

6.1 Notetaking with Vocabulary (continued)

6.1 Day 1
Extra Practice

Extra Practice

In Exercises 1–8, evaluate the expression.

1. 3^0

$\boxed{1}$

2. $(-2)^0$

$\boxed{1}$

3. 3^{-4}

$\frac{1}{3^4} = \boxed{\frac{1}{81}}$

4. $(-4)^{-3}$

$\frac{1}{(-4)^3} = \boxed{\frac{1}{-64}}$

5. $\frac{2^{-3}}{5^0} = \frac{2^{-3}}{1}$
 $= \frac{1}{2^3} = \boxed{\frac{1}{8}}$

6. $\frac{-3^{-2}}{2^{-3}} = \frac{-2^3}{+3^2}$
 $= \boxed{\frac{8}{-9}}$

7. $\frac{4^{-1}}{-7^0} = \frac{4^{-1}}{-1}$
 $= \frac{1}{-1(4)} = \boxed{\frac{1}{-4}}$

8. $\frac{3^{-1}}{(-5)^0} = \frac{3^{-1}}{1}$
 $= \boxed{\frac{1}{3}}$

In Exercises 9–23, simplify the expression. Write your answer using only positive exponents.

9. $z^0 = \boxed{1}$

10. $a^{-8} = \boxed{\frac{1}{a^8}}$

11. $6a^0b^{-2} = \boxed{\frac{6}{b^2}}$

12. $14m^{-4}n^0$

$\boxed{\frac{14}{m^4}}$

13. $\frac{3^{-2}r^{-3}}{s^0} = \boxed{\frac{1}{9r^3}}$

14. $\frac{2^3a^{-3}}{8^{-1}b^{-5}c^0} = \frac{8 \cdot 8b^5}{a^3}$
 $= \boxed{\frac{64b^5}{a^3}}$

15. $\frac{3^5}{3^3} = \frac{243}{27} = \boxed{9}$

16. $\frac{(-2)^7}{(-2)^5} = (-2)^{7-5}$
 $= (-2)^2 = \boxed{4}$

17. $(-5)^3 \cdot (-5)^3 = (-5)^{3+3}$
 $= (-5)^6 = \boxed{15,625}$

18. $(q^5)^3 = q^{5 \cdot 3}$
 $= \boxed{q^{15}}$

19. $(a^{-4})^2 = a^{-4 \cdot 2} = a^{-8}$
 $= \boxed{\frac{1}{a^8}}$

20. $\frac{c^4 \cdot c^3}{c^6} = \frac{c^{4+3}}{c^6} = \frac{c^7}{c^6} = c^{7-6} = \boxed{c}$

21. $(-4d)^4 = (-4)^4(d)^4$
 $= \boxed{256d^4}$

22. $(-3f)^{-3} = (-3)^{-3}(f)^{-3}$
 $= \left(\frac{1}{-27}\right)(f^{-3}) = \boxed{\frac{1}{-27f^3}}$

23. $\left(\frac{4}{x}\right)^{-3} = \left(\frac{x}{4}\right)^3 = \frac{(x)^3}{(4)^3} = \boxed{\frac{x^3}{64}}$

24. A rectangular prism has length x , width $\frac{x}{2}$, and height $\frac{x}{3}$. Which of the expressions represent the volume of the prism? Select all that apply.

$V = lwh$

A. $\frac{6^{-1}x^3}{\frac{x}{3} \cdot 6}$

B. $\frac{6^{-1}x^{-3}}{6x^3}$

C. $(6x^{-3})^{-1}$

D. $2^{-1} \cdot 3^{-1} \cdot x^3$

$= \left(\frac{1}{2}\right)\left(\frac{1}{3}\right)\left(\frac{x^3}{1}\right) = \frac{x^3}{6}$

$V = \left(\frac{x}{2}\right)(x)\left(\frac{x}{3}\right) = \frac{x^3}{6} = \frac{x^3}{6}$

