 \times 6 = \underline{\hspace{2cm}}$

Change the fact to  $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ .

$8 \times 6$  is  $\underline{\hspace{2cm}}$ .

$11 \times 4 = \underline{\hspace{2cm}}$

Change the fact to  $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ .

$11 \times 4$  is  $\underline{\hspace{2cm}}$ .

$9 \times 6 = \underline{\hspace{2cm}}$

Change the fact to  $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ .

$9 \times 6$  is  $\underline{\hspace{2cm}}$ .

**Reflecting**Was there another way you could have changed  $9 \times 6$ ? Explain.

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**Chapter 9**  
**Lesson 5****Estimating Products****GOAL**

Choose when and how to estimate.

1. Estimate each product. Show your work.

a)  $5 \times 44$  \_\_\_\_\_ d)  $7 \times 31$  \_\_\_\_\_

b)  $8 \times 62$  \_\_\_\_\_ e)  $3 \times 82$  \_\_\_\_\_

c)  $9 \times 28$  \_\_\_\_\_ f)  $4 \times 73$  \_\_\_\_\_

2. Decide whether you can estimate to answer. Then answer.

a) Lang, Ken, and Joshua each have \$42. Do they have enough money to buy a second-hand bike for \$150?

b) Each bookcase contains 64 books. There are 4 bookcases. Are there more than 200 books?

c) 5 cartons hold 54 juice boxes each. Are there enough juice boxes for 250 students?

# Estimating Products

Name \_\_\_\_\_

Estimate the product of 51 and 62.

Round each number to the nearest 10.

Multiply.

$$\begin{array}{r} 62 \rightarrow 60 \\ \times 51 \rightarrow 50 \\ \hline \end{array}$$

$$\begin{array}{r} 60 \\ \times 50 \\ \hline 3000 \end{array}$$

The estimated product is 3000.

Remember:  
 if  $5 \times 6 = 30$   
 and  $5 \times 60 = 300$   
 then  $50 \times 60 = 3000$ .



Estimate by rounding to the nearest 10.

$$\begin{array}{r} 1. \quad 78 \rightarrow \\ \times 57 \rightarrow \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 42 \rightarrow \\ \times 28 \rightarrow \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 17 \rightarrow \\ \times 47 \rightarrow \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 24 \rightarrow \\ \times 68 \rightarrow \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 18 \rightarrow \\ \times 74 \rightarrow \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 77 \\ \times 64 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 63 \\ \times 32 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 59 \\ \times 68 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 42 \\ \times 39 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 59 \\ \times 48 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 67 \\ \times 17 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 53 \\ \times 47 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 31 \\ \times 84 \\ \hline \end{array}$$

Name: \_\_\_\_\_

Date: \_\_\_\_\_

WORD PROBLEM

Ray bought 7 packs of juice boxes for the class picnic.  
There were 24 juice boxes in a pack. How many juice boxes did Ray buy?

**BASICS BOX**

There are many methods for multiplying numbers with more than one digit. Here are two that Ray (and you) can use:

**Traditional**

$$\begin{array}{r} 24 \\ \times 7 \\ \hline \end{array}$$

Multiply ones

$$\begin{array}{r} 24 \\ \times 7 \\ \hline 28 \end{array}$$

Regroup 2 tens

$$\begin{array}{r} 2 \\ 24 \\ \times 7 \\ \hline 8 \end{array}$$

Multiply tens

$$\begin{array}{r} 2 \\ 24 \\ \times 7 \\ \hline 8 \end{array}$$

$$2 \times 7 = 14 + 2 = 16$$

$$\begin{array}{r} 24 \\ \times 7 \\ \hline 168 \text{ juice boxes} \end{array}$$

**Partial Products**

$$\begin{array}{r} 24 \\ \times 7 \\ \hline \end{array}$$

Multiply ones

$$\begin{array}{r} 4 \\ \times 7 \\ \hline 28 \end{array}$$

Multiply tens

$$\begin{array}{r} 20 \\ \times 7 \\ \hline 140 \end{array}$$

Add both products

$$\begin{array}{r} 140 \\ + 28 \\ \hline 168 \text{ juice boxes} \end{array}$$

PRACTICE

Solve each problem using both methods. Show your work.

1. 
$$\begin{array}{r} 36 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 30 + 6 \\ \times 8 \\ \hline \text{---} \text{---} \text{---} \\ + \text{---} \text{---} \text{---} \\ \hline \end{array} \quad \begin{array}{l} (30 \times 8) \\ (6 \times 8) \end{array}$$

2. 
$$\begin{array}{r} 52 \\ \times 9 \\ \hline \end{array}$$

JOURNAL

Which multiplication method do you find easiest to work with? Why?

## Multiplication Methods

Find the products. Show your work.

1. 
$$\begin{array}{r} 13 \\ \times 4 \\ \hline \end{array}$$

2. 
$$\begin{array}{r} 25 \\ \times 3 \\ \hline \end{array}$$

3. 
$$\begin{array}{r} 50 \\ \times 7 \\ \hline \end{array}$$

4. 
$$\begin{array}{r} 68 \\ \times 6 \\ \hline \end{array}$$

10.  $300 \times 50 = \underline{\hspace{2cm}}$

9.  $30 \times 50 = \underline{\hspace{2cm}}$

Review.

5. 
$$\begin{array}{r} 93 \\ \times 5 \\ \hline \end{array}$$

6. 
$$\begin{array}{r} 41 \\ \times 8 \\ \hline \end{array}$$

7. 
$$\begin{array}{r} 33 \\ \times 3 \\ \hline \end{array}$$

8. 
$$\begin{array}{r} 76 \\ \times 2 \\ \hline \end{array}$$

12.  $400 \times 800 = \underline{\hspace{2cm}}$

11.  $40 \times 80 = \underline{\hspace{2cm}}$

Name: \_\_\_\_\_ Date: \_\_\_\_\_



## 9.6 Communicating about Solving Problems Page 1

Student Book pages 328–329

### GOAL

Explain your thinking when solving a problem.

### Checking

1. For every year a bear lives, it ages about 4 human years.  
Carolyn calculated the age of a 19-year-old bear in human years.  
1. I made sure I understood the problem.

A bear this old...	...is like a human this old
1	4
2	8
3	12

2. I made a plan. I calculated  $19 \times 4$ .  
3. I carried out the plan.  $19 \times 4 = 76$ .  
4. I looked back to check. 76 looks right because  $20 \times 4 = 80$ , so  $19 \times 4$  must be less.

a) What did Carolyn explain well?

Be specific about each step she did.

**Hint:** Look at Desmond's comments in the Student Book.

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b) What questions would you ask Carolyn to improve her communication?

For example: How did you know  $19 \times 4 = 76$ ?

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## Practising

### 9.6 Communicating about Solving Problems Page 2

C&P Name: \_\_\_\_\_

Date: \_\_\_\_\_

2. For every year a dog lives, it ages about 7 human years.  
How old is a 13-year-old dog in human years?

#### Step 1: Understand the Problem

I know a 1-year-old dog is \_\_\_\_\_ in human years.

I have to find out how old a \_\_\_\_\_-year-old dog is in human years.

I can make a table to show what I know.

A dog this old...	...
1	7
2	14
3	21

#### Step 2: Make a Plan

I plan to \_\_\_\_\_

#### Step 3: Carry Out the Plan

This is how I calculated the answer.

I found out \_\_\_\_\_

#### Step 4: Look Back

I know my answer is reasonable because \_\_\_\_\_

## 9.6 Communicating about Solving Problems Page 1

Student Book pages 328–329

### GOAL

Explain your thinking when solving a problem.

### Problem

Horses age more quickly than humans.

For every year a horse lives, it ages 3 human years.

Ken wondered how old his 8-year-old horse would be in human years.



How can Ken explain how he solved the problem?

### Understand the Problem

What do you know?

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A horse this old...	...is like a human this old
1	3
2	6
3	9
4	
5	
6	

### Make a Plan

Multiply to find the answer.

How do you know that you can multiply?

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# 9.6 Communicating about Solving Problems Page 2

## Carry Out the Plan

What is the age of the horse?

## Look Back to Check

Is your answer reasonable?

## Reflecting

How could Ken have explained his plan more clearly?

Look at the Communication Checklist.

Do you think you have given a good explanation to how you solved the horse problem?

Why or why not?

### Communication Checklist

- ✓ Did you show the right amount of detail?
- ✓ Did you explain your thinking?

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Mid-Chapter Review—Frequently Asked Questions

STUDENT BOOK PAGE 326

**Q:** How can you multiply a 2-digit number by a 1-digit number?

**A:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Q:** How can you estimate the product of a 2-digit number and a 1-digit number?

**A:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Communicating about Solving Problems

## Chapter 9 Lesson 6

Explain your thinking when solving a problem.

GOAL

1. Emily earns \$28 each week for doing yard work. How much money can she earn in 5 weeks?

2. Jade, Cole, Michael, and Hailey each brought 46 brownies to the school bake sale. How many brownies did they bring in total?

3. Ken earned 72 points on the first day of the summer fair. If he earns the same number of points each day for 3 days will he win the prize for 290 points? Explain your solution.

Follow these steps to help you communicate about solving problems:

- Step 1 Make sure you understand the problem.
- Step 2 Make a plan.
- Step 3 Carry out the plan.
- Step 4 Look back to check.

### Communication Checklist

- ✓ Did you show the right amount of detail?
- ✓ Did you explain your thinking?

### At-Home Help

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# 9.7 Multiplying 2-Digit Numbers Page 1

Student Book pages 330–332

## GOAL

Multiply 2-digit numbers by 1-digit numbers using expanded form.

## You will need

- base ten blocks



- a place value chart

Thousands	Hundreds	Tens	Ones

## Problem

Diane lives near a beach.  
 She collected 14 shells in 1 week.  
 She wants to collect the same number of shells each week.



**How many shells will Diane have in 4 weeks?**

There are 4 groups of 14 shells after 4 weeks.  
 When there are equal groups, you can multiply.

### Step 1: Estimate first.

$4 \times 14$  is about  $4 \times 10 =$  \_\_\_\_\_.

I predict that Diane will have more than \_\_\_\_\_ shells.

### Step 2: Make 4 groups of 14 with base ten blocks.

Record them using the expanded form.

Hundreds	Tens	Ones
		□□□□
		□□□□
		□□□□
		□□□□

$$\begin{array}{r} 14 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 10 + 4 \\ \times 4 \\ \hline \end{array}$$

# 9.7 Multiplying 2-Digit Numbers Page 2

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Step 3:** Multiply to show the number of tens first.

$$\begin{array}{r}
 14 \\
 \times 4 \\
 \hline
 56 \\
 + 140 \\
 \hline
 196
 \end{array}$$

(number of tens)

**Step 4:** Complete the multiplication.

$$\begin{array}{r}
 14 \\
 \times 4 \\
 \hline
 56 \\
 + 140 \\
 \hline
 196
 \end{array}$$

(number of tens)      (number of ones)      (total)

Diane will have \_\_\_\_\_ shells in 4 weeks.

## Reflecting

Suppose that you multiplied the ones first. Would the product be the same? Explain.

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## 9.7 Multiplying 3-Digit Numbers Page 1

Student Book pages 330–332

### GOAL

Multiply 3-digit numbers by 1-digit numbers using expanded form.

### You will need

- base ten blocks



## Checking

1. Model with base ten blocks. Multiply.

a)  $300 + 20 + 7$  is the same as  $327$   
 $\times \quad \quad 5$   $\quad \quad \quad \times 5$

Make 5 groups of \_\_\_\_\_ with base ten blocks.

Do not regroup.

Fill in the rest of the question.

$$\begin{array}{r}
 300 + 20 + 7 \\
 \times \quad \quad 5 \\
 \hline
 \quad \quad 1500 \quad (\text{number of hundreds}) \\
 \quad \quad \quad 100 \quad (\text{number of tens}) \\
 + \quad \quad \quad \quad \quad (\text{number of ones}) \\
 \hline
 \quad \quad \quad \quad \quad (\text{total altogether})
 \end{array}$$

b) Model 5 groups of 327 with base ten blocks.

Remember, do not regroup.

$$\begin{array}{r}
 \quad \quad 327 \\
 \times \quad \quad 5 \\
 \hline
 \quad \quad 35 \quad (\text{number of ones}) \\
 \quad \quad \quad \quad (\text{number of tens}) \\
 + \quad \quad \quad \quad (\text{number of hundreds}) \\
 \hline
 \quad \quad \quad \quad (\text{total altogether})
 \end{array}$$



Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Scaffolding for Lesson 7, Question 5

STUDENT BOOK PAGE 332

5. Calculate. Follow Diane's Solution from Student Book page 330.

a)

$$\begin{array}{r} 361 \\ \times 7 \\ \hline 2100 \\ 420 \\ + \underline{\quad 1} \\ \hline 2527 \end{array}$$

$$\begin{array}{r} 300 + 60 + 1 \\ \times 7 \\ \hline 2100 \\ 420 \\ + \underline{\quad 1} \\ \hline 2527 \end{array}$$

7 x 300  
7 x 60  
7 x 1

TH	H	T	ones
	□□□		□
			□
	□□□		□
			□
	□□□		□
			□
			□
	□□□		□

b)

$$\begin{array}{r} 421 \\ \times 4 \\ \hline 1600 \\ 80 \\ + \underline{\quad 4} \\ \hline 1684 \end{array}$$

(1x4)  
(20x4)  
(400x4)

$$\begin{array}{r} 400 + 20 + 1 \\ \times 4 \\ \hline 1600 \\ 80 \\ + \underline{\quad 4} \\ \hline 1684 \end{array}$$

400 x 4  
20 x 4  
1 x 4

21 hund  
42 tens  
7 ones.

c)

$$\begin{array}{r} 618 \\ \times 3 \\ \hline 1800 \\ 30 \\ + \underline{\quad 24} \\ \hline 1854 \end{array}$$

(3x8)  
(3x10)  
(3x600)

$$\begin{array}{r} 600 + 10 + 8 \\ \times 3 \\ \hline 1800 \\ 30 \\ + \underline{\quad 24} \\ \hline 1854 \end{array}$$

d)

$$\begin{array}{r} 333 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 300 + 30 + 3 \\ \times 6 \\ \hline \end{array}$$

+ \_\_\_\_\_

+ \_\_\_\_\_

# Multiplying 3-Digit Numbers

**GOAL**

Multiply 3-digit numbers by 1-digit numbers using expanded form.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Multiply.

a)  $3 \times 242 = \square$

$$\begin{array}{r} \underline{\hspace{2cm}} \\ 200 + 40 + 2 \\ \times 3 \end{array}$$

b)  $2 \times 567 = \square$

$$\begin{array}{r} \underline{\hspace{2cm}} \\ 500 + 60 + 7 \\ \times 2 \end{array}$$

2. Multiply.

a)  $2 \times 122$

c)  $3 \times 254$

e)  $4 \times 197$

b)  $5 \times 316$

d)  $6 \times 624$

f)  $2 \times 472$

3. Estimate to check your answer for each part of Question 2.

a)

b)

c)

d)

e)

f)

$$\begin{array}{r} 300 + 20 + 1 \\ \times 4 \\ \hline 1200 \\ 80 \\ \hline 1284 \\ 4 \times 321 = 1284 \end{array}$$

You can use expanded form to multiply 3-digit numbers by 1-digit numbers. For example: I want to know  $4 \times 321$ . I know that 321 is the same as  $300 + 20 + 1$ . I will multiply each part separately by 4.

**At-Home Help**

## 9.8 Multiplying Another Way Page 1

Student Book pages 334–337

### GOAL

Multiply, regrouping as you go.

### Checking

1. Follow these steps to calculate.

a)  $7 \times 62$

**Step 1:** Multiply by making 7 groups of 62 using base ten blocks.

Sketch the groups on a place value chart.

How many ones? \_\_\_\_\_

Regroup the ones as \_\_\_\_\_ tens \_\_\_\_\_ ones.

How many tens? \_\_\_\_\_

Regroup the tens as \_\_\_\_\_ hundreds \_\_\_\_\_ tens.

How many hundreds? \_\_\_\_\_

**Step 2:** Count all the blocks together.

There are \_\_\_\_\_ hundreds \_\_\_\_\_ tens \_\_\_\_\_ ones.

$7 \times 62 =$  \_\_\_\_\_

b)  $7 \times 145$

**Step 1:** Multiply by making 7 groups of 145 using base ten blocks.

Sketch the groups on a place value chart.

How many ones? \_\_\_\_\_

Regroup the ones as \_\_\_\_\_ tens \_\_\_\_\_ ones.

How many tens? \_\_\_\_\_

Regroup the tens as \_\_\_\_\_ hundreds \_\_\_\_\_ tens.

How many hundreds? \_\_\_\_\_

Regroup the hundreds as \_\_\_\_\_ thousand \_\_\_\_\_ hundreds.

### You will need

- base ten blocks



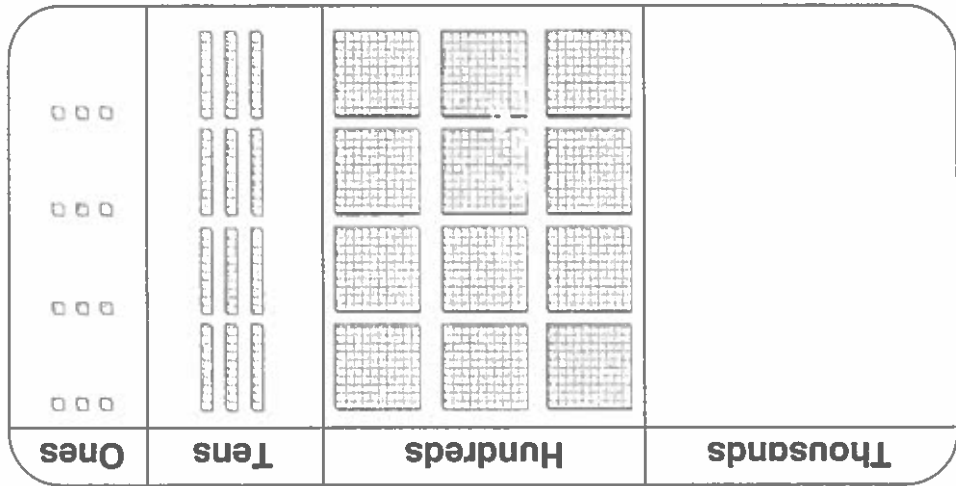
- a place value chart

Thousands	Hundreds	Tens	Ones

### 9.8 Multiplying Another Way Page 2

### Practising

5. Write the multiplication equation for this model.



Circle the groups.

How many are there? \_\_\_\_\_

How much do the blocks in 1 group equal? \_\_\_\_\_

Use your answers to write the multiplication equation.

\_\_\_\_\_ × \_\_\_\_\_ = \_\_\_\_\_

Count the blocks.

Regroup if you need to.

There are \_\_\_\_\_ thousands \_\_\_\_\_ hundreds \_\_\_\_\_ tens \_\_\_\_\_ ones.  
 The product is \_\_\_\_\_.

# 9.8 Multiplying Another Way Page 1

Student Book pages 334–337

## GOAL

Multiply, regrouping as you go.

## You will need

- base ten blocks



## Problem

Michael has 56 hockey cards. Pedro has twice as many.

How many cards does Pedro have?

Twice as many means 2 times as many.

Multiply 56 cards by 2.

**Step 1:** Estimate  $2 \times 56$  first.

I know that  $2 \times 50 =$  \_\_\_\_\_.

So Pedro has more than \_\_\_\_\_ cards.

**Step 2:** Multiply by making 2 groups of 56.

Use base 10 blocks.

Hundreds	Tens	Ones

$$2 \times 56 = \underline{\quad}$$

$$\begin{array}{r} 56 \\ \times 2 \\ \hline \end{array}$$

**Step 3:** There are  $2 \times 6$  ones.

$$2 \times 6 = 12$$

Regroup 12 ones as 1 ten, 2 ones.

Hundreds	Tens	Ones

$$2 \times 56 = \underline{\quad}$$

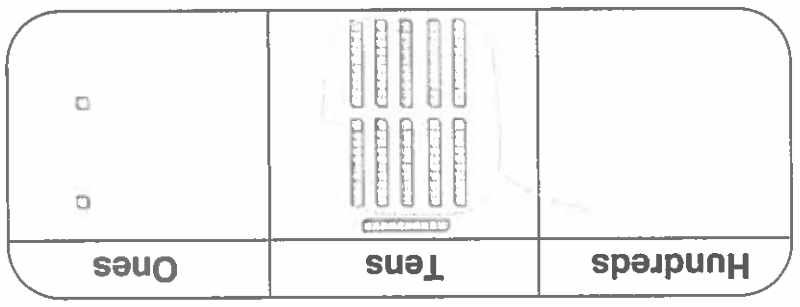
$$\begin{array}{r} 1 \\ 56 \\ \times 2 \\ \hline 2 \end{array}$$

## 9.8 Multiplying Another Way Page 2

**Step 4:** There are  $2 \times 5$  tens + 1 ten.

There are 11 tens.

Regroup 11 tens as 1 hundred, 1 ten.



$$\begin{array}{r}
 2 \times 56 = \underline{\quad} \\
 11 \\
 11 \\
 \times 56 \\
 \hline
 12 \\
 112 \\
 \hline
 \end{array}$$

**Step 5:** Add.

$$100 + 10 + 2 = \underline{\quad}$$

$$2 \times 56 = \underline{\quad}$$

So, Pedro has \_\_\_\_\_ cards.

### Reflecting

How did using the place value chart help you to multiply 2-digit numbers?

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## Scaffolding for Lesson 8, Question 7

STUDENT BOOK PAGE 337

7. Multiply. Follow Michael's Calculations from Student Book page 334–335.

a)

	3	0	5	
	x		4	

- Step 1 Estimate  $4 \times 305$  is about  $4 \times$  \_\_\_\_\_.
- Step 2 Multiply by making \_\_\_\_\_ groups of \_\_\_\_\_.

Sketch the groups on a place value chart.

Thousands	Hundreds	Tens	Ones

- Step 3 Multiply the ones. Regroup if you need to.
- Step 4 Multiply the tens. Regroup if you need to.
- Step 5 Multiply the hundreds. Regroup if you need to.

b)

	2	6	0	
	x		5	

c)

	2	9	3	
	x		6	

d)

	4	2	9	
	x		4	

# Multiplying Another Way

**GOAL**

Multiply, regrouping as you go.

1. Multiply by regrouping.

a) 
$$\begin{array}{r} 43 \\ \times 5 \\ \hline \end{array}$$

d) 
$$\begin{array}{r} 243 \\ \times 5 \\ \hline \end{array}$$

g) 
$$\begin{array}{r} 492 \\ \times 3 \\ \hline \end{array}$$

b) 
$$\begin{array}{r} 152 \\ \times 4 \\ \hline \end{array}$$

e) 
$$\begin{array}{r} 548 \\ \times 2 \\ \hline \end{array}$$

h) 
$$\begin{array}{r} 129 \\ \times 5 \\ \hline \end{array}$$

c) 
$$\begin{array}{r} 461 \\ \times 6 \\ \hline \end{array}$$

f) 
$$\begin{array}{r} 617 \\ \times 7 \\ \hline \end{array}$$

i) 
$$\begin{array}{r} 257 \\ \times 2 \\ \hline \end{array}$$

$3 \times 384 = 1152$

$$\begin{array}{r} 1152 \\ \times 3 \\ \hline \end{array}$$

You can multiply by regrouping. For example: I want to know  $3 \times 384$ . As I multiply, I will regroup ones, tens, and hundreds.

**At-Home Help**

2. a) What multiplication equation does this model show?

Thousands	Hundreds	Tens	Ones

b) Calculate the product.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## 9.9 Choosing a Method for Multiplying Page 1

Student Book pages 338–340

### GOAL

Choose whether to estimate or calculate, and explain your multiplication method.

### You will need

- base ten blocks



### Problem

Sometimes you can find an answer using estimation.

Sometimes you can solve a problem using mental math.

Sometimes you need materials to solve a problem.

### How can you solve each problem?

1. You and your friend are buying 2 bottles of water.

1 bottle of water costs \$1.25.

You want to make sure you have enough money to buy 2 bottles.

Would you estimate or calculate the cost of 2 bottles?

Explain or show what you would do.

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2. There are 45 pencils in a box.

You want to know if there are more than 150 pencils in 3 boxes.

Would you estimate or calculate the number of pencils?

Explain or show what you would do.

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How did you decide when to use mental math?

How did you decide when to estimate?

**Reflecting**

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4. The grocery store sells eggs in cartons of 12. If you buy 3 cartons of eggs, will you have more or less than 30 eggs? Would you estimate or calculate the number of eggs? Explain or show what you would do.

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3. 5 schools are getting together for a checkers tournament. Each school is bringing 100 students. How many students will be at the tournament altogether? Would you estimate or calculate the number of students? Explain or show what you would do.

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**9.9 Choosing a Method for Multiplying Page 2**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## 9.9 Choosing a Method for Multiplying Page 1

Student Book pages 338–340

### GOAL

Choose whether to estimate or calculate, and explain your multiplication method.

### You will need

- base ten blocks



- a place value chart

Thousands	Hundreds	Tens	Ones

### Checking

1. In 2004:

- 33 babies were born in Saskatchewan every 24 hours
- 44 babies were born in Alberta every 10 hours

Would you estimate or calculate to find the following answers? Why?

a) How many Saskatchewan babies were born in 5 days?

I need to find out the exact answer so I would \_\_\_\_\_.

b) Were more than 1000 babies born in Alberta each month?

I would \_\_\_\_\_ because \_\_\_\_\_  
\_\_\_\_\_.

2. How would you calculate in each situation?

**Hint:** Choose mental math, expanded form, or base ten blocks.

a) the number of Saskatchewan babies born in 6 days

1 day = 33 babies, so 6 days = \_\_\_\_\_ × \_\_\_\_\_

I would \_\_\_\_\_  
\_\_\_\_\_.

b) the number of Alberta babies born in 90 hours

10 hours = 44 babies, so 90 hours = \_\_\_\_\_ × \_\_\_\_\_

I would \_\_\_\_\_  
\_\_\_\_\_.

**Practising**

**9.9 Choosing a Method for Multiplying** Page 2

G&P Name: \_\_\_\_\_

Date: \_\_\_\_\_

3. Would you answer each question using mental math or base ten blocks?

a) There are 250 sheets in 1 pack of paper.

Are there more than 500 sheets in 3 packs?

1 pack = 250

3 packs = \_\_\_\_\_ × 250

I would \_\_\_\_\_ because \_\_\_\_\_

b) How many days are there in 2 years?

1 year = 365 days

2 years = \_\_\_\_\_ × 365

I would \_\_\_\_\_ because \_\_\_\_\_

c) Aaron has 3 times as much money as Raven. Raven has \$127.

Raven = \$127

Aaron = \_\_\_\_\_ × 127

I would \_\_\_\_\_ because \_\_\_\_\_

6. Alana earns \$9 an hour babysitting. Which could you answer by estimating?

A: the amount Alana earns in 10 hours

B: the amount Alana earns in 15 hours

C: the number of hours needed to earn \$90

D: about how long it would take Alana to earn \$250

I could estimate letter \_\_\_\_\_ because \_\_\_\_\_

Chapter 9  
**Lesson 9**

# Choosing a Method for Multiplying

## GOAL

Choose whether to estimate or calculate, and explain your multiplication method.

- Jade can string 76 beads every hour. Which question could you answer by estimating?
  - How many beads can Jade string in 10 hours?
  - How many beads can Jade string in 12 hours?
  - Would Jade use more than 200 beads in 3 hours?
  - How many hours would it take for Jade to use 380 beads?

## At-Home Help

Here are 3 methods you can use to solve multiplication problems:

- estimate
- calculate using mental math
- calculate using materials

- How would you answer each question: by estimating, using mental math, or using base ten blocks?

a) A skateboard costs \$325.

Can you buy 2 skateboards for \$600? \_\_\_\_\_

b) Joshua earned 279 points at the school fair.

Diane earned 3 times as many points.

How many points did Diane earn? \_\_\_\_\_

c) Aneela can type 42 words in a minute.

How many words can she type in 5 minutes? \_\_\_\_\_

- Matt and Hailey want to solve this problem:

*A box of crayons holds 54 crayons. About how many crayons are in 9 boxes?*

Matt says, "I will use mental math to solve the problem.

$9 \times 50 = 450$ , and  $9 \times 4 = 36$ . The answer is  $450 + 36 = 486$ ."

Hailey says, "I will estimate to solve the problem. 9 is close to 10.

$10 \times 54 = 540$ , so the answer is about 540."

Can both answers be correct? Explain your answer. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Chapter Review—Frequently Asked Questions

STUDENT BOOK PAGE 342

**Q:** How can you multiply a 3-digit number by a 1-digit number?

A: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Q:** How do you decide whether to multiply using mental math or using base ten blocks?

A: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Q:** Why might you estimate a product instead of calculating it?

A: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_



## 9.10 Creating Multiplication Problems

Student Book page 341

### GOAL

Create and solve multiplication problems.



How can you create a story about multiplication?

#### Step 1: Understand the Problem

What do you have to do?

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#### Step 2: Make a Plan

What is your story going to be about?

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What kinds of multiplication problems will be in the story?

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What strategies will you use to find the answer to these multiplication problems?

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#### Step 3: Carry Out the Plan

Write the pages of your story. Show how you solved the multiplication problems.

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#### Step 4: Look Back

How do you know you made multiplication problems in your book?

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# 9.10 Creating Multiplication Problems

Student Book page 341

## GOAL

Create and solve multiplication problems.

## Problem

Alec wrote a page for a book about multiplication. He included a picture and a multiplication story. He also wrote a multiplication fact. His story told the answer to the problem.



How can you create a story about multiplication?

Hint: First think of equal groups of things for a story.

Write the multiplication fact that goes with your story.

Write your story.

End your story with the answer to the multiplication problem.


7 x 15

Kelly practised piano 15 minutes a day every day of the week. That makes 105 minutes.



You will need

- pencil
- crayons



# Creating Multiplication Problems

## GOAL

Create and solve multiplication problems.

1. Fill in the blanks to write your own multiplication problems.

a) \_\_\_\_\_  $\times$  26

Diane made 26 cookies every day. How many cookies did she make in \_\_\_\_\_ days?

Diane made \_\_\_\_\_ cookies.

b)  $3 \times$  \_\_\_\_\_

Ken earns \$\_\_\_\_\_ every week.  
How much does he earn in 3 weeks?

Ken earns \$\_\_\_\_\_ in 3 weeks.

c) \_\_\_\_\_  $\times$  \_\_\_\_\_

Jade made \_\_\_\_\_ necklaces with \_\_\_\_\_ beads in each necklace. How many beads did Jade use?

Jade used \_\_\_\_\_ beads.

2. Write a multiplication problem that uses the numbers 4 and 213. Solve your problem.
- \_\_\_\_\_

## At-Home Help

Follow these steps to create your own multiplication problem.

**Step 1** Think of 2 numbers to multiply (e.g.,  $125 \times 4$ ).

**Step 2** Write a problem using your 2 numbers (e.g., There are 125 raisins in a bag. How many raisins are in 4 bags?).

**Step 3** Solve your problem (e.g., 500 raisins are in 4 bags).

# Chapter 9

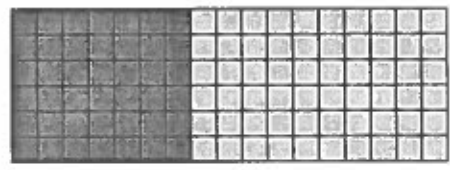
## Test Yourself

Circle the correct answer.

1. What is the product?  $5 \times 300 = \square$

- A. 1100
- B. 1200
- C. 1500
- D. 1800

2. Which number sentence does this array show?



- A.  $6 \times 10 = 60$
- B.  $6 \times 17 = 6 \times 10 + 6 \times 7$
- C.  $7 \times 12 = 7 \times 10 + 7 \times 2$
- D.  $10 \times 60 = 600$

3. What is the expanded form of 853?

- A.  $800 + 50 + 3$
- B.  $85 + 30$
- C.  $8 + 5 + 3$
- D.  $8 \times 5 \times 3$

4. Matt made 6 models. Each model used 29 small sticks. About how many small sticks did Matt use?

- A. 220
- B. 180
- C. 120
- D. 300

5. Jade used 521 beads for each of 4 necklaces. How many beads did she use?

- A. 2840
- B. 2804
- C. 2484
- D. 2084

6. Which multiplication equation does this model show?

- A.  $3 \times 236$
- B.  $3 \times 136$
- C.  $136 \times 2$
- D.  $1 \times 266$

