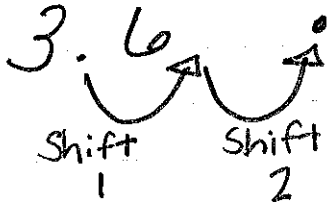
Powers of 10

Multiplication	Power of 10
10×1	10^1
10×10	10^2
$10 \times 10 \times 10$	10^3
$10 \times 10 \times 10 \times 10$	10^4

* When you multiply by 10, you move one place value to the right (your decimal shifts to the right the same number of zeros you have)

ex. 3.6×10^2

$3.6 \times 10 \times 10$ (2 zeros)



$= 360.$

* When you divide you do the opposite

5.NBT.2 Powers of 10

I can explain patterns in the number of zeros in a product and the acement of a decimal point, when multiplying or dividing a number by a wer of 10. I can use whole-number exponents to denote powers of 10.

$5 \times 1 = 5$

$5 \times 10 = 50$

$5 \times 100 = 500$

$5 \times 1000 = 5{,}000$

What patterns do you notice?
One zero is added each time. The number of zeros in the factor is the same number of zeros in the product

$5 \div 1 = 5$

$5 \div 10 = 0.5$

$5 \div 100 = 0.05$

$5 \div 1000 = 0.005$

What patterns do you notice?
The place value of the 5 changes depending on the number of zeros in the factors.

$5 \times 10^1 = 50$

$5 \times 10^2 = 500$

$5 \times 10^3 = 5{,}000$

$5 \times 10^4 = 50{,}000$

What patterns do you notice?
The number of zeros matches the exponent of power of 10.

$23 \times 100 =$

2,300

$15 \div 1000 =$

0.015

$12 \times 10^{2} =$

1,200

$316 \times 10 =$

3,160

$26 \div 100 =$

0.26

$19 \times 10^{3} =$

19,000

$9 \times 10^{4} =$

90,000

$83 \times 10,000 =$

830,000