NAME _____ DATE _____ PERIOD _____

Chapter 7 Test, Form 1

SCORE _____

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

1. Simplify $y^5 \cdot y.^3$
A y^2 **B** y^8 **C** y^{15} **D** $2y^8$ 1. B

2. Simplify $(b^4)^3$.
F b^7 **G** $3b^4$ **H** b^{12} **J** $3b^7$ 2. H

3. Simplify $\frac{a^7}{a^4}$. Assume the denominator is not equal to zero.
A a^{11} **B** a^{28} **C** a^3 **D** 1 3. C

4. A rectangle has a length of $25x^3$and a width of $5x^2$. Find the area in square units.
F $25x^6$ **G** $25x^5$ **H** $125x^6$ **J** $125x^5$ 4. J

5. Simplify $\frac{m^5r^2}{m^2r^3}$. Assume the denominator is not equal to zero.
A m^7r^5 **B** $\frac{m^3}{r}$ **C** m^3r **D** $\frac{r}{m^3}$ 5. B

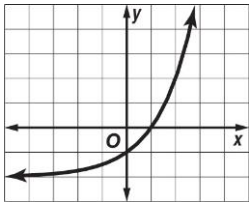
6. Express 0.000024 in scientific notation.
F 2.4×10^5 **G** 0.24×10^{-4} **H** 2.4×10^{-4} **J** 2.4×10^{-5} 6. J

7. Evaluate $(7 \times 10^8)(2.4 \times 10^{-4})$.
A 1.68×10^4 **B** 2.92×10^4 **C** 1.68×10^5 **D** 1.68×10^{13} 7. C

8. Evaluate $(16)^{\frac{3}{4}}$.
F 2 **G** 4 **H** 8 **J** 32 8. H

9. Solve $3^{x+2} = 81$.
A 0 **B** 1 **C** 2 **D** 3 9. C

10. Which equation corresponds to the graph shown?



F $y = 2^x + 2$ **H** $y = 2^x - 2$
G $y = \left(\frac{1}{2}\right)^x - 2$ **J** $y = \left(\frac{1}{2}\right)^x + 2$ 10. H

11. What is the *y*-intercept on the graph shown?
A $\frac{1}{2}$ **B** 1 **C** 0 **D** –1 11. D

Chapter 7 Test, Form 1 *(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

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

13. 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

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

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

16. J

17. What is the ninth term of the geometric sequence 3, 9, 27, . . .?

A 2187 **B** 6561 **C** 19,683 **D** 59,049

17. C

18. Find the third term of the sequence in which $a_1 = 12$ and $a_n = 5a_{n-1} - 14$, if $n \geq 2$.

F 1 **G** 46 **H** 216 **J** 1066

18. H

19. Find an explicit formula for $a_1 = 17$, $a_n = a_{n-1} + 4$, $n \geq 2$.

A $a_n = 4n + 13$ **C** $a_n = 4n + 17$

B $a_n = n + 4$ **D** $a_n = 17n + 4$

19. A

20. Find a recursive formula for the arithmetic sequence 18, 12, 6, 0, ...

F $a_1 = 18$, $a_n = -6a_{n-1}$, $n \geq 2$ **H** $a_1 = 18$, $a_n = \frac{2}{3}a_{n-1}$, $n \geq 2$

G $a_1 = 18$, $a_n = a_{n-1} - 6$, $n \geq 2$ **J** $a_1 = 18$, $a_n = \frac{1}{2}a_{n-1} + 9$, $n \geq 2$

20. G

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

B. 3^{9n+1}