Applications Connections Extensions

ACE

Applications

Predict the ones digit for the standard form of the number.

1. 7^{100} **2.** 6^{200} **3.** 17^{100} **4.** 31^{10} **5.** 12^{100}

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For: Pattern Iterator
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For Exercises 6 and 7, find the value of a that makes the number sentence true.

6. $a^7 = 823{,}543$ **7.** $a^6 = 1{,}771{,}561$

8. Explain how you can use your calculator to find the ones digit of the standard form of 3^{30}.

9. Multiple Choice In the powers table you completed in Problem 5.1, look for patterns in the ones digit of square numbers. Which number is *not* a square number? Explain.

A. 289 **B.** 784 **C.** 1,392 **D.** 10,000

Tell how many zeros are in the standard form of the number.

10. 10^{10} **11.** 10^{50} **12.** 10^{100}

Find the least value of x that will make the statement true.

13. $9^6 < 10^x$ **14.** $3^{14} < 10^x$

For Exercises 15–17, identify the greater number in each pair.

15. 6^{10} or 7^{10} **16.** 8^{10} or 10^8 **17.** 6^9 or 9^6

18. Multiple Choice Which expression is equivalent to $2^9 \times 2^{10}$?

F. 2^{90} **G.** 2^{19} **H.** 4^{19} **J.** 2^{18}

Use the properties of exponents to write each expression as a single power. Check your answers.

19. $5^6 \times 8^6$ **20.** $(7^5)^3$ **21.** $\frac{8^{15}}{8^{10}}$