What Will Students Learn in This Unit?

Using Area Models and Partial Products

Your child will use area models to represent multiplication of multi-digit factors. The place value of each digit is used to find the area of the smaller rectangles, which are the partial products. Then these partial products are added to find the total product.

Example:

A clothing store is 57 feet long and 43 feet wide. What is the area of the clothing store?

57

43	50	+ 7
40	2,000	280
+		
3	150	21

Add the partial products.

2,000 + 280 + 150 + 21 = 2,451

The area of the clothing store is 2,451 square feet.

Using Partial Products and an Algorithm

Your child will learn an algorithm for multiplying by using the place values of each digit to find the partial products.

```
   143
 × 26
-----
20 × 100 = 2,000
20 × 40  =   800
20 × 3   =    60
6 × 100  =   600
6 × 40   =   240
6 × 3    =  +18
-----
         3,718
```

Using an Algorithm

Your child will learn an algorithm for multiplying multi-digit numbers. They can use this process without using partial products.

```
  21
  143   ← Regroup.
× 26
-----
  858
+ 2,860
-----
  3,718
```


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× 26
-----
  858
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-----
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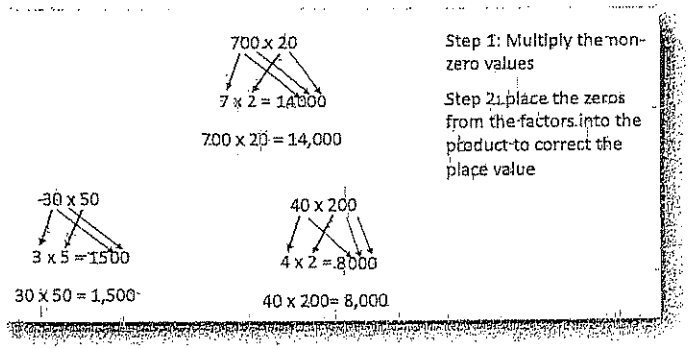
```

Multiplication Notes:

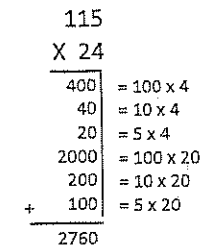
Multiply by multiples of 10



Step 1: Multiply the non-zero values

Step 2: place the zeros from the factors into the product to correct the place value

Multiply using partial products



Step 1: Decompose the numbers you are multiplying

Think: 115 = 100 + 10 + 5

Think 24 = 20 + 4

Step 2: Use the distributive property to find all the smaller multiplication problems

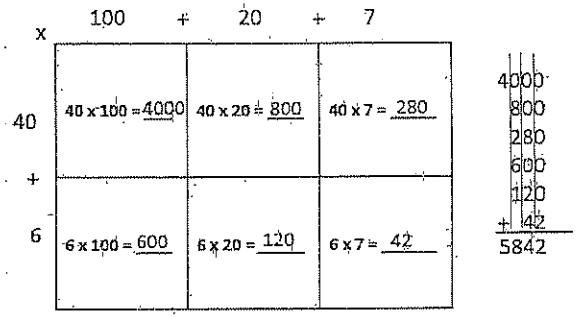
Think: 115 x 4 = (100 x 4) + (10 x 4) + (5 x 4)

Think: 115 x 20 = (100 x 20) + (10 x 20) + (5 x 20)

Step 3: Find the partial products.

Step 4: Add the partial products together to find the full product.

Multiply using area model



Step 1: Decompose both values in our multiplication problem using expanded form.

127 = 100 + 20 + 7

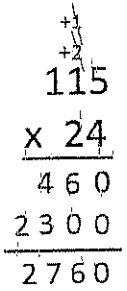
46 = 40 + 6

Step 2: Create your area model (3 digit by 2 digit)

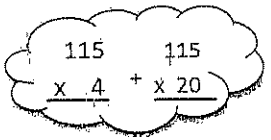
Step 3: Find the partial products

Step 4: Add the partial products to find the total product

Multiply using standard algorithm



Step 1: Decompose the problem mentally into smaller problems



Step 2: Multiply the top number by the ones place of the bottom number.

Step 3: Place a zero to represent that you are in the tens place and then multiply the top number by the tens place of the bottom number.

Step 4: Add the partial products

Lesson 5-1 • Reinforce Understanding

Estimate Products of Multi-Digit Factors

Name _____

Review

You can multiply with multiples of 10 to help when estimating products of multi-digit factors.

Estimate the product 52 × 303.

$50 \times 300 = 5 \times 10 \times 3 \times 100$

$= 5 \times 3 \times 1{,}000$

$= 15 \times 1{,}000$

$= 15{,}000$

Estimate the product using rounded numbers or multiples of 10.

1. 713 × 82

2. 5,585 × 5

3. 205 × 11

4. 398 × 61

5. 352 × 27

6. 7,258 × 8

Estimate the product presented in the word problem.

7. The classroom library has 12 shelves. Each shelf holds 53 books. About how many books does the classroom library have in all? Show your work.

Lesson **5-1**

Additional Practice

Name _____

Review

You can use rounding or compatible numbers to estimate a product.

There are 329 students in a grade school. Each student donates 11 canned items. About how many canned items does the school collect?

$329 \times 11 = c$ — 329 rounds to 330.

11 rounds to 10.

$330 \times 10 = 3{,}300$

A reasonable estimate is that the school collected 3,300 canned items.

Estimate the product.

1. $412 \times 17 =$ _____ × _____ = _____
2. $281 \times 32 =$ _____ × _____ = _____
3. $81 \times 687 =$ _____ × _____ = _____
4. $57 \times 509 =$ _____ × _____ = _____
5. $749 \times 64 =$ _____ × _____ = _____
6. $499 \times 51 =$ _____ × _____ = _____
7. $79 \times 643 =$ _____ × _____ = _____
8. $24 \times 702 =$ _____ × _____ = _____

Greek and Latin Roots

3rd – 5th Grade Sample List

Root	Meaning	Examples	Origin
ant, anti	against, opposed to, preventative	antagonist, antibiotic	Greek
aqua	water	aquarium, aquatic	Latin
aud	to hear	audiobook, audience	Latin
auto	self	autobiography, autograph	Greek
bio	life	biology, biography	Greek
cent	one hundred	century, percent	Latin
chron	time	chronological, chronic	Greek
cir/circum	around	circumference, circumstance, circular	Latin
duc/duct	lead, make	deduce, produce, educate	Latin
form	shape	formation, format	Latin
geo	earth	geography, geology	Greek
graph	write	autograph, graphic	Greek
hetero	different	heteronym, heterogeneous	Greek
homo	same	homonym, homogenous	Greek
logy	study of	biology, zoology	Greek
mal	bad	malfunction, malpractice, maleficence	Latin
meter/metr	measure	thermometer, perimeter	Greek
micro	small	microscope, microphone	Greek
mono	one	monologue, monotonous	Greek
multi	many	multimedia, multitask	Latin
photo	light	photograph, photosynthesis	Greek
port	to carry	import, transportation	Latin
scope	viewing instrument	microscope, telescope	Greek
spect	to look	inspection, spectator	Latin
tele	far off	television, telephone	Greek
vid/vis	to see	visual, video	Latin

FLORIDA'S B.E.S.T. STANDARDS: ENGLISH LANGUAGE ARTS

Greek and Latin Roots

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ant, anti	against, opposed to, preventative	antagonist, antibiotic	Greek
aqua	water	aquarium, aquatic	Latin
aud	to hear	audiobook, audience	Latin
auto	self	autobiography, autograph	Greek
bio	life	biology, biography	Greek
cent	one hundred	century, percent	Latin
chron	time	chronological, chronic	Greek
cir/circum	around	circumference, circumstance, circular	Latin
duc/duct	lead, make	deduce, produce, educate	Latin
form	shape	formation, format	Latin
geo	earth	geography, geology	Greek
graph	write	autograph, graphic	Greek
hetero	different	heteronym, heterogeneous	Greek
homo	same	homonym, homogenous	Greek
logy	study of	biology, zoology	Greek
mal	bad	malfunction, malpractice, maleficence	Latin
meter/metr	measure	thermometer, perimeter	Greek
micro	small	microscope, microphone	Greek
mono	one	monologue, monotonous	Greek
multi	many	multimedia, multitask	Latin
photo	light	photograph, photosynthesis	Greek
port	to carry	import, transportation	Latin
scope	viewing instrument	microscope, telescope	Greek
spect	to look	inspection, spectator	Latin
tele	far off	television, telephone	Greek
vid/vis	to see	visual, video	Latin

Common Prefixes

Prefix	Definition	Examples
anti-	against	antibiotic, anticlimax
auto-	self	autograph, autobiography
bi-	two	bicycle, binocular
de-	opposite	devalue, dehumidify
dis-	not, opposite of	detach, deploy
en-, em-	cause to	empower, entangle
fore-	before, front of	forecast, foresee
in-, im-, il-, ir-	not	impossible, innocent
inter-	between, among	international, interject
micro-	small	microscope, microwave
mid-	middle	midway, midday
mis-	wrongly	misunderstand, misconduct
multi-	many, much	multicolor, multipurpose
non-	not	nonsense, nondescript
oct-	eight	octopus, octagon
over-	over, too much	overall, overworked
poly-	many, much	polygon, polymer
pre-	before	prevent, preview
quad-	four	quadrilateral, quadrant
re-	again	rebuild, recall
semi-	half, partly, not fully	semicircle, semiformal
sub-	under	submarine, subconscious
tele	far, distant	telephone, television
trans-	across, change, through	transfer, transportation
super-	above, beyond	superhuman, superficial
trans-	across	transcontinental, translucent
tri	three	tripod, triangle
un-	not, opposite of	unable, unhappy
uni-	one	unicycle, unicorn
under-	under, too little	underground, undercurrent

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Common Suffixes

Suffix	*Part of Speech*	*Definition/Meaning*	*Examples*
-able, -ible	adjective	is; can be	collectable, gullible
-age	noun	result of an action; collection	manage, acreage
-al, -ial	adjective	having characteristics of	circumstantial, seasonal
-an	noun	one having a certain skill; relating/belonging to	American, electrician
-ate	verb	to make, have, become	differentiate, duplicate
-ed	verb/adjective	past tense verbs; adjectives	accomplished, accepted
-en	noun/adjective	made of	hydrogen, mistaken
-ence, -ance	noun	act; condition of	excellence, importance
-ent, -ant	noun	an action; condition; causing a specific action	student, contestant
-er, -or	noun	one who; action or process; more	teacher, boxer
-est	adjective	the most	coldest, largest
-ful	adjective	full of	beautiful, hateful
-ic	adjective	having characteristics of	historic, asymmetric
-ies	noun	plural, more than one	parties, babies
-ify	verb	to make, have, become	amplify, justify
-ing	verb	verb forms; present participles	helping, running
-ion, -tion, -ation,	noun	act; process	confusion, inspection
-ish	adjective	like; similar	childish, bookish
-ist	noun	the person who is _____	loyalist, nutritionist
-ity, -ty	noun	state of	responsibility, specialty
-ive, -ative, -itive	adjective	adjective form of noun	active, comparative
-ize	verb	to make; to cause to become	criticize, apologize
-less	adjective	without	helpless, effortless
-logy, -ology	noun	science of; study of	biology, archeology
-ly	adverb	how something is	fluently, briefly
-ment	noun	state of being; act of	payment, employment
-ness	noun	state of; condition of	sickness, wilderness
-ous, -eous, -ious	adjective	having qualities of	courageous, gracious
-s, -es	noun	more than one	books, boxes
-ship	noun	the state of being something	friendship, leadership
-y	adjective	characterized by	cloudy, thirsty

FLORIDA'S B.E.S.T. STANDARDS: ENGLISH LANGUAGE ARTS

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Lesson 5-2

Additional Practice

Name _____

Review

You can use an algorithm to multiply a multi-digit factor and a single-digit factor.

Find the product of 2,234 × 6.
Use a standard algorithm for multiplication.

$$\begin{array}{r} {\scriptstyle +1\,+2\,+2} \\ 2,234 \\ \times \quad 6 \\ \hline 13,404 \end{array}$$

The product is 13,404.

Solve using a standard algorithm for multiplication.

1. 478 × 7

2. 791 × 9

3. 384 × 5

4. 1,477 × 4

5. 3,519 × 6

6. 7,568 × 8

Lesson 5-2 • Reinforce Understanding

Relate Partial Products to an Algorithm

Name _____

Review

Below is a way to combine the partial products with an algorithm.

	983	
×	5	
	15	3 and the 5 are in the ones place. Multiply 3 × 5.
	400	8 is in the tens place. Multiply 80 × 5.
+	4,500	9 is in the hundreds place. Multiply 900 × 5.
	4,915	Add 15, 400, and 4,500 for the product.

	$^{4\ 1}983$	
×	5	Here it is using an algorithm.
	4,915	

Find the products of the equations first using partial products and then using an algorithm. Choose the correct answer.

1. 512 × 8 = _____

A. 4,106

B. 4,096

C. 4,086

D. 4,196

2. 2,604 × 5 = _____

A. 13,000

B. 10,020

C. 13,030

D. 13,020

Find the products of the equations using an algorithm.

5. 116 × 9 = _____

6. 289 × 4 = _____

7. 3,752 × 5 = _____

8. 2,974 × 3 = _____

*Make sure that you write and underline the question AND answer the question in a complete sentence.

Fish in a Tree Chapters 1-3 Comprehension questions

1. On page 9, discuss the analogy, "I need attention like a fish needs a snorkel" and how it relates to how Ally feels when at school?

2. Why was Ally in trouble for giving Mrs. Hall a sympathy card? Explain how it happened and why it was a mistake? (page 10)

3. On page 11, Ally says, "I wish I had my Sketchbook of Impossible Things. It's the only thing that makes me feel like I'm not a waste of space." In the sketchbook, Ally draws the images she sees in her mind movies. Why does Ally feel like a waste of space? What are Ally's strengths?

4. On page 14, discuss the analogy, "me avoiding consequences would be like the rain avoiding the sky" What does this mean and how does it relate to Ally's experiences in school?

5. List three character traits to describe Ally.

6. Predict: Why do you think Ally might have given her teacher a sympathy card?

7. What does Ally mean when, on page 15 she says, "even I'm tired of me?"

*Make sure that you write and underline the question AND answer the question in a complete sentence.

Fish in a Tree Chapters 4-6 Comprehension questions

1. Ally and Ally's mom both loved the book Alice in Wonderland. Ally describes the book, "a book about living in a world where nothing makes sense". In your world, what are some things that don't make sense to you?

2. Grandpa and Dad would ask Travis and Ally if they were having a silver dollar day or a wooden nickel day. What is the difference between these types of days? Describe a silver dollar day for you. Describe a wooden nickel day for you.

3. Travis told Ally to not have low expectations of herself. Do you think you have low or high expectations for yourself? Give an example of some high expectations to have.

4. Was your Chapter 2 prediction correct? What cluses could have led you to believe that? Has there ever been a time YOU have felt humiliated or embarrassed like Ally? What does it feel like?

Ally: Fish in a Tree Character 4-Square

Name:

Thoughts	Feelings
•	
Actions	**Words**
•	•
Fish in a Tree pg. 24 "'So your favorite big brother had a silver dollar day today!' I think of Grandpa and Dad, who always asked us if we were having a silver dollar day or a wooden nickel one." Based on what Travis says and does in the chapter, what do you think a silver dollar day is? What is a wooden nickel day? Use details from the text to support your thinking.	

Name _____ Date _____

2-digit multiplication - Box Method

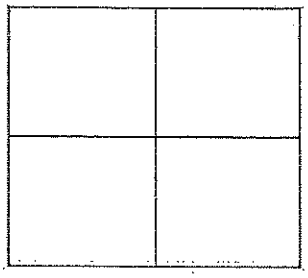
Work out the answers to these multiplication questions using the box method.

27 x 18 = 486

	20	7
10	200	70
8	160	56

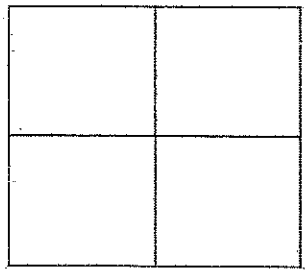
200
70
160
+ 56
486

18 x 17 = _____



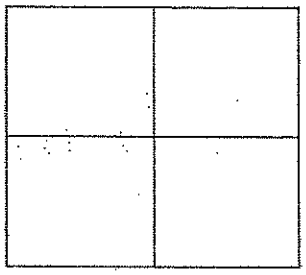
_____

21 x 19 = _____



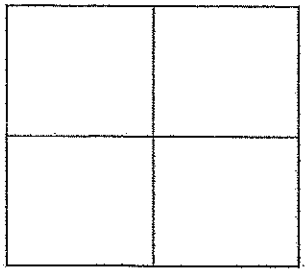
_____

29 x 15 = _____



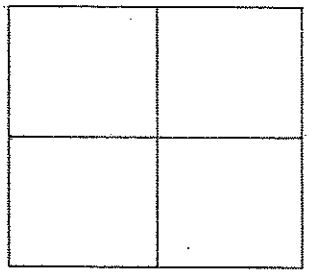
_____

28 x 24 = _____



_____

17 x 12 = _____



_____

Name _____ Due Date _____

2-digit multiplication - Box Method

Work out the answers to these multiplication questions using the box method.

19 x 3 = 57

	10	9
3	30	27

30
+ 27
57

17 x 9 = _____

19 x 5 = _____

22 x 8 = _____

25 x 4 = _____

18 x 7 = _____

29 x 3 = _____

15 x 6 = _____

Fish in a Tree Chapter 7-9 questions

1. What does Ally mean when she says, "if trying to read helped, I'd be a genius"?

2. Why does Ally look at going to the office with Mrs. Silver as a "get out of jail free card"?

3. What do you predict Mr. Daniels and Ally's relationship will be like?

4. What does Ally's coin really represent?

5. When thinking about what to bring to school that represents her, Ally considers a bad of nothing or a bag of dirt. *What does this tell us about how Ally is thinking about herself? *What would be in your bag? *What does it mean to you?

6. Ally likes math and art in school. *How are you and Ally alike? *How are you different from Ally? *What subjects do you like in school? *What subjects do you dislike? *Why?

Fish in a Tree Chapters 10-12 questions

1. Ally draws a "dark room" in her notebook so she cannot be seen. How do you think she feels on a daily basis, and what will she or someone else perhaps do to change that? Make a prediction.

2. Discuss with someone your thoughts on Albert? What type of person is he as compared to Ally? How are they the same or different?

3. How does Ally feel about going along with making fun of Albert? Have you ever felt this way?

4. Ally tells Mr. Daniels, "it would be easier to be invisible", What do you think she means by this? Have you ever felt invisible? Explain.

5. In the cafeteria Ally wishes she was more like Albert. In what ways does she want to be more like him?

6. How did Ally "make things right" with Albert? Have you ever had to do this with a friend or classmate? Explain.