

Powers of Ten (4-5)

decimal

whole #

0.001 0.01 0.1 10 100 1,000...

Multiplying by powers of ten...

Whole Numbers: Move the decimal point one place to the **right** for each **zero**.

$$7,287 \cdot 100 = 728.7$$

Decimals: Move the decimal point one place to the **left** for each **decimal place**.

$$7,287 \cdot 0.01 = 0.07287$$

Example 1: Multiply each decimal using mental math.

| I Do ³ | You Do |
|---------------------------|---------------|
| 0.0062 · 1,000 | 127,854 · 100 |
| 0.62 | 12,785.4 |

| I Do ^{left} | You Do ⁴ |
|----------------------|---------------------|
| 651 · 0.01 | 58 · 0.0001 |
| 6.51 | 0.0058 |
| 6.51 | 0.0058 |

Dividing by powers of ten...

Whole Numbers: Move the decimal point one place to the left for each zero.

658.

$$658 \div 100 = 6.58$$

Decimals: Move the decimal point one place to the right for each decimal place.

658.00

$$658 \div 0.01 = 65,800$$

Example 3: Divide each decimal using mental math.

| I Do <i>left</i> | You Do <i>left</i> |
|-------------------------------|-------------------------------|
| $45.2 \div 100$ 0.452 | $984 \div 10,000$ 0.0984 |
| I Do <i>right</i> | You Do <i>right</i> |
| $45.2 \div 0.001$ $45,200$ | $592 \div 0.1$ 59.2 |