NAME Key DATE _____ PERIOD _____

Chapter 7 Practice Test

SCORE _____

Write the letter for the correct answer in the blank at the right of each question.

1. Simplify $(-2w^5y^4)^3(2wy^2)^2$

$(-8w^{15}y^{12})(4w^2y^4)$

1. $-32w^{17}y^{16}$

2. Simplify $(b^4)^3$.

2. b^{12}

3. Simplify $\frac{16r^3t^{-5}}{4r^{-1}t^2}$. Assume the denominator is not equal to zero.

$\frac{4r^{3-(-1)}t^{-5-2}}{1} = 4r^4t^{-7}$

3. $\frac{4r^4}{t^7}$

4. What represents the number of square units in the area of a circle with radius $2x^4$ units? (Area of a circle = πr^2)

$r = 2x^4$ $A = \pi(2x^4)^2 = 4x^8\pi$

4. $4x^8\pi$

5. Simplify $\frac{(-8x^2y^2)^{-2}}{(4x^3y)^3}$. Assume the denominator is not equal to zero.

$\frac{(-8)^{-2}x^{-4}y^{-4}}{64x^9y^3} = \frac{x^{-4-9}y^{-4-3}}{(64)(8^2)} = \frac{x^{-13}y^{-7}}{4096}$

5. $\frac{1}{4096x^{13}y^7}$

6. Express 0.000024 in scientific notation.

6. 2.4×10^{-5}

7. Evaluate $\frac{(7 \times 10^8)}{(2.4 \times 10^{-4})}$.

$= \frac{7}{2.4} = 2.9$ $\frac{10^8}{10^{-4}} = 10^{8-(-4)}$

7. 2.9×10^{12}

8. Evaluate $16^{\frac{3}{4}}$.

$(\sqrt[4]{16})^3 = 2^3$

$2 \cdot 2 \cdot 2 \cdot 2$

8. 8

9. Solve $3^{x+2} = 81$.

$3^{x+2} = 3^4$ $x+2=4$

9. $x = 2$

10. ATTENDANCE The total home attendance for a professional basketball team in 2010 was about 8.2×10^5, and in 2008 was about 7.175×10^5. About how many times as large was the attendance in 2010 as the attendance in 2008?

2010 $\frac{8.2 \times 10^5}{7.175 \times 10^5} = 1.14$

10. about 1.14 times as big

11. Write $4(y)^{\frac{1}{2}}$ in radical form

11. $4\sqrt{y}$

NAME KEY DATE PERIOD

Chapter 7 Practice Test *(continued)*

12. TOURNAMENTS A chess tournament starts with 16 people competing. The exponential function $y = 16\left(\frac{1}{2}\right)^x$ describes how many people are remaining in the tournament after x rounds. How many people are left in the tournament after 2 rounds?

F 4 **G** 2 **H** 8 **J** 1

$16\left(\frac{1}{2}\right)^2 = 16\left(\frac{1}{4}\right) = 4$

12. F

13. INVESTMENTS Determine the amount of an investment if \$1000 is invested at an interest rate of 8% compounded quarterly for 2 years.

A \$1160.00 **B** \$1171.66 **C** \$1040.40 **D** \$1166.40

$1000\left(1+\frac{.08}{4}\right)^{4(2)} = 1000(1.02)^8$

≈ 1171.66

$1000(1.02)^8$

13. OR B

14. BIOLOGY If $y = 10(2.5)^t$ represents the number of bacteria in a culture at time t, how many will there be at time $t = 6$?

F 2441 **G** 244 **H** 24 **J** none

$10(2.5)^6 = 1$

≈ 2441.40

14. F

15. DEPRECIATION A \$60,000 piece of machinery depreciates in value at a rate of 11% per year. About what will its value be in 5 years?

A \$47,526 **B** \$42,298 **C** \$33,504 **D** \$37,645

$A = 60{,}000(1-.11)^5 = 60{,}000(.89)^5$

$60{,}000(.89)^5$

15. OR C

16. Which is the equation for the nth term of the geometric sequence –2, 8, –32, . . . ?

F $a_n = -2 \cdot 4^n$ **H** $a_n = -2 \cdot 4^{n-1}$

G $a_n = 4 \cdot (-2)^n$ **J** $a_n = -2 \cdot (-4)^{n-1}$

$r = -4$ $a_n = a_1(r)^{n-1}$

$a_1 = -2$ $= -2(-4)^{n-1}$

16. J

B. C

Bonus Simplify $(3^{n+1})(3^{2n})^4$.

n	a_n
1	$-4(-2)^0 = -2$
2	$-4(-2)^1 = 8$
3	$-4(-2)^2 = -16$