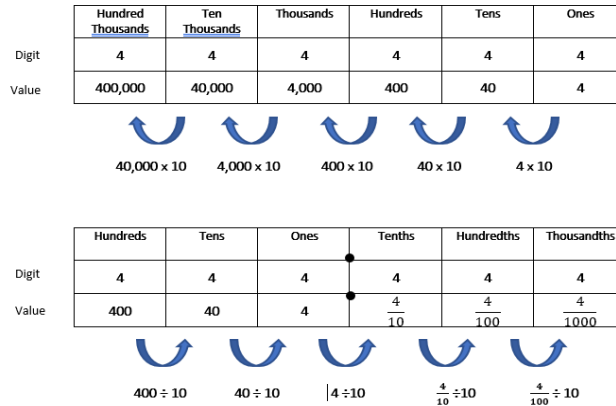


Extending Place Value

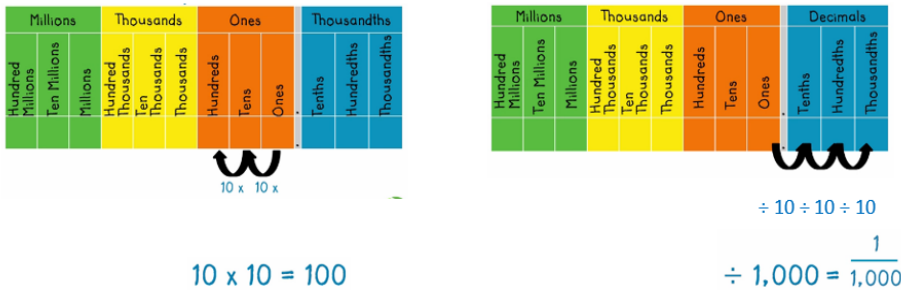
Overarching Student Learning Goals

In this unit, your child will work to build an understanding of the following:

- Students can explain the relationship between place values directly to the left or right.



- Students can explain and justify the relationship between any place values.



Place value increases ten times with each shift to the left and decreases ten times with each shift to the right.

Resources/Tasks to support your child at home.

- LearnZillion: Understanding the value of a Digit Using a Place Value Chart <http://bit.ly/2qlyUH7>
- Compare the value of the 2 in the following numbers:
2,345 5,278
 - How does the value of the 2 in the first number compare to the value of the 2 in the second number?
 - How does the value of the 2 in the second number compare to the value of the 2 in the first number?
- How much larger is 600 than 60? How much smaller is 5,000 than 50,000? Explain your thinking.
- LearnZillion: Recognize Place Value Relationships by Multiplying and Dividing by Ten <http://bit.ly/2CUphHa>
- Look at the digit in the hundreds place. Create a new number where the value of the digit in the ten thousands place is 100 times the value of this digit.

274,953 New Number: _____
- Read the number 576.37. Compare the 2 sevens. Explain what you notice.
- Agree or Disagree? 80 is ten times larger than 0.8? Explain your reasoning with words, pictures, and/or symbols.

Grade 5

- Students can identify and explain patterns in multiplying and dividing decimals by powers of 10.

powers of 10

$$10 = 10 \times 1$$

$$100 = 10 \times 10$$

$$1,000 = 10 \times 10 \times 10$$

$$10,000 = 10 \times 10 \times 10 \times 10$$

Thousands Period			Ones Period		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
			3	2	0
		3	2	0	0
	3	2	0	0	0
3	2	0	0	0	0

Do you notice any patterns in the factors and the products?

$$32 \times 1$$

$$32 \times 10$$

$$32 \times 100$$

$$32 \times 1,000$$

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
	3	2			
		3	2		
		0	3	2	
		0	0	3	2

Do you notice any patterns in the dividends and the quotients?

$$32 \div 1$$

$$32 \div 10$$

$$32 \div 100$$

$$32 \div 1000$$

- LearnZillion: Explain Patterns in Zeros When Multiplying by a Power of Ten <https://goo.gl/9Svj4m>
- Khan Academy: Dividing Decimals by a Power of 10 <https://goo.gl/CYMbsw>
- Complete the equations.

$0.02 \times \underline{\hspace{1cm}} = 0.2$	$\underline{\hspace{1cm}} \times 0.008 = 0.8$
$0.07 \times 1,000 = \underline{\hspace{1cm}}$	$100 \times 0.09 = \underline{\hspace{1cm}}$
- Write the quotient.

$0.05 \div 10 = \underline{\hspace{1cm}}$	$8 \div 100 = \underline{\hspace{1cm}}$
$0.3 \div 100 = \underline{\hspace{1cm}}$	$4 \div 1000 = \underline{\hspace{1cm}}$

- Students can express powers of 10 using exponents.

$$10^1 = 1 \times \underline{10}$$

$$10^2 = \underline{10} \times \underline{10}$$

$$10^3 = \underline{10} \times \underline{10} \times \underline{10}$$

$$10^4 = \underline{10} \times \underline{10} \times \underline{10} \times \underline{10}$$

$$10^5 = \underline{10} \times \underline{10} \times \underline{10} \times \underline{10} \times \underline{10}$$

The value of the exponent tells us how many times ten is multiplied by itself.

$$10^1 = 10$$

$$10^2 = 100$$

$$10^3 = 1,000$$

$$10^4 = 10,000$$

$$10^5 = 100,000$$

The number of zeros in the power of ten is equal to the value of the exponent.

- Khan Academy: Patterns in Powers of 10 <https://goo.gl/kgG7uX>
- LearnZillion: Represent Powers of 10 Using Exponents <https://goo.gl/d9LELy>
- Complete the equations showing powers of ten using exponents.
 - $6 \times 100 = 6 \times 10^2 = \underline{\hspace{1cm}}$
 - $8 \times 1,000 = 8 \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$
 - $4 \times \underline{\hspace{1cm}} = 4 \times 10^1 = \underline{\hspace{1cm}}$
 - $3 \times 10,000 = 3 \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$