Unit 3 Review

Exponents and Scientific Notation

Name_____
Date_____
Period_____

Show your work. Circle your final answer.

HOW TO USE THIS. This review covers every learning target from the unit — more than the assessment does. Work it one section at a time. If you miss two or more in a section, that section is where to spend your study time. The reference sheet has everything you need for each section.

Product, Quotient and Power Laws

Lessons 3.01–3.03 · 8 questions

1. Write as a single power: $6^4 \cdot 6^5$

2. Write as a single power: $\frac{3^8}{3^2}$

3. Write as a single power: $(5^2)^4$

4. Find the value: $\left(\frac{3}{4}\right)^3$

5. Find the value: $(2 \cdot 5)^3$ and $2 \cdot 5^3$. Are they equal?

6. Find the value: $9^0 + 4^0$

7. Find the value of n : $\frac{7^n}{7^2} = 7^3$

8. Which expression is equivalent to $4^3 \cdot 4^2$?

- ○ A. 4^5
- ○ B. 16^5
- ○ C. 4^6
- ○ D. 16^6

Zero and Negative Exponents

Lessons 3.04–3.05 · 7 questions

9. Rewrite with a positive exponent: 7^{-3}

10. Rewrite with a positive exponent: $\frac{1}{(-5)^{-4}}$

11. Find the value: 3^{-4}

12. Find the value: $(-4)^{-3}$

13. Find the value: $\left(\frac{2}{5}\right)^{-2}$

14. Find the value: $\frac{6^0}{6^{-2}}$

15. Find the value of n : $2^n = \frac{1}{64}$

Evaluating and Equivalent Expressions

Lessons 3.06–3.07 · 5 questions

16. Find the value: $(2^3)^2 \cdot 2^{-4}$

17. Find the value: $\frac{5^{-2} \cdot 5^6}{5^3}$

18. Every part below is about the expression $4^{-2} \cdot 4^5$.

a. Write it as a single power.

b. Find its value.

c. Is it equivalent to $\frac{4^5}{4^2}$? Explain.

d. Find n so that $4^{-2} \cdot 4^n = 1$.

19. Select ALL of the expressions equivalent to 3^{-2} .

- ☐ A. -6
- ☐ B. -9
- ☐ C. $3^2 \cdot 3^{-4}$
- ☐ D. $\frac{3^4}{3^6}$
- ☐ E. $\frac{1}{9}$
- ☐ F. $\left(\frac{1}{3}\right)^2$

20. Aryella says that 10^0 and 134^0 are equal. Is she right? Explain.

21. Write as a single monomial: $x^7 \cdot x^5$

22. Write as a single monomial: $(2m^4)^3$

23. Write as a single monomial: $(3a^2b)(5ab^4)$

24. Write as a single monomial: $\frac{18x^6y^3}{6x^2y^3}$

25. Rewrite with positive exponents only: $4x^{-3}$

26. Rewrite with positive exponents only: $(2y^{-2})^3$

27. Rewrite with positive exponents only: $\frac{a^3}{a^8}$

28. Which expression is equivalent to $(5x^2)^3$?

- ○ A. $5x^6$
- ○ B. $125x^6$
- ○ C. $125x^5$
- ○ D. $15x^6$

Large Numbers in Scientific Notation

Lesson 3.08 · 5 questions

29. Write 7,400,000 in scientific notation.

30. Write 205,000,000,000 in scientific notation.

31. Write 8.3×10^5 in standard form.

32. How many times larger is 9×10^7 than 3×10^4 ?

33. Dana writes 45,000 as 45×10^3 . Is her expression equal to 45,000? Is it scientific notation? Explain.

34. Write 10^{-5} as a decimal.

35. Write 0.00093 in scientific notation.

36. Write 6.1×10^{-7} in standard form.

37. Which is greater, 4.8×10^{-3} or 9.1×10^{-4} ? Explain.

38. How many times larger is 8.4×10^{-2} than 2.1×10^{-6} ?

39. A computer displays a number as 2.7E−5. Write it in scientific notation and in standard form.