LESSON MASTER 8-7 B

Questions on SPUR Objectives

Skills Objective A: Evaluate quotients of integer powers of real numbers.

In 1–8, write as a single power.

1. $\frac{3^6}{3^4}$ 3^2
2. $\frac{6^5}{6^9}$ $\frac{1}{6^4}$
3. $\frac{8^{-7}}{8^4}$ $\frac{1}{8^{11}}$
4. $\frac{12^6}{12^{-8}}$ 12^{14}
5. $\frac{5^{-8}}{5^{-2}}$ $\frac{1}{5^6}$
6. $\frac{4^6}{4^6}$ 4^0
7. $\frac{7^5 \cdot 7^2}{7^3}$ 7^4
8. $\frac{2^8 \cdot 2^{-4}}{2^7}$ $\frac{1}{2^3}$

16. $\frac{6.6 \cdot 10^7}{1.1 \cdot 10^{12}}$ $\frac{6}{10^5} \rightarrow .00006$
18. $\frac{4.06 \cdot 10^9}{2 \cdot 10^2}$ $2.03 \cdot 10^7 \rightarrow 20{,}300{,}000$

19. Simplify $\frac{x^5}{x^{12}}$. Give your answer

   a. as a fraction. $\frac{1}{x^7}$

   b. using a negative exponent. x^{-7}

In 20–31, simplify. Write your answers without negative exponents.

20. $\frac{a^7}{a^2}$ a^5
21. $\frac{x^5}{x^8}$ $\frac{1}{x^3}$
22. $\frac{u^{-6}}{u^{-2}}$ $\frac{1}{u^4}$
23. $\frac{a^4b^8}{ab^2}$ a^3b^6
24. $\frac{m^6n^8}{m^2n^{10}}$ $\frac{m^4}{n^2}$
25. $\frac{15a^7}{3a^2}$ $5a^5$
26. $\frac{16d^4e^{11}}{20d^6e^4}$ $\frac{4e^7}{5d^2}$
27. $\frac{-18cb^8}{6c^8b^2}$ $\frac{-3b^6}{c^7}$
28. $\frac{9u^6}{4u^{-2}v^5}$ $\frac{9u^8}{4v^5}$
29. $\frac{(y-5)^3}{(y-5)^4}$ $\frac{1}{y-5}$
30. $\frac{(3v)^4}{(3v)^8}$ $\frac{1}{81v^4}$
31. $\frac{14c^3}{3x} \cdot \frac{6x^3}{c^{12}}$ $\frac{28x^2}{c^9}$

Properties Objective E: Identify the Quotient of Powers Property and use it to explain operations with powers.

32. Write an algebraic fraction that the Quotient of Powers Property can be used to simplify to b^5. $\frac{b^8}{b^3}$
33. Explain how to use the Quotient of Powers Property to find the value of x in $\frac{6^x}{6^3} = 6^8$.

$x-3=8$, Therefore $x=11$.

Uses Objective H: Use and simplify expressions with powers in everyday situations.

34. Pluto's average distance from the sun is $3.66 \cdot 10^9$ miles. Earth is about $9.3 \cdot 10^7$ miles from the sun. Pluto's distance from the sun is how many times Earth's distance?

≈ 39.35 times farther