Name _____ Date _____

1. Write the following in exponential form (e.g., $100 = 10^2$).

   a. 10,000 = _____

   b. 1,000 = _____

   c. 10 × 10 = _____

   d. 100 × 100 = _____

   e. 1,000,000 = _____

   f. 1,000 × 1,000 = _____

2. Write the following in standard form (e.g., $5 \times 10^2 = 500$).

   a. 9×10^3 = _____

   b. 39×10^4 = _____

   c. $7{,}200 \div 10^2$ = _____

   d. $7{,}200{,}000 \div 10^3$ = _____

   e. 4.025×10^3 = _____

   f. 40.25×10^4 = _____

   g. $72.5 \div 10^2$ = _____

   h. $7.2 \div 10^2$ = _____

3. Think about the answers to Problem 2(a–d). Explain the pattern used to find an answer when you multiply or divide a whole number by a power of 10.

4. Think about the answers to Problem 2(e–h). Explain the pattern used to place the decimal in the answer when you multiply or divide a decimal by a power of 10.

5. Complete the patterns.

   a. 0.03 0.3 _____ 30 _____ _____

   b. 6,500,000 65,000 _____ 6.5 _____

   c. _____ 9,430 _____ 94.3 9.43 _____

   d. 999 9990 99,900 _____ _____ _____

   e. _____ 7.5 750 75,000 _____ _____

   f. Explain how you found the unknown numbers in set (b). Be sure to include your reasoning about the number of zeros in your numbers and how you placed the decimal.

   g. Explain how you found the unknown numbers in set (d). Be sure to include your reasoning about the number of zeros in your numbers and how you placed the decimal.

6. Shaunnie and Marlon missed the lesson on exponents. Shaunnie incorrectly wrote $10^5 = 50$ on her paper, and Marlon incorrectly wrote $2.5 \times 10^2 = 2.500$ on his paper.

   a. What mistake has Shaunnie made? Explain using words, numbers, or pictures why her thinking is incorrect and what she needs to do to correct her answer.

   b. What mistake has Marlon made? Explain using words, numbers, or pictures why his thinking is incorrect and what he needs to do to correct his answer.