Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Powers of 10 Resource Page Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| NBT.2: Powers of 10**Explain** patterns in the number of zeros of the product when multiplying a number by powers of 10.**Explain** patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. |
|  | 100 = 1101 = 10102  = 100103 = 1,000104 = 10,000 |
| Strategies: Multiplying Numbers by Powers of 10:  1. “B” for bigger 2. Decimal moves to the right 3. Exponent tells how many places the decimal movesBB5 x 102 = 50 2.3 x 102 = 230.  BB8 x 103 = 800 47.71 x 103 = 47,710. | Multiplying Numbers by Powers of 10:36 × 10 = 360 36 × 101 = 36036 × 10 × 10 = 3,600 36 × 102 = 3,60036 × 10 × 10 × 10 = 36,000 36 × 103 = 36,00036 × 10 × 10 × 10 × 10 = 360,000 36 × 104 = 360,000 |
| Explanation Example:I noticed that every time I multiplied by 10, I placed a zero to the end of the number. That makes sense because each digit’s value became 10 times larger. To make a digit 10 times larger, I have to *shift* it one place value to the left. |
| Strategies: Dividing Numbers by Powers of 10:  1. “S” – quotient is “smaller” 2. Decimal moves to the left 3. Exponent tells how many places the decimal movesSS45.3 ÷ 103 = .0453 984.2 ÷ 102 = 9.842  | Explanation Example:When I multiplied 36 by 10, the 30 became 300. The 6 became 60 or the 36 became 360. So I had to place a zero at the end to have the 3 tens represent 3 one-hundreds (instead of 3 tens) and the 6 ones represents 6 tens (instead of 6 ones). |