AchieveMath

Student Book

Volume 1

Name:

Catapult Learning™

Unit 1:

Place Value to 1,000,000

Catapult Learning™

Catapult Learning™

Catapult Learning, LLC
1-800-841-8730

www.catapultlearning.com

Printed in the United States of America.

Video Likes

Use **place value disks** to model each number. Rewrite the number in standard form. Then answer the question about it.

Sancho's Video Likes

Day	Number of Likes	Standard Form	Question
Monday	253089		What is the value of the hundred thousands digit?
Tuesday	310964		What is the number in expanded form?
Wednesday	927335		What is the value of the ten thousands digit?
Thursday	314125		In what two places is the digit 1?
Friday	806443		In what place is the digit 3?
Saturday	1000000		What is the greatest place?

Song Downloads

Use **place value disks** to model each number of downloads. Rewrite each number in expanded form. Then name the place of the underlined digit.

"Howl-ow-ooo" Downloads

Monday Downloads: 5<u>2</u>2,741	
Number in Expanded Form	
Place of Underlined Digit	
Tuesday Downloads: <u>8</u>3,262	
Number in Expanded Form	
Place of Underlined Digit	
Wednesday Downloads: 78<u>0</u>,134	
Number in Expanded Form	
Place of Underlined Digit	
Thursday Downloads: 1,060,<u>8</u>25	
Number in Expanded Form	
Place of Underlined Digit	
Friday Downloads: <u>9</u>48,071	
Number in Expanded Form	
Place of Underlined Digit	

Lesson 1 Exit Ticket

Part 1: Use **place value disks** to model each number. Rewrite each number in standard form and expanded form.

	Number	Standard Form	Expanded Form
1.	104210		
2.	691358		
3.	290904		

Part 2: Use **place value disks** to model the number. Then answer the questions.

449,355

4. In what two places does the digit 4 appear? _____

_____

5. What is the value of the digit 9? _____

Extra Practice: Around the Planets

The table shows the distance around the planets in our solar system. Read each description. Write the name of the planet whose distance is described. You may use **place value disks** to help.

Planet	Distance Around (miles)
Mercury	9,522
Venus	23,617
Earth	24,889
Mars	13,256
Jupiter	272,985
Saturn	235,185
Uranus	99,739
Neptune	96,645

1. The value of the thousands digit is 6,000.

_____

2. The digit 7 is in the ones place.

_____

3. The digit 1 is in the ten thousands place.

_____

4. The distance is equal to 2 hundred thousands, 7 ten thousands, 2 thousands, 9 hundreds, 8 tens, and 5 ones. _____

5. You would need 3 ten thousands disks to model the distance. _____

6. The value of the distance is 20,000 + 4,000 + 800 + 80 + 9. _____

7. The digit 5 is in the hundreds place. _____

8. The digit 9 appears in the ten thousands, thousands, and ones place. _____

Place Value Mat (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Cards

Ones	Tens	Hundreds
Thousands	Ten Thousands	Hundred Thousands

Cereal Boxes

Model each number with a **place value drawing** on a place value mat. Then write the number in expanded and word form.

1. The Soggy Puffs factory makes 321,586 boxes of oat clusters cereal each day.

Expanded Form	
Word Form	

2. The Soggy Puffs factory makes 29,602 boxes of chocolate cookie cereal each day.

Expanded Form	
Word Form	

3. The Soggy Puffs factory makes 618,790 boxes of apple rings cereal each day.

Expanded Form	
Word Form	

4. The Soggy Puffs factory makes 755,142 boxes of shredded wheat cereal each day.

Expanded Form	
Word Form	

Alphabet Bites

Review the example problem. Then write the numbers in standard and expanded form. Use **place value drawings** on a place value mat to help.

Example

Family Food Grocery offered a big discount on a new cereal, Alphabet Bites, to get people to try it. This promotion worked! They sold **eight hundred thirty-two thousand nine hundred forty-five** boxes. How many is that in standard and expanded form?

Step 1

Use digits to write each period of the number in standard form.

Thousands	Ones
eight hundred thirty-two	nine hundred forty-five
832	**945**

Step 2

Combine the digits for the two periods, using a comma to separate them.

832,945

Step 3

Use the value of each place to write the number in expanded form.

8 hundred thousands = **800,000**
3 ten thousands = **30,000**
2 thousands = **2,000**
9 hundreds = **900**
4 tens = **40**
5 ones = **5**

Step 4

Write the number as a sum of the place values.

800,000 + **30,000** + **2,000** + **900** + **40** + **5**

1. one hundred forty thousand three hundred fifty-one

Standard Form	
Expanded Form	

2. five hundred sixty-nine thousand nine hundred thirteen

Standard Form	
Expanded Form	

3. forty-six thousand nine hundred seventy-seven

Standard Form	
Expanded Form	

Lesson 2 Exit Ticket

Complete the table to show how to write and model each number.

1.

Standard Form	877,539				
Expanded Form					
Word Form					
Hundred Thousands	**Ten Thousands**	**Thousands**	**Hundreds**	**Tens**	**Ones**

2.

Standard Form					
Expanded Form					
Word Form					
Hundred Thousands	**Ten Thousands**	**Thousands**	**Hundreds**	**Tens**	**Ones**
●	● ● ●	● ● ● ● ● ●		● ●	● ●

3.

Standard Form					
Expanded Form	300,000 + 40,000 + 9,000 + 300 + 80 + 7				
Word Form					
Hundred Thousands	**Ten Thousands**	**Thousands**	**Hundreds**	**Tens**	**Ones**

Extra Practice: Skateboards

1. The place value drawings show the number of red skateboards the Wheelie Factory makes in a week.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
●	● ● ● ● ● ● ● ● ●	● ● ● ● ●	● ●	● ● ● ● ● ●	

Circle all the ways to represent the number of red skateboards.

One hundred ninety-five thousand two hundred six	195,206	One hundred ninety-five two hundred sixty
109,526	100,000 + 90,000 + 5,000 + 200 + 60 + 0	100,000 + 9,000 +5,000 + 200 + 60 + 0
100,000 + 90,000 + 5,000 + 200 + 6	One hundred ninety-five thousand two hundred sixty	195,260

2. The place value drawings show the number of green skateboards the Wheelie factory makes in a week.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
● ● ● ● ●	● ● ● ● ● ●	● ● ●	● ● ● ●	● ● ● ● ● ● ●	● ●

Circle all the ways to represent the number of green skateboards.

five hundred sixty-three thousand four hundred ninety-two	563,492	five hundred thousand, nine thousand four hundred eleven
5634,92	500,000 + 64,000 + 300 + 92	560,000 + 4,300 + 90 + 2
500,000 + 60,000 + 3,000 + 400 + 90 + 2	five hundred sixty thousand, three thousand four hundred ninety-two	56, 3492

Place Value Mat (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Mat (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Mat (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Mat (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Mat (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Mat (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Make a Match Cards

129,548	100,000 + 20,000 + 9,000 + 500 + 40 + 8	one hundred twenty-nine thousand five hundred forty-eight
374,692	300,000 + 70,000 + 4,000 + 600 + 90 + 2	three hundred seventy-four thousand six hundred ninety-two
631,870	600,000 + 30,000 + 1,000 + 800 + 70 + 0	six hundred thirty-one thousand eight hundred seventy
502,196	500,000 + 00,000 + 2,000 + 100 + 90 + 6	five hundred two thousand one hundred ninety-six
773,824	700,000 + 70,000 + 3,000 + 800 + 24 + 4	seven hundred seventy-three thousand eight hundred twenty-four
956,415	900,000 + 50,000 + 6,000 + 400 + 10 + 5	nine hundred fifty-six thousand four hundred fifteen

Asteroid Maze

Use **place value disks** or a **place value drawing** to model and compare the numbers. Then answer the questions.

Friday	
Carmella's score	28,632
Shen's score	28,613

1. Who's score was higher? _____

How do you know? _____

_____

Saturday	
Carmella's score	20,592
Shen's score	168,127

2. Who's score was higher? _____

How do you know? _____

_____

Sunday	
Carmella's score	1,000,000
Shen's score	128,948

3. Who's score was higher? _____

How do you know? _____

_____

Dance Jam

Review the example problem. Then use number lines to compare the numbers.

Example

Mac and Priya also go to Zaps! Their favorite game is *Dance Jam*. They earn points for doing the correct dance steps as music plays. Priya scored **25,237** points and Mac scored **25,012** points. Who had the higher score?

Step 1

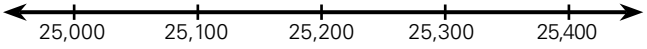
Find the greatest place that differs.

Ten Thousands	Thousands	**Hundreds**	Tens	Ones
2	5	**2**	3	7
2	5	**0**	1	2

The hundreds place is the greatest place that differs.

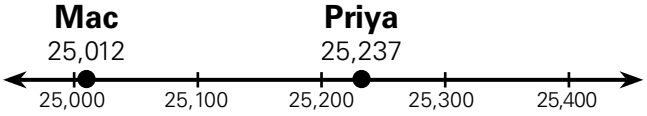
Step 2

Set up a number line. Use intervals for the greatest place in the numbers that differs.



Step 3

Plot the numbers on the number line.



Priya's score is farthest right on the number line, so it is greater than Mac's score.

1. Yesterday, Priya scored 750,642 points and Mac scored 755,189 points.

Who scored more points? _____

2. Today, Priya scored 261,301 points and Mac scored 263,101 points.

Who scored more points? _____

Lesson 3 Exit Ticket

Part 1: Use **place value disks** to model and compare the numbers. Then answer the questions.

1. **461,699** **498,906**

a. Circle the greater number.

b. How do you know it is greater? _____

_____

2. **112,612** **67,614**

a. Circle the greater number.

b. How do you know it is greater? _____

_____

Part 2: Use a **number line** to model and compare the numbers. Then circle the greater number.

3. **42,946** **41,112**

4. **657,502** **657,089**

Extra Practice: Screaming Acres

Use **number lines** to compare the number of riders on each amusement park ride.

Switcheroo Edge	733,990
Comet Loop	792,913
Jumbo Diver	734,827
Plummet	755,994
The Tornado	770,181
Colossal Swing	792,901

1. Compare the riders for Switcheroo Edge and Jumbo Diver.

a. What is the greatest place value the numbers have in common?

_____

b. What intervals will you use for the number line? _____

c. Which ride has more riders? _____

2. Compare the riders for Comet Loop and Colossal Swing.

a. What is the greatest place value the numbers have in common?

_____

b. What intervals will you use for the number line? _____

c. Which ride has more riders? _____

3. Compare the riders for Plummet and The Tornado.

a. What is the greatest place value the numbers have in common?

_____

b. What intervals will you use for the number line? _____

c. Which ride has more riders? _____

Place Value Mat (Millions)

Millions			Thousands			Ones		
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Mat (Millions)

Millions			Thousands			Ones		
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Mat (Millions)

Millions			Thousands			Ones		
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Mat (Millions)

Millions			Thousands			Ones		
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Open Number Lines

Open Number Lines

Open Number Lines

Open Number Lines

Place Value Cards

Ones	Tens	Hundreds	
Thousands	Ten Thousands	Hundred Thousands	

Fun Zone

Use a **place value chart** to compare the numbers. Then write a numbers sentence that shows how the numbers compare.

1. Fun Zone sells a lot of tokens. On Friday they sold 923,491 tokens. On Saturday they sold 917,129 tokens. On which day did Fun Zone sell more tokens?

_____ **>** _____

Fun Zone sold more tokens on _____.

Which place did you use to compare the numbers? _____

2. Rhiana can't get enough of Fun Zone. She especially loves the go-carts. The first year, she does 40,259 laps around the track. The second year, she does 40,900 laps around the track. In which year does Rhiana do more laps?

_____ **>** _____

Rhiana does more laps the _____ year.

Which place did you use to compare the numbers? _____

3. The next best thing at Fun Zone is laser tag. Rhiana plays with her friend Brett. Rhiana scores 100,867 points. Brett scores 45,347 points. Who scores more points?

_____ **>** _____

_____ scores more points.

Which place did you use to compare the numbers? _____

Mini Golf

Review the example problem. Then use **place value charts** to compare the numbers.

Example

Mini golf is super popular at Fun Zone. But players are always losing the golf balls. Fun Zone needs 150,000 golf balls for all the players this year. They have 173,602 golf balls. Do they have enough?

Step 1

Align the numbers in a place value chart.

Hundred Thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
1	7	3	6	0	2
1	5	0	0	0	0

Step 2

Circle the greatest place that has different digits.

Hundred Thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
1	**7**	3	6	0	2
1	**5**	0	0	0	0

Step 3

The number with the greater digit in this place is the greater number.

7 > **5**

1**7**3,602 > 1**5**0,000 Fun Zone has enough golf balls.

1. Fun Zone has 54,810 golf clubs. It needs 54,200. Does Fun Zone have enough clubs?

a. Which number is greater? _____ > _____

b. Does Fun Zone have enough golf clubs? _____

2. Fun Zone has 491,738 score cards. It needs 403,574. Does Fun Zone have enough score cards?

a. Which number is greater? _____ > _____

b. Does Fun Zone have enough score cards? _____

3. Fun Zone has 15,508 pencils. It needs 18,182. Does Fun Zone have enough pencils?

a. Which number is greater? _____ > _____

b. Does Fun Zone have enough pencils? _____

Lesson 4 Exit Ticket

Use a **place value chart** to compare the numbers. Then write a number sentence that shows how the numbers compare.

1. **770,906** **753,292**

_____ **>** _____

Which number is greater? _____

Which place did you use to compare the numbers? _____

2. **282,140** **288,667**

_____ **>** _____

Which number is greater? _____

Which place did you use to compare the numbers? _____

3. **31,745** **114,073**

_____ **<** _____

Which number is greater? _____

Which place did you use to compare the numbers? _____

Extra Practice: National Parks

The table shows the size of the largest U.S. National Parks. Use the information to compare the size of the parks. Show your answer by writing a number sentence using a greater than or less than symbol.

Park	Size (in sq. km)
Death Valley	13,759
Denali	24,281
Gates of the Arctic	33,994
Glacier Bay	13,354
Katmai	17,401
Lake Clark	16,369
Wrangell-St. Elias	53,419
Yellowstone	8,903

1. Compare the size of Death Valley and Glacier Bay. _____

2. Compare the size of Death Valley and Katmai. _____

3. Compare the size of Gates of the Arctic and Wrangell-St. Elias.

_____

4. Compare the size of Denali and Katmai. _____

5. Compare Lake Clark and Yellowstone. _____

6. Which park is the largest? _____

Place Value Charts (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Charts (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Charts (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Place Value Charts (Thousands)

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Farm Stand

Part 1: Use a **number line** to round each number.

1. This year the farm stand raises $682,415. About how many dollars is that rounded to the nearest ten thousand?

To the nearest ten thousand, the farm stand raised _____ dollars.

2. In the fall, the farm stand raised $227,482. To the nearest hundred dollars, about how much money did the farm stand raise in the fall?

To the nearest hundred, the farm stand raised _____ dollars.

Part 2: Use the rounding rule to round each number.

3. Round 13,704 to the nearest thousand.

a. Which digit is in the place you are rounding to? _____

b. Which digit tells you whether to round up or down? _____

c. Will you round up or down? _____

d. What is 13,704 rounded to the nearest thousand? _____

4. Round 998,919 to the nearest hundred thousand.

a. Which digit is in the place you are rounding to? _____

b. Which digit tells you whether to round up or down? _____

c. Will you round up or down? _____

d. What is 998,919 rounded to the nearest hundred thousand? _____

Farm Stand Visitors

Review the example problem. Then round the numbers using the rounding rule. Use circles and underlines to show how you figure out how to round.

Example

Last year **543,073** people visited the community farm stand. To the nearest ten thousand, how many visitors were there?

Step 1

Circle the place you are rounding to.

5(4)3, 0 7 3

Step 2

Underline the digit to the right. Is it 5 or greater? If yes, round up.

5(4)3, 0 7 3

3 is not greater than 5, so round down.

Step 3

To round down, the circled digit stays the same. All digits to the right change to 0.

5(4)0, 0 0 0

543,073 rounds down to 540,000.

Step 4

If a number rounds up, the circled digit increases by 1. All digits to the right change to 0.

5(4)6, 0 7 3

5(5)0, 0 0 0

546,073 rounds up to 550,000.

1. This year, the goal is for 767,658 people to visit the farm stand. What is the goal rounded to the nearest thousand?

7 6 7, 6 5 8 rounds _____ to _____.

2. Last year 69,213 children visited the farm stand. How many children is that, rounded to the nearest hundred?

6 9, 2 1 3 rounds _____ to _____.

3. Visitors to the farm stand can make a donation. Last year they donated $486,006. How much money is that rounded to the nearest hundred thousand?

4 8 6, 0 0 6 rounds _____ to _____.

Lesson 5 Exit Ticket

Part 1: Use a **number line** to round each number.

1. What is 424,586 rounded to the nearest ten thousand?

To the nearest ten thousand, 424,586 rounds to _____.

2. What is 711,107 rounded to the nearest hundred thousand?

To the nearest hundred thousand, 711,107 rounds to _____.

Part 2: Use the rounding rule to round each number. Use circles and underlines to show how you figure out how to round.

3. Round 542,170 to the nearest thousand.

5 4 2, 1 7 0 rounds _____ to _____.

4. Round 24,882 to the nearest ten thousand.

2 4, 8 8 2 rounds _____ to _____.

Extra Practice: Dance Marathon

Part 1: The table shows the total money raised for charity each year at a dance contest. Round each number to the nearest hundred thousand.

Year	Money	Rounded to the nearest hundred thousand
1	462,431	
2	700,916	
3	590,396	
4	922,176	
5	680,003	
6	854,833	

Part 2: Rounded to the nearest ten thousand, Anthony earned $410,000 in the dance contest. Circle all the possible amounts Anthony could have earned.

$414,075 $410,250 $401,180 $412,168 $408,294 $418,342

Part 3: Match each number on the left to the number it rounds to.

Number	Rounded to the nearest thousand
205,512	255,000
254,270	254,000
255,067	205,000
223,396	224,000
223,571	223,000
204,802	206,000

Confetti Time!

Part 1: The table shows the number of confetti pieces in the different size bags sold online. Use **place value disks** and partial sums to add.

Size	Number of Confetti Pieces
Regular	78,253
Large	345,684

1. Find the total number of confetti pieces in two large bags.

		+		+		+		+		+		
+		+		+		+		+		+		
											=	

Part 2: Use the standard algorithm to add.

2. Find the total number of confetti pieces in two regular bags.

	7	8	2	5	3
+	7	8	2	5	3

3. Find the number of confetti pieces in one large bag and one regular bag.

	3	4	5	6	8	4
+		7	8	2	5	3

More Confetti

Review the example problem. Then use the standard algorithm to add.

Example

Jeni buys one small bag that has **41,065** pieces of confetti, and one jumbo bag that has **592,415** pieces. How many pieces did she buy in all?

Step 1

Align the two addends by place

$$\begin{array}{r} \mathbf{592415} \\ +\ \mathbf{41065} \\ \hline \end{array}$$

Step 2

Add the ones column.

5 + 5 = 10

$$\begin{array}{r} \mathbf{1} \\ 59241\mathbf{5} \\ +\ 4106\mathbf{5} \\ \hline \mathbf{0} \end{array}$$

If the sum is more than 9, regroup the tens. Write the tens digit above the tens column.

Step 3

Add all the digits in the tens column, including any regrouped tens.

1 + **1** + **6** = **8**

$$\begin{array}{r} \mathbf{1} \\ 5924\mathbf{1}5 \\ +\ 410\mathbf{6}5 \\ \hline \mathbf{8}0 \end{array}$$

Step 4

Continue adding each place, moving to the left. Regroup if the sum is more than 9.

$$\begin{array}{r} 1\ \ 1 \\ \mathbf{592415} \\ +\ \mathbf{41065} \\ \hline 633480 \end{array}$$

Jeni bought 633,480 pieces of confetti in all.

1.

$$\begin{array}{r} \square\square\square\square\square\square \\ \mathbf{6\ 8\ 7\ 7\ 7\ 0} \\ +\ \mathbf{1\ 4\ 0\ 1\ 9} \\ \hline \end{array}$$

2.

$$\begin{array}{r} \square\square\square\square\square\square \\ \mathbf{4\ 1\ 0\ 6\ 5} \\ +\ \mathbf{7\ 8\ 2\ 5\ 3} \\ \hline \end{array}$$

3.

$$\begin{array}{r} \square\square\square\square\square\square \\ \mathbf{4\ 6\ 0\ 3\ 2} \\ +\ \mathbf{2\ 3\ 9\ 7\ 2} \\ \hline \end{array}$$

4.

$$\begin{array}{r} \square\square\square\square\square\square \\ \mathbf{5\ 9\ 2\ 4\ 1\ 5} \\ +\ \mathbf{3\ 4\ 5\ 6\ 8\ 4} \\ \hline \end{array}$$

5.

$$\begin{array}{r} \square\square\square\square\square\square \\ \mathbf{5\ 4\ 3\ 1\ 0\ 2} \\ +\ \mathbf{2\ 7\ 7\ 8\ 1\ 8} \\ \hline \end{array}$$

6.

$$\begin{array}{r} \square\square\square\square\square\square \\ \mathbf{4\ 1\ 0\ 6\ 5} \\ +\ \mathbf{4\ 1\ 0\ 6\ 5} \\ \hline \end{array}$$

Lesson 6 Exit Ticket

Last year the Ka-Pow Confetti Company sold 98,175 regular bags, 246,350 large bags, and 410,963 jumbo bags of confetti.

1. Find the total number of regular and large bags sold using **place value disks.**

98,175 + 246,350 = _____

2. Find the total number of large and jumbo bags sold using **partial sums.**

		+		+		+		+		+		
+		+		+		+		+		+		
											=	

3. Find the total number of regular and jumbo bags sold using the standard algorithm**.**

		9	**8**	**1**	**7**	**5**
+	**4**	**1**	**0**	**9**	**6**	**3**

Extra Practice: Cheer on the Wildcats

Part 1: The table shows the number of people who went to Wildcats soccer games. Use **place value disks** on a place value mat to find the total number of people who went to the Wildcats' games.

Day	Number of People
Friday	53,486
Saturday	67,902
Sunday	44,328

1. How many people went to the games on Friday and Saturday?

_____ people

2. How many people went to the games on Saturday and Sunday?

_____ people

Part 2: Use the standard addition algorithm to find the sums. Show any regrouping.

3.

$$\begin{array}{r} 259130 \\ +\ 400276 \\ \hline \end{array}$$

4.

$$\begin{array}{r} 71645 \\ +\ 68012 \\ \hline \end{array}$$

5.

$$\begin{array}{r} 12805 \\ +\ 8467 \\ \hline \end{array}$$

6.

$$\begin{array}{r} 362174 \\ +\ 129759 \\ \hline \end{array}$$

Take a Hike

The table below shows how far Aliyah and her brother Finn hiked each day on a hiking trip. Use the information to answer the questions.

	Aliyah's Steps	Finn's Steps
Day 1	27,213	32,415
Day 2	21,063	38,954

1. Use **place value disks** and partial differences to find out how many more steps Aliyah takes on Day 1 than on Day 2.

$$\square + \square + \square + \square + \square$$
$$- \quad \square + \square + \square + \square + \square$$
$$= \_\_\_\_\_$$

2. Use the standard algorithm to find out how many more steps Finn takes on Day 2 than on Day 1.

$$\begin{array}{r} \mathbf{3\ 8\ 9\ 5\ 4} \\ \mathbf{-\ \ 3\ 2\ 4\ 1\ 5} \\ \hline \end{array}$$

3. Use the standard algorithm to find out how many more steps Finn takes on Day 1 than Aliyah takes on Day 1.

$$\begin{array}{r} \mathbf{3\ 2\ 4\ 1\ 5} \\ \mathbf{-\ \ 2\ 7\ 2\ 1\ 3} \\ \hline \end{array}$$

More Steps

Review the example problem. Then subtract using the standard algorithm.

Example

Aliyah hikes **24,982** steps and Finn hikes **21,063** steps. How much farther did Aaliyah hike than Finn?

Step 1

Align the two numbers by place.

```
  24982
– 21063
```

Step 2

Subtract the ones column. Decide whether you need to regroup.

You can't subtract **2 – 3,** so you need to regroup.

```
  2498 2
– 2106 3
```

Step 3

Regroup **1 ten** as **10 ones** by subtracting **1 ten** from the tens column, and adding **10 ones** to the ones column. Then subtract.

8 tens – **1 ten** = 7 tens
2 ones + **10 ones** = 12 ones

```
    7 12
  24982
– 21063
      9
```

Step 4

Continue subtracting and regrouping to find the entire difference.

```
    7 12
  24982
– 21063
  3919
```

Aliyah hiked 3,919 more steps than Finn.

Aliyah's dad hikes 20,964 steps on Day 1. He hurts his ankle on Day 2, so he only hikes 7,503 steps that day. On Day 3 he feels better and hikes 18,212 steps. On Day 4 he hikes a new personal best: 21,079 steps.

1. How much farther does he walk on Day 1 than on Day 2?

```
  20964
–  7503
```

2. How much farther does he walk on Day 3 than on Day 2?

```
  18212
–  7503
```

3. How much farther does he walk on Day 1 than on Day 3?

```
  20964
–  1821 2
```

4. How much farther does he walk on Day 4 than on Day 1?

```
  21079
–  20964
```

Lesson 7 Exit Ticket

On another day of hiking, Aliyah hikes 18,631 steps, Finn hikes 14,925 steps, and their dad hikes 20,932 steps.

1. Use **place value disks** to find how many more steps Aliyah hikes than Finn hikes.

Aliyah hikes _____ more steps than Finn.

2. Use partial differences to find how many more steps Aliyah and Finn's dad hikes than Finn hikes.

	☐	+	☐	+	☐	+	☐	+	☐
−	☐	+	☐	+	☐	+	☐	+	☐

= _____

3. Use the standard subtraction algorithm to find how many more steps Aliyah and Finn's dad hikes than Aliyah hikes.

	2	**0**	**9**	**3**	**2**
–	**1**	**8**	**6**	**3**	**1**

Extra Practice: Nature Center

The table shows the number of visitors at a nature center for three different weeks.

Week	Number of Visitors
1	214,782
2	209,651
3	197,830

1. Use place value disks to find how many more people visit the nature center during Week 2 than during Week 3.

_____ more people

2. Use place value disks on your place value mat to find how many more people visit the nature center during Week 1 than during Week 3.

_____ more people

Use the standard subtraction algorithm to find the differences. Show any regrouping.

3.

$$\begin{array}{r} 6\,1\,8\,4\,5\,7 \\ -\,3\,4\,5\,1\,1\,9 \\ \hline \end{array}$$

4.

$$\begin{array}{r} 7\,1\,6\,4\,5 \\ -\,6\,8\,0\,1\,2 \\ \hline \end{array}$$

5.

$$\begin{array}{r} 1\,2\,8\,0\,5 \\ -\,\;\;8\,4\,6\,7 \\ \hline \end{array}$$

6.

$$\begin{array}{r} 3\,6\,2\,1\,7\,4 \\ -\,1\,2\,9\,7\,5\,9 \\ \hline \end{array}$$

Assessment

Unit 1 Assessment

1. Write the number 845,263 in expanded form.

_____

2. Write the number represented in the place value chart in word form and standard form.

Thousands Period			Ones Period		
Hundred Thousands	**Ten Thousands**	**Thousands**	**Hundreds**	**Tens**	**Ones**
● ● ●	● ● ● ● ● ●	● ● ● ● ● ● ● ●	● ● ● ●		●

Word form: _____

_____

Standard form: _____

3. Use the number line to compare 6,742 and 6,736.

_____ is greater than _____.

4. Zoe scored 28,502 points playing the video game *Dragon Rider*. Binh scored 28,396 points. Use math symbols to show who had the higher score.

_____ had the higher score.

5. Use the number line to round 86,375 to the nearest hundred.

86,375 rounded to the nearest hundred is _____.

6. The Smoothie Place sold 672,048 strawberry smoothies last year. About how many smoothies is that, rounded to the nearest ten thousand? Use rounding rules to round, then explain your answer.

6 7 2, 0 4 8

672,048 rounded to the nearest ten thousand is _____ because

_____

_____

7. Use partial sums to add. Show your work.

469,273 + 81,594 = _____

8. Jerry went on a two-day hike. He hiked 17,952 steps on Saturday and 13,845 steps on Sunday. How many total steps did Jerry hike? Use the standard algorithm to add.

$$\begin{array}{r} 1\ 7\ 9\ 5\ 2 \\ +\ 1\ 3\ 8\ 4\ 5 \\ \hline \end{array}$$

Jerry hiked _____ steps in total.

9. Two classes are collecting pennies to give to charity.

Class	Pennies collected
Mrs. Kennedy	136,094
Mr. Franco	124,673

Use partial differences to find out how many more pennies Mrs. Kennedy's class collects than Mr. Franco's class. Show your work.

10. Use the standard algorithm to subtract.

$$\begin{array}{r} 3\ 9\ 2\ 6\ 8 \\ -\quad 7\ 5\ 4\ 3 \\ \hline \end{array}$$

Unit 1 Cumulative Review

1. Dafna had 7 boxes with 8 crayons in each box. She gave one box to Kirin. How many crayons does Dafna have now? Show your work.

Dafna now has _____ crayons.

2. Ana has 8 bookshelves. Each shelf has 9 books. She uses the linking cube train below to find out how many books she has.

Can Ana use this model to find out how many books she has? _____

Why?_____

_____

_____

_____

3. Find a number that is equivalent to $\frac{1}{2}$.

$\frac{1}{2}$ is equivalent to _____

4. Subtract.

$$\begin{array}{r} 8\ 3\ 9\ 7\ 5\ 4 \\ -\quad 6\ 4\ 1\ 0\ 3 \\ \hline \end{array}$$

5. Solve.

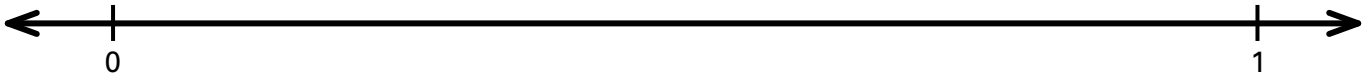
$6 \times g = 42$

$g =$ _____

6. Multiply.

$5 \times 3 \times 2 =$ _____

7. McKenna's family shares a pizza equally. There are 6 members in her family. What fraction shows how much of the pizza each family member gets?



Each family member will get _____ of the pizza.

8. Three students each make 30 friendship bracelets. How many bracelets do they make in all?

They made _____ bracelets in all.

9. 138 rounded to the nearest ten is _____.

Explain how you used rounding rules to round 138 to the nearest ten.

_____

_____

_____

10. Stephen has 12 model cars. He will display 4 cars on each shelf. How many shelves will he need?

12 ÷ 4 = _____

Stephen will need _____ shelves.

11. Jamal is baking muffins for his 5 friends. He baked 30 muffins. Draw a picture to show how he can share the muffins equally among his friends.

12. Subtract.

274 – 218 = _____

13. Circle the greater number.

5,824 5,867

14. A box can fit 6 apples. Adam packs 6 apples in a box. Write a whole number fraction that shows how many apples are in the box.

There are _____ apples in the box.

15. Tamara buys a bag of socks: $\frac{1}{8}$ of the socks are blue, and $\frac{1}{4}$ of the socks are green. Are there more blue or green socks in the bag?

There are more _____ socks.

Unit 2:

Factors and Multiples

Catapult Learning™

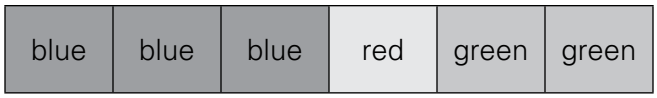
Swimming Strokes

Copy the pattern with **tiles**. Then fill the charts and answer questions.

Janiah competes in the same pattern of races at every swim meet. She used a color-coded system to track the races from the first meet, as shown.

Blue = Freestyle race Red = Butterfly race Green = Backstroke race

Swim Meet 1



1. Fill in the tables with the total number of races in each style Janiah will have completed by the end of each swim meet.

a. Freestyle Races

Swim Meets Finished	Total Freestyle Races
1	3
2	
3	
4	
5	

b. Butterfly Races

Swim Meets Finished	Total Freestyle Races
1	1
2	
3	
4	
5	

c. Backstroke Races

Swim Meets Finished	Total Freestyle Races
1	2
2	
3	
4	
5	

2. What is the rule for how the total races increase in each table?

a. Freestyle: _____ **b.** Butterfly: _____ **c.** Backstroke:_____

3. What do you notice about how the numbers in each table's right column relate to the number in the left column?

_____

How many races total will Janiah have completed after 5 meets? _____

4. How would you continue the number patterns if Janiah raced in a sixth meet?

_____

_____

Pattern Boxes

Complete the tables and answer the questions.

1. Calvin wants to see what happens to certain numbers when he subtracts 3 and then doubles them. He puts some numbers in the left column of a table. Help him complete the table by following the rule.

Number	Subtract 3, Double the Number
4	
5	
6	
7	
8	

a. Fill in the right column of the table.

What do you notice about the numbers you filled in?

_____

_____

2. Calvin's friend Adya gives him this table. She says she followed a rule to change the numbers on the left to the numbers on the right.

Number	
1	3
2	4
3	5
4	
5	
6	
7	
8	

a. Continue the pattern to complete the table.

b. What rule changes the numbers on the left into the numbers on the right? (Use "+" or "–" to answer.)

_____

c. How do the numbers on the right change as you go down the column? How is this related to the numbers on the left?

_____

_____

_____

_____

Lesson 9 Exit Ticket

Part 1: Use **counters** and **square tiles** to make or continue the patterns.

1. Make a pattern using counters that follows the rule +2 yellow, +3 red twice.

2. Continue the pattern twice with counters and tiles.

Part 2: Complete the table. Then answer the question.

3. For each given number on the left, use the 2-part rule to find the number on the right (multiply the number by 2, then add 3). Fill in the table.

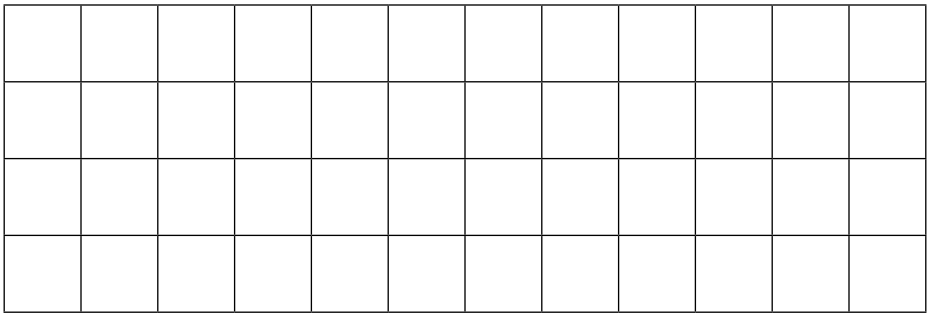
Number	Multiply by 2, Add 3
0	
3	
6	
9	
12	

4. What do you notice about the numbers you filled in? Write at least one observation.

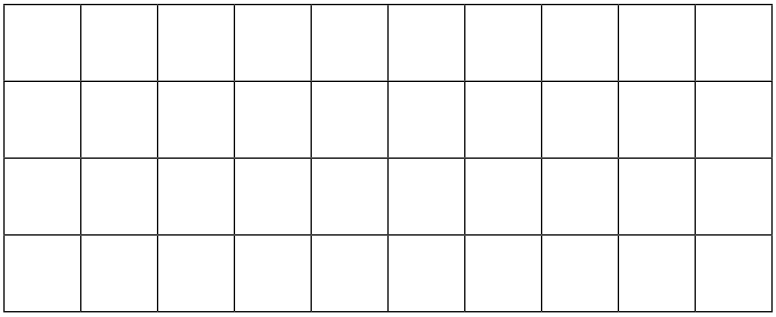
Extra Practice: Patches and Patterns

Part 1: The following boxes represent a quilt with different patches. Draw the patterns following the given rules.

1. This quilt pattern begins with stars (+4) and is followed by hearts (+2).



2. This quilt pattern begins with smiley faces (+3) and is followed by diamonds (+7).



Part 2: For each number on the left, use the 2-part rule to find the number on the right. Fill the table. Reflect on the number pattern you create.

Number	Subtract 1, Multiply by 3
3	
4	
5	
6	
7	

What do you notice about the number pattern you created?

2-Column Tables

Part 1: Use **counters** and **square tiles** to make or continue the patterns.

Even Teams

Part 1: Use **counters** in arrays to represent teams with even numbers of students from a PE class. Then answer the questions.

1. On Tuesday, there were 30 students in the PE class. Fill in the chart.

Array Rows and Columns	Factor Pairs for 30
_____ row of _____	
_____ rows of _____	
_____ rows of _____	
_____ rows of _____	
_____ rows of _____	
_____ rows of _____	
_____ rows of _____	
_____ rows of _____	
List all factors of 30 from least to greatest:	

2. On Friday, there were 32 students in the PE class. Fill in the chart.

Array Rows and Columns	Factor Pairs for 32
_____ row of _____	
_____ rows of _____	
_____ rows of _____	
_____ rows of _____	
_____ rows of _____	
_____ rows of _____	
List all factors of 32 from least to greatest:	

Part 2: Answer the questions.

1. Is 35 a multiple of 7? Explain. _____

_____

2. Is 24 a factor of 6? Explain. _____

_____

Which Numbers Are Factors?

Review the example problem. Then answer the questions. You can use **counters** in arrays to help you find all the multiplication expressions and factors for each given number.

Example

Holden needs to divide **20** players into even softball teams. Which expressions represent the teams he might make? List all the expressions that show the factor pairs of **20**. Then list the factors.

Step 1	Step 2	Step 3
Starting with 1, write an expression that represents 1 team. $1 \times$ **20**	Find the next factor of the given number. Remember that a factor divides evenly into another number. 2 divides evenly into **20**, so 2 is also a factor of **20**. 2×10	Continue testing numbers, in order, up to the target number. Identify each factor pair with a multiplication expression. Then list the factors from least to greatest. $1 \times$ **20**, 2×10, 4×5 5×4, 10×2, **20** $\times 1$ The factors are 1, 2, 4, 5, 10, and 20.

1. Which multiplication expressions show the factors of 18?

What are the factors? _____

2. Which multiplication expressions show the factors of 44?

What are the factors? _____

3. Which multiplication expressions show the factors of 32?

What are the factors? _____

4. Which multiplication expressions show the factors of 9?

What are the factors? _____

Lesson 10 Exit Ticket

Answer the questions about factors and multiples.

1. What are the factors of 16? Use **counters** in arrays to solve the problem.

Factors of 16: _____

2. Find the factor pairs and expressions for 40. List factors to complete the chart.

Factor Pairs for 40	Multiplication Expressions
Factors of 40:	

3. Is 40 a multiple of 7? _____

Why or why not? _____

_____

_____

Extra Practice: Factor Fun

Use **counters** to create arrays and find the factors for the top number in each table. Color the squares below these numbers blue if they show a factor of the top number. Color the squares red if they show a number that is not a factor of the top number.

24		
2	7	13
11	4	9
3	8	1

36		
3	1	6
8	13	7
5	12	10

14		
4	7	13
6	9	2
1	3	11

40		
2	20	6
10	7	4
5	1	3

Factor Rainbows

Create **factor rainbows** for each number on a separate page. Then decide which number from each pair is prime and which number is composite.

1. 11 and 35

Which number is prime? _____ Which number is composite? _____

2. 21 and 43

Which number is prime? _____ Which number is composite? _____

3. 4 and 5

Which number is prime? _____ Which number is composite? _____

4. 61 and 56

Which number is prime? _____ Which number is composite? _____

5. 49 and 59

Which number is prime? _____ Which number is composite? _____

6. 70 and 83

Which number is prime? _____ Which number is composite? _____

Under the Rainbow

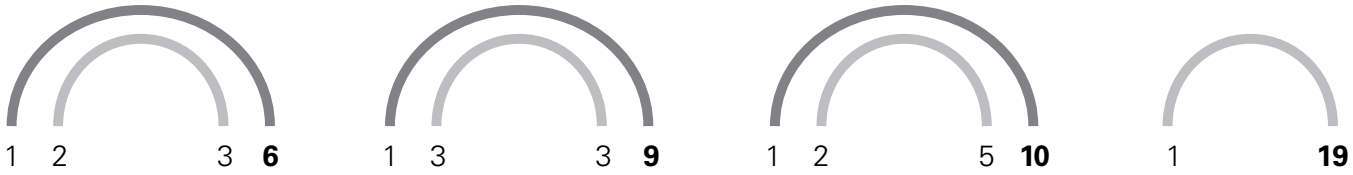
Review the example problem. Draw a factor rainbow for each number and circle the prime number.

Example

Which number is prime? **6, 9, 10, 19**

Step 1

Create a factor rainbow to review each of the numbers.



Step 2

Circle the number that has only two factors.

19 only has the factors 1 and **19**, so it is prime. **6, 10, 9, (19)**

1. 40 41 45 49

2. 82 94 39 23

3. 8 33 48 53

4. 61 62 18 81

5. 38 97 25 9

6. 69 67 44 88

7. 64 84 13 98

8. 87 63 3 15

9. 46 16 27 59

10. 11 66 50 42

Lesson 11 Exit Ticket

Answer the following questions.

1. Create a factor rainbow for the number 30.

List the factors of 30 from least to greatest:

_____

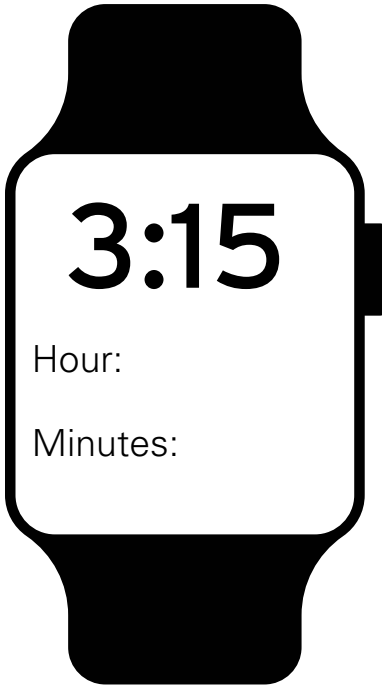
2. Complete the chart by writing all the prime numbers in the prime column and all the composite numbers in the composite column. Use factor rainbows to check as needed.

Numbers: 36, 11, 42, 9, 17, 39, 3, 7

Prime Numbers	Composite Numbers

Extra Practice: Prime Time

Part 1: For each of the times below, decide if the hours number is prime or composite. Then decide if each minutes number is prime or composite. Write the answers below each time.



Part 2: Select two composite numbers from the times above. Create factor rainbows for each of them below.

Assessment

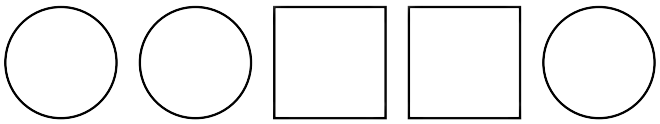
Unit 2 Assessment

1. Draw a pattern that shows the rules of +3 squares and +2 circles for each box.

Box 1	Box 2

If you add the boxes together, what is the rule for the total shapes added from each box? (Use a "+" sign in your answer.) _____

2. The pattern below uses counters and square tiles. Continue the pattern once by drawing the correct numbers of counters and tiles.



3. For each number on the left, use the 2-part rule to find the number on the right (multiply the number by 4, then subtract 2). Fill in the table.

Starting Number	Multiply by 4, Subtract 2
1	
3	
5	
7	
9	

What do you notice about the numbers you filled in? Write at least one observation.

_____

_____

4. The table shows the total number of apples the Brandt family has eaten by the end of each day.

Day	Total Apples Eaten
0	0
1	3
2	6
3	9
4	
5	
6	

a. Complete the table by working down the second column to extend the pattern.

b. What is the rule for how the numbers on the right change as they move down the column? (Use a "+" or "–" sign to answer.)

_____

5. The table shows the number of cars built by a small sports car factory.

Week	Total Cars Built
1	4
2	8
3	12
4	16
5	20

a. What rule is shown in the second column of the table? _____

b. What else do you notice about the numbers in the table? Write at least one observation.

_____

_____

_____

_____

_____

6. Draw and label a factor rainbow for the number 36.

List the factors of 36 from least to greatest: _____

7. Draw and label a factor rainbow for the number 27.

List the factors of 27 from least to greatest: _____

8. Organize the numbers. Write prime numbers in the Prime Number box. Write composite numbers in the Composite Number box.

41 21 7 55 61 30 56 3

Prime Numbers	Composite Numbers

9. Which number has more factors, 10 or 17? _____

Why? _____

_____

_____

10. How do you know if a number is prime? _____

_____

How do you know if a number is composite? _____

_____

Unit 2 Cumulative Review

1. Tiger has a total of 32 gumballs. They are split between 8 bags. How many gumballs are in each bag? _____

2. Solve the following multiplication and division problems.

$2 \times 8 =$	$70 \div 7 =$	$52 \div 4 =$
$18 \div 6 =$	$7 \times 7 =$	$9 \times 6 =$

3. Fill in the circle with the symbol >, <, or = to compare the fractions.

$\frac{3}{6}$ ◯ $\frac{5}{6}$

4. Peter has 4 dogs. Each one eats 2 treats a day. How many treats does Peter need for 3 days? _____

5. What fraction of the shapes are circles? _____

6. 802 – 134 = _____

7. Fill in the box to complete the equivalent fraction. $\frac{3}{6} = \frac{\square}{12}$

8. Zyra spends $8 at the movie theater every time she visits. This year she went to the movie theater 9 times. How much money did she spend this year at the movie theater?

She spent _____ dollars at the movie theater.

9. Round 6,749 to the nearest 10. _____

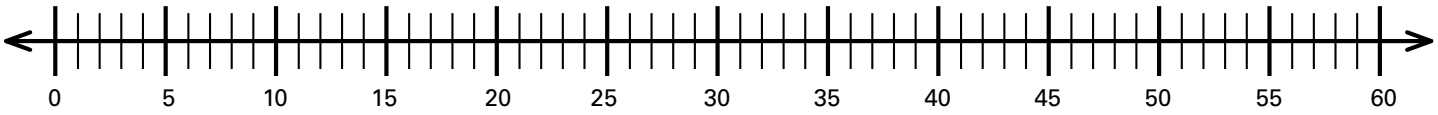
10. Circle the fraction that equals 2 wholes.

$\frac{1}{2}$ $\frac{4}{2}$ $\frac{9}{1}$ $\frac{2}{2}$

11. What is 2,312 rounded to the nearest 100? _____

12. Divide using repeated subtraction.

$56 \div 7 =$ _____



13. Fill in the circle with the symbol >, <, or = to compare the numbers.

4,386 ◯ 4,329

14. $6 \times 40 =$ _____

15. Draw a factor rainbow below for the number 54.

Unit 3:

Multiply Numbers to 1,000

Catapult Learning™

Horse Ranch

Part 1: Use **base-10 blocks** to model each problem. Then complete the equation and the solution to each problem.

1.

Number of Trail Horses	Miles Walked per Month per Horse
7	250

Miles walked by horses per month = _____ × _____ = _____

2.

Number of Trails	Trail Rides per Trail per Month
3	830

Total trail rides per month = _____ × _____= _____

3.

Number of Horses	Carrots per Horse per Month
9	170

Total carrots per month = _____ × _____= _____

Part 2: Write a number string starting with a basic multiplication fact to solve each problem.

4. 8 × 800 = ?

_____

_____

_____

5. 9 × 400 = ?

_____

_____

_____

Giddy Up Multiplication

Review the example problem. Then solve the multiplication problems by using **base-10 drawings** on a separate page.

Example

Multiply **3** × **210**. Use base-10 drawings to model the problem.

Step 1	Step 2	Step 3
Review the factors. Determine how you will create base-10 drawings for the number of groups and the number within each group. Drawing **3** groups of **210** is more efficient than drawing **210** groups of **3**.	Create a base-10 drawing to represent your problem. **3** groups of **210**: 	Find the solution by counting the total represented by your base-10 drawings. Regroup if necessary. **3** × **210** = 6 hundreds squares and 3 tens lines = 630.

1. 4 × 160 = _____

2. 6 × 450 = _____

3. 7 × 390 = _____

4. 8 × 170 = _____

5. 5 × 240 = _____

6. 2 × 130 = _____

7. 3 × 320 = _____

8. 3 × 520 = _____

9. 2 × 270 = _____

10. 4 × 530 = _____

11. 9 × 150 = _____

12. 5 × 220 = _____

Lesson 13 Exit Ticket

Part 1: Use **base-10 blocks** to model each problem. Then complete the equation and the solution to each problem.

1.

Factors	
2	430

_____ × _____ = _____

2.

Factors	
5	180

_____ × _____ = _____

Part 2: Model the following multiplication problem with a base-10 drawing. Write the solution.

3. 6 × 210 = _____

Part 3: Write a number string that starts with a basic multiplication fact to solve the problem. Write the solution.

4. 7 × 300 = _____

_____

_____

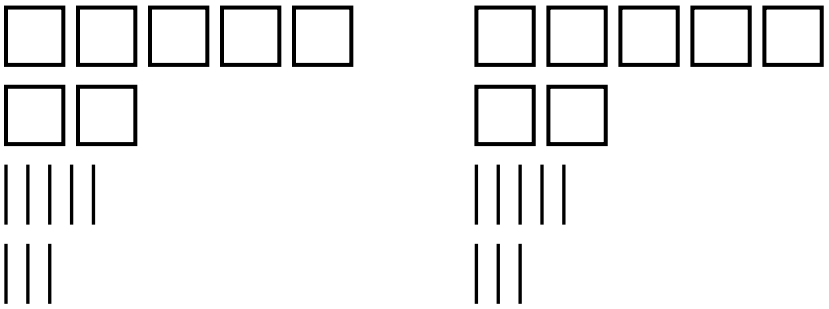
_____

Extra Practice: Base-10 Fun

Part 1: Write the multiplication problem represented by each of the base-10 drawings. Then solve the problem.

1. 

_____

2. 

_____

Part 2: Use **base-10 blocks** to model the problem. Write the solution.

3. 5 × 140 = _____

Part 3: Write a number string that starts with a basic multiplication fact to solve each problem. Write the solution.

4. 4 × 600 = _____

_____

_____

_____

5. 7 × 200 = _____

_____

_____

_____

Save the Monarchs

Use **place value disks** and an area model to solve each problem. Divide the rectangles into parts to make the area models.

1. The Save the Monarch event had 5 sessions. 168 tickets sold for each session. How many total tickets sold?

$5 \times 168 =$ _____

2. Volunteers released 3 containers of butterflies into their natural habitat. Each container held 214 butterflies. How many butterflies did the volunteers release?

$3 \times 214 =$ _____

3. There were 4 classes with 22 people in each. How many people took classes?

$4 \times 22 =$ _____

Multiplication Fun

Read the example problem. Then use the area models with written numbers to solve the problems. You can check your answers using **place value disks.**

Example

Use an area model to multiply **6** × **312**. Check your answer using place value disks on the area model.

Step 1

Set up an area model. Use place values in the larger factor to label the top. Use the 1-digit factor to label the left side.

	300	**10**	**2**
6			

Step 2

Multiply **6** by each number on top. Fill the area model with the product in each part.

	300	**10**	**2**
6	1,800	60	12

Step 3

Add the products for each part to solve for the original problem.

1,800 + 60 + 12 = 1,872

6 × **312** = 1,872

1. 4 × 223 = ? _____

_____	_____	_____

2. 3 × 352 = ? _____

_____	_____	_____

3. 2 × 404 = ? _____

_____	_____	_____

4. 5 × 236 = ? _____

_____	_____	_____

Lesson 14 Exit Ticket

Part 1: Use **place value disks** and an area model to solve the problem.

1. Solve 3 × 243.

3 × 243 = _____

Part 2: Complete the area models to solve the problems.

2. Solve 5 × 224.

5 × 224 = _____

3. Solve 2 × 935.

2 × 935 = _____

Extra Practice: Match the Model

Match the equation on the left to the area model on the right. Then solve each problem using the area model.

$3 \times 714 = ?$

	400	40	2
7	2,800	280	14

= _____

$6 \times 395 = ?$

	400	80	7
3	1,200	240	21

= _____

$7 \times 442 = ?$

	700	10	4
3	2,100	30	12

= _____

$3 \times 487 = ?$

	600	20	1
6	3,600	120	6

= _____

$6 \times 621 = ?$

	300	90	5
6	1,800	540	30

= _____

Bird Migration

The table shows the age and the number of miles migrated each year by certain birds studied at a national park. Use the table to answer the questions.

	Age (years)	Average Annual Migration (miles)
Sandhill Crane	7	9,321
American Robin	2	2,252
Common Nighthawk	5	6,587
Barn Swallow	4	7,253

1. Use an area model to find the total miles the sandhill crane migrated.

_____ _____ _____ _____

_____

_____ × _____ = _____ miles

2. Use an area model to find the total miles the American robin migrated.

_____ _____ _____ _____

_____

_____ × _____ = _____ miles

3. Use the horizontal partial products algorithm to find the total miles the common nighthawk migrated.

_____ × _____ = _____

4. Use the horizontal partial products algorithm to find the total miles the barn swallow migrated.

_____ × _____ = _____

Partial Products Multiplication

Review the example problem. Then complete the problems using the partial products algorithm.

Example

Solve **3** × **4,372**.

Step 1	Step 2	Step 3	Step 4
Set up the partial products algorithm with the expanded form of the 4-digit number on top. **4,000** + **300** + **70** + **2** × **3**	Multiply each place value by the 1-digit factor. **4,000** + **300** + **70** + **2** × **3** 12,000 + 900 + 210 + 6	Add the partial products. **4,000** + **300** + **70** + **2** × **3** 12,000 + 900 + 210 + 6 = 13,116	Complete the multiplication equation. **3** × **4,372** = 13,116

1. 5 × 7,283 = _____

2. 7 × 3,715 = _____

3. 2 × 1,602 = _____

4. 3 × 5,656 = _____

5. 4 × 5,910 = _____

6. 6 × 1,313 = _____

Lesson 15 Exit Ticket

Part 1: Solve each problem using an area model. Complete the equations.

1. Solve 2 × 2,739.

_____ _____ _____ _____

_____

2 × 2,739 = _____

2. Solve 4 × 8,176.

_____ _____ _____ _____

_____

4 × 8,176 = _____

Part 2: Solve each problem using the horizontal partial products algorithm. Complete the equations.

3. Solve 5 × 3,919.

5 × 3,919 = _____

4. Solve 8 × 4,204.

8 × 4,204 = _____

Extra Practice: Multiplication Math

Draw a line connecting each multiplication equation with the correct product. You may use either an area model or the horizontal or vertical partial products algorithms to solve, but you must use each method at least once.

$8 \times 4{,}527 =$	10,390
$4 \times 8{,}872 =$	14,768
$3 \times 1{,}429 =$	36,216
$2 \times 7{,}384 =$	63,161
$7 \times 9{,}023 =$	4,287
$5 \times 2{,}078 =$	35,488

Workout Routines

Read the problems. Use **place value disks** in an array to model the total number of exercises in each problem. Write a multiplication equation for each problem with its solution.

1. Julian did 40 jumping jacks a day for 13 days. How many jumping jacks did Julian do?

Equation: _____ = _____ Julian did _____ jumping jacks.

2. Marta did push-ups for 15 days, doing 50 push-ups each day. How many push-ups did Marta do?

Equation: _____ = _____ Marta did _____ push-ups.

3. Bo did 70 crunches each day for 19 days. How many crunches did Bo do?

Equation: _____ = _____ Bo did _____ crunches.

4. Steph did 60 lunges each day for 12 days. How many lunges did Steph do?

Equation: _____ = _____ Steph did _____ lunges.

5. Robbie walked 30 minutes each day for 16 days. How many minutes did he walk?

Equation: _____ = _____ Robbie walked _____ minutes.

Multiplication Exercises

A 4th-grade PE class completed the exercises in the table. Use **place value disks** in an array to model the total number of exercises completed. Answer each question by writing a multiplication equation with its solution.

Exercise	Number of Students Doing Exercises	Number of Exercises Completed Per Student
Sit-Ups	16	40
Push-Ups	13	30
Squats	15	60
Jumping Jacks	14	50

1. How many sit-ups did the class complete?

Equation: _____ = _____

2. How many push-ups did the class complete?

Equation: _____ = _____

3. How many squats did the class complete?

Equation: _____ = _____

4. How many jumping jacks did the class complete?

Equation: _____ = _____

Lesson 16 Exit Ticket

Use **place value disks** in an array to model multiplying the factors. Write a multiplication equation for each problem with its solution.

1. Mateo swims 40 laps a day for 17 days. How many laps does he swim?

Equation: _____ = _____

2. For 19 days, Laila runs for 30 minutes. How many minutes does Laila run?

Equation: _____ = _____

3. Erika completes a 60-minute dance routine once a day for 13 days. How many minutes does Erika dance?

Equation: _____ = _____

Extra Practice: Right or Wrong?

Using **place value disks**, create an array to represent each of the multiplication problems. Count by 10s to find the product for each problem. If the product listed is right, draw a star in the blank. If the problem is wrong, cross out the product and write the correct answer in the blank.

1. $15 \times 40 = 600$ _____

2. $22 \times 20 = 410$ _____

3. $12 \times 60 = 720$ _____

4. $16 \times 50 = 700$ _____

5. $14 \times 60 = 840$ _____

6. $17 \times 20 = 340$ _____

7. $12 \times 70 = 84$ _____

8. $15 \times 50 = 750$ _____

9. $19 \times 40 = 76$ _____

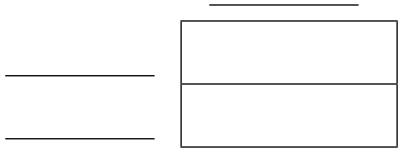
10. $15 \times 60 = 890$ _____

Writing Journals

The chart shows the number of journal pages and the number of words per page that each student wrote. Use the area model and partial products to solve each problem. Write an equation with a solution for each problem.

Student	Number of Pages	Number of Words per Page
Landon	20	37
Selina	40	74
Frankie	30	26

1. How many words did Landon write?

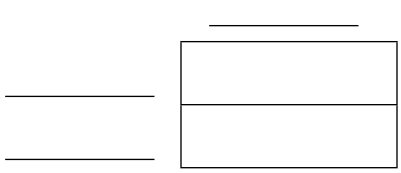


Add the partial products: _____ + _____ = _____

Write a multiplication equation: _____

Landon wrote _____ words.

2. How many words did Selina write?

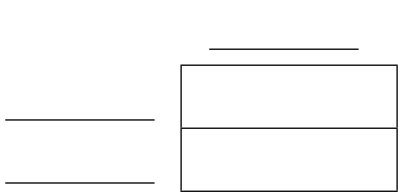


Add the partial products: _____ + _____ = _____

Multiplication equation: _____

Selina wrote _____ words.

3. How many words did Frankie write?



Add the partial products: _____ + _____ = _____

Multiplication equation: _____

Frankie wrote _____ words.

Area Model Multiplication

Review the example problem. Then calculate the products of each problem by completing an area model and finding partial products. Complete the partial products addition problems and the multiplication equations.

Example

Use an area model to find the product of **36** and **20**.

Step 1

Write the factors in expanded form.

36 = 30 + 6

20 = 20 + 0

Since **20** has no ones, we can write it as ***20*** in expanded form.

Step 2

Use the expanded form to label the side lengths of an area model. Multiply for each place value in the expanded form to find the partial products.

	20
30	600
6	120

Step 3

Fill in the addition problem to find the sum of the partial products.

Partial products equation: 600 + 120 = 720

Step 4

Fill in an equation for the problem with the sum of the partial products as the solution.

Multiplication equation: **36** × **20** = 720

1. Find the product of 29 and 60.

Partial products equation: _____

Multiplication equation: _____

_____	
_____	

2. Find the product of 62 and 90.

Partial products equation: _____

Multiplication equation: _____

_____	
_____	

3. Find the product of 47 and 40.

Partial products equation: _____

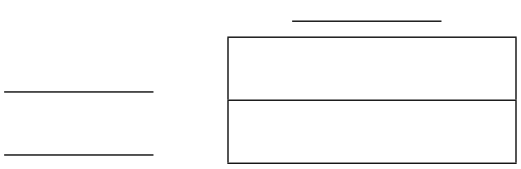
Multiplication equation: _____

_____	
_____	

Lesson 17 Exit Ticket

Use an area model and partial products to solve each multiplication problem. Write an addition equation to find the sum of the partial products. Write a multiplication equation with the solution to each problem.

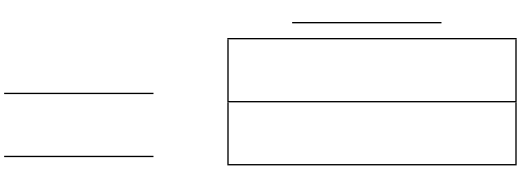
1. Find the product of 52 and 20.



Partial products equation: _____

Multiplication equation: _____

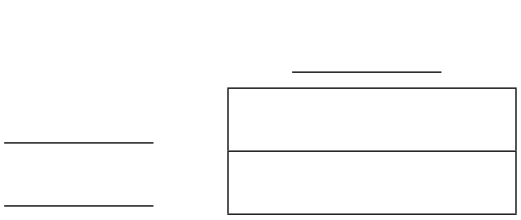
2. Find the product of 89 and 40.



Partial products equation: _____

Multiplication equation: _____

3. There were 12 students in a writing club, and they challenged themselves to write 90 pages each. How many total pages did the students write?



Partial products equation: _____

Multiplication equation: _____

The students wrote _____ total pages.

Extra Practice: Multiplication Fill-Ins

Complete the paragraphs by choosing a factor to fill each blank. Then use an area model to solve each problem. Write an equation that represents each problem and its solution.

1. Jonathan and Kyle are filling gumball machines at the arcade. There is a total of

_____ machines and they must fill each of them with _____
(2-digit #) (2-digit multiple of 10)

gumballs. How many gumballs do they need to fill all of the machines?

Equation: _____

2. Maura and Kate are making _____ batches of chocolate chip cookies.
(2-digit #)

They need to put _____ chocolate chips in each batch. How many
(2-digit multiple of 10)

chocolate chips do they need?

Equation: _____

3. Susan and Chris are making _____ gift bags for a party. They decorate each bag
(2-digit #)

with _____ stickers. How many stickers do they use?
(2-digit multiple of 10)

Equation: _____

The Big Games

Using **base-10 blocks,** build an area model to find the total number of people in the rows of seats at each football game. Write an equation to show the addition of partial products. Write a multiplication equation to show each problem with its solution.

1.

Game 1	
42 stadium rows filled	17 people sat in each row

Partial products equation: _____

Multiplication equation: _____

2.

Game 2	
37 stadium rows filled	21 people sat in each row

Partial products equation: _____

Multiplication equation: _____

3.

Game 3	
29 stadium rows filled	14 people sat in each row

Partial products equation: _____

Multiplication equation: _____

Game Time Snacks

Using **base-10 blocks**, build an area model for each problem to find how many of each snack was sold at a football game. Write an equation to show the addition of partial products. Write a multiplication equation to show each problem with its solution.

1. The snack shack sold 25 bags of chicken fingers with 37 chicken fingers in each bag. How many chicken fingers did it sell?

Partial products equation: _____

Multiplication equation: _____

2. The snack shack sold 31 boxes of fries with 84 fries in each box. How many fries did it sell?

Partial products equation: _____

Multiplication equation: _____

3. The snack shack sold 72 bags of hot dogs with 12 hot dogs in each bag. How many hot dogs did it sell?

Partial products equation: _____

Multiplication equation: _____

Lesson 18 Exit Ticket

Using **base-10 blocks,** build an area model to find the product of each pair of factors. Write an equation to show the addition of partial products. Write a multiplication equation to show each problem with its solution.

1. Factors: 23 and 43

Partial products equation: _____

Multiplication equation: _____

2. Factors: 33 and 42

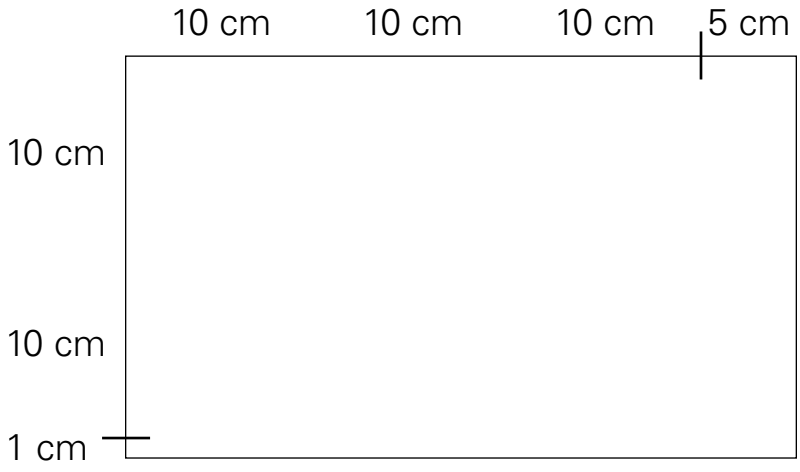
Partial products equation: _____

Multiplication equation: _____

Extra Practice: Area Model Multiplication

Using **base-10 blocks**, fill in the area model indicated by the base-10 frame shown. Then write the partial products addition equation and the multiplication equation to match.

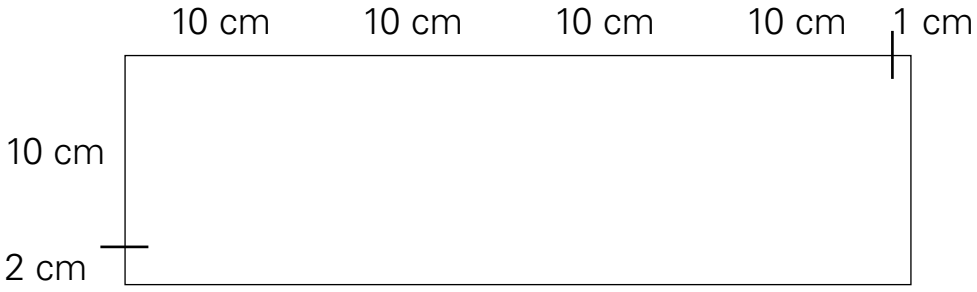
1.



Partial products equation: _____

Multiplication equation: _____

2.



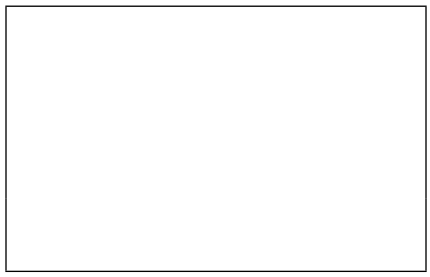
Partial products equation: _____

Multiplication equation: _____

Robotics Fundraiser

Draw an area model for each problem. Write a partial products addition equation. Write a multiplication equation to show the problem and its solution.

1. Pizza Pride is making 48 pizzas. Each pizza has 24 slices of tomato. How many total slices of tomato are on the pizzas?



Partial products addition equation:

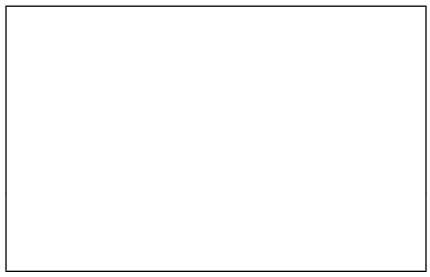
_____

Multiplication equation:

_____

There are _____ total slices of tomato on the pizzas.

2. At the fundraiser, there are 17 volunteers. Iola gives each volunteer 12 cookies to thank them. How many total cookies does Iola give the volunteers?



Partial products addition equation:

_____

Multiplication equation:

_____

Iola gives the volunteers _____ cookies.

Area Model Multiplication

Review the example problem. Then draw an **area model** to find partial products and complete each equation.

Example

Solve the equation using an area model and finding partial products. **31** × **29** = ?

Step 1

Build an area model by writing each factor in its expanded form to create four smaller rectangles.

	20	**9**
30		
1		

Step 2

Find the partial products for each part of the model by multiplying each place value by each of the other place values.

	20	**9**
30	600	270
1	20	9

Step 3

Complete the partial products addition equation.

600 + 270 + 20 + 9 = 899

Step 4

Complete the multiplication equation with the solution.

Multiplication equation:
31 × **29** = 899

1. 87 × 64 = _____

Partial products addition equation: _____

2. 26 × 25 = _____

Partial products addition equation: _____

3. 76 × 59 = _____

Partial products addition equation: _____

4. 48 × 18 = _____

Partial products addition equation: _____

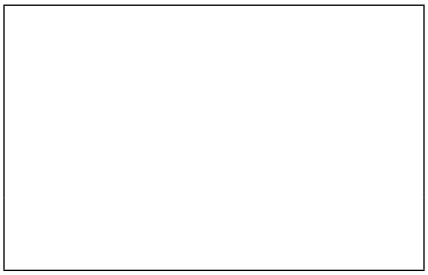
5. 67 × 51 = _____

Partial products addition equation: _____

Lesson 19 Exit Ticket

Draw an area model. Then write a partial products addition equation to find the total product. Write a multiplication equation to show the problem and its solution.

1. Multiply 92 and 31.



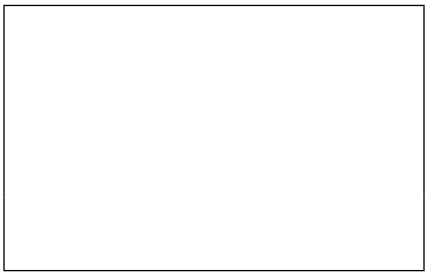
Partial products addition equation:

_____

Multiplication equation:

_____

2. A rollerbot has 56 sets of 44 tiny wheels. How many wheels does it have?



Partial products addition equation:

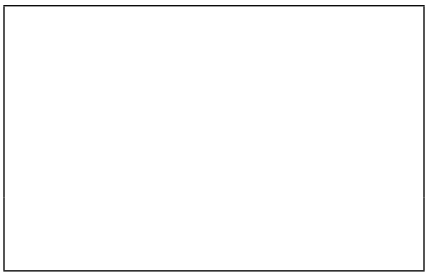
_____

Multiplication equation:

_____

The rollerbot has _____ wheels.

3. There are 32 robot kits with 86 pieces in each. How many pieces are there?



Partial products addition equation:

_____

Multiplication equation:

_____

There are _____ pieces.

Extra Practice: Multi-Color

Color each part of the rectangles a different color. Then fill in the area model by writing each factor in expanded form. Finally, write and solve each multiplication equation with its solution. Show your work.

1. _____ × _____ = _____

	_____	_____
_____	50 × 40	50 × 3
_____	3 × 40	3 × 3

2. _____ × _____ = _____

	_____	_____
_____	30 × 20	30 × 7
_____	6 × 20	6 × 7

Class Trip

Using the distributive property of multiplication, find how many fish were in each tank at the aquarium when the class visited. After you solve each problem, check your work by drawing an **area model**.

1. There are 12 tanks that each hold 37 guppies. How many guppies are there?

There are _____ guppies.

2. There are 31 tanks that each hold 24 neon tetras. How many tetras are there?

There are _____ neon tetras.

3. There are 29 tanks that each hold 18 swordtails. How many swordtails are there?

There are _____ swordtails.

Distributive Property Practice

Review the example problem. Use the distributive property to solve the multiplication problems.

Example

39 × **34** = _____.

Step 1	Step 2	Step 3	Step 4
Write the factors in expanded form. **39** = **30** + **9** **34** = **30** + **4**	Write the second factor in expanded form. Write an equation showing how to multiple the tens and ones of the first factor by the expanded form of the second number. **39** × **34** = **39** × (**30** + **4**) = **30** × (**30** + **4**) + **9** × (**30** + **4**) =	Distribute to find the partial product equations. **30** × (**30** + **4**) + **9** × (**30** + **4**) = (**30** × **30**) + (**30** × **4**) + (**9** × **30**) + (**9** × **4**) = 900 + 120 + 270 + 36	Add the partial products and write the final product to complete the original equation. 900 120 270 + 36 1,326

1. 94 × 27 =

2. 56 × 28 =

3. 45 × 63 =

4. 52 × 73 =

Lesson 20 Exit Ticket

Solve the following multiplication problems by using the distributive property. Check your answer by creating an area model.

1. $33 \times 34 =$ _____

2. $21 \times 35 =$ _____

3. $42 \times 29 =$ _____

Extra Practice: What's the Problem?

Part 1: The expressions represent a 2-digit by 2-digit multiplication problem. Write the multiplication equation represented.

1. $30 \times (50 + 8) + 9 \times (50 + 8)$ _____ × _____ = _____

2. $40 \times (60 + 2) + 3 \times (60 + 2)$ _____ × _____ = _____

Part 2: Solve the problems using the distributive property of multiplication. Check your work with an area model on a separate page.

3. $37 \times 94 =$ _____

4. $23 \times 68 =$ _____

5. $40 \times 14 =$ _____

6. $98 \times 35 =$ _____

Stacking Up

Part 1: Use the vertical partial products algorithm to solve each problem.

1. 48 × 36 = _____

2. 82 × 77 = _____

3. 53 × 62 = _____

4. 76 × 84 = _____

Part 2: Check your work with an area model drawing, **base-10 blocks**, or **place value disks**.

Partial Products Algorithm

Review the example problem. Then use the vertical partial products algorithm, or some other method that you choose, to solve each problem. You may check solutions using a second strategy.

Example

Solve **57** × **34** using the vertical partial products algorithm.

Step 1

Stack one factor above the other. Include a multiplication sign and a line at the bottom.

57
× **34**

Step 2

Write the expanded forms of the factors to one side.

57 = **50** + **7**

34 = **30** + **4**

Step 3

To find partial products, multiply each place value in one factor by each place value in the other factor.

57
× **34**

50 × **34**
- **50** × **30** = 1,500
- **50** × **4** = 200

7 × **34**
- **7** × **30** = 210
- **7** × **4** = 28

Step 4

Add the partial products under the stacked problem.

57
× **34**
1,500
200
210
+ 28
1,938

57 × **34** = 1,938

1. 26 × 82 = _____

2. 19 × 27 = _____

3. 49 × 43 = _____

4. 21 × 52 = _____

5. 94 × 95 = _____

6. 17 × 77 = _____

Lesson 21 Exit Ticket

Use the vertical partial products algorithm to solve each problem. Then check your work using **another strategy or tool.**

1. $24 \times 13 =$ _____

2. $87 \times 53 =$ _____

Extra Practice: True or False

Solve each multiplication problem below and write *true* or *false* on the line.You may use any multiplication method or strategy to solve each problem.

1. $78 \times 51 = 3{,}978$ _____

2. $47 \times 19 = 883$ _____

3. $40 \times 11 = 450$ _____

4. $82 \times 15 = 1{,}230$ _____

5. $66 \times 28 = 848$ _____

Assessment

Unit 3 Assessment

1. Solve each problem using a number string that starts with a basic multiplication fact.

a. $4 \times 300 =$ _____

_____

_____

_____

b. $6 \times 700 =$ _____

_____

_____

_____

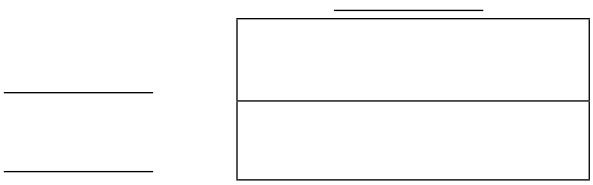
2. Solve the multiplication problem by drawing an area model. Then complete the equation.

$7 \times 491 =$ _____

3. Multiply using the horizontal partial products algorithm.

$8 \times 1{,}758 =$ _____

4. A football tournament brought together 22 teams with 40 players on each team. How many players were at the tournament? Complete the area model and fill in the equations to show your answer.



Partial products equation: _____

Multiplication equation: _____

There were _____ players at the tournament.

5. Solve the multiplication problem by drawing an area model. Then complete the equation.

$47 \times 92 =$ _____

6. Solve the problem by using the distributive property. Complete the equation.

$37 \times 55 =$ _____

7. Use the vertical partial products algorithm to solve the problem.

$82 \times 45 =$ _____

8. Tim sold 15 boxes of chocolates that each had 72 chocolates inside. How many chocolates did Tim sell?

Use the vertical partial products algorithm to solve.

Write a multiplication equation: _____

Tim sold _____ chocolates.

9. Solve the problem using an area model, the distributive property of multiplication, or the vertical partial products algorithm.

$95 \times 26 =$_____

10. Solve the problem using an area model, the distributive property of multiplication, or the vertical partial products algorithm.

At an orchard, there were 38 rows of fruit trees with 80 trees in each row. How many total trees were there?

Write an equation: _____

There were _____ total trees.

Unit 3 Cumulative Review

1. Multiply.

$29 \times 63 =$ _____

2. Write >, <, or = to compare.

$\frac{3}{4}$ ◯ $\frac{1}{2}$

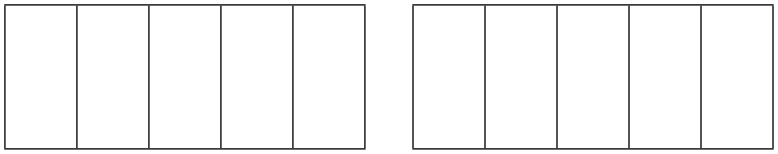
3. Multiply.

$7 \times 4{,}227 =$ _____

4. Find an equivalent fraction.

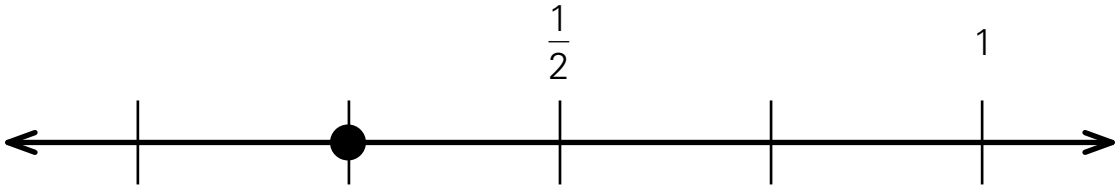
$\frac{2}{4} =$ _____

5. Two wholes are shown below. Label each part with a unit fraction. What whole number fraction describes the model?



_____

6. What fraction does the number line show? _____



7. Complete the pattern and write the rule.

21 18 15 12 ☐ 6 ☐ 0

Rule: _____

8. Round 345,728 to the nearest hundred. _____

9. Multiply.

$7 \times 30 =$ _____

10. Clarissa has 3 wallets. In each wallet she has $20. How many total dollars does Clarissa have?

Clarissa has _____ dollars.

11. Franco is filling buckets with water balloons. There are 7 buckets, and he puts 12 balloons in each bucket. How many total water balloons are there? Use a tape diagram to write an equation and then solve.

There are _____ water balloons.

12. Add.

$$\begin{array}{r} 732,471 \\ +\ 190,244 \\ \hline \end{array}$$

13. Add.

$$\begin{array}{r} 271 \\ +\ 653 \\ \hline \end{array}$$

14. Jan wants to make chocolate chip cookies. She makes 12 cookies in each batch. She makes 4 batches. Then she divides the cookies into 2 cookie tins. Each tin has 24 cookies.

Draw set models to represent the problem.

15. Model 374,192 with place value drawings.

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones