Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Algebra 1 Chapter 07 review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

Simplify the expression.

____ 1. $(-8.6)^0$
a. -1 b. 0 c. -8.6 d. 1

____ 2. $7a^{-5}b^3$
a. $7ab^{-15}$ b. $\frac{b^3}{7a^5}$ c. $\frac{7b^3}{a^5}$ d. $7a^5b^{-3}$

____ 3. $20 \cdot 5^{-2}$
a. 25 b. -500 c. $\frac{4}{5}$ d. -200

____ 4. $12^{-3} \cdot 12^{10} \cdot 12^0$
a. 36^7 b. 1728^7 c. 1 d. 12^7

____ 5. $(7.46)^{-5} \cdot (7.46)^6$
a. 1 b. 11 c. -7.46^{11} d. 7.46

____ 6. $2k^8 \cdot 3k^3$
a. $5k^{24}$ b. $5k^{11}$ c. $6k^{11}$ d. $6k^{24}$

____ 7. $7x^{-8} \cdot 6x^3$
a. $\frac{42}{x^5}$ b. $\frac{1}{42x^5}$ c. $42x^{11}$ d. $13x^{-5}$

____ 8. $(t^{-2})^6$
a. t^{12} b. $\frac{x}{12}$ c. $\frac{1}{t^{12}}$ d. $\frac{1}{t^{64}}$

____ 9. $(3xy^3)^2(xy)^6$
a. $9x^8y^{12}$ b. $3x^8y^{12}$ c. $2x^3y^{12}$ d. $9x^8y^9$

____ 10. $(-5g^5h^6)^2(g^4h^2)^4$
a. $25g^{26}h^{20}$ b. $\frac{g^{26}h^{20}}{25}$ c. $-25g^{26}h^{20}$ d. $25g^{15}h^{14}$

____ 11. $\frac{x^{14}}{x^7}$
a. x^7 b. x^{98} c. $\frac{1}{x^7}$ d. x^{21}

____ 12. $\dfrac{m^{-6}n^{-3}}{m^{-13}n^{-1}}$

a. $\dfrac{n^{-9}}{n^{-14}}$ b. m^3n^{12} c. $\dfrac{m^7}{n^2}$ d. m^7n^2

____ 13. $\left(\dfrac{7}{10}\right)^3$

a. $\dfrac{343}{1000}$ b. $\dfrac{21}{30}$ c. $\dfrac{100}{7}$ d. $\dfrac{1000}{343}$

____ 14. Chase scored 14 points on Monday, and he doubled his score each day thereafter. How many points did he score on Thursday?

a. 224 points b. 112 points c. 56 points d. 42 points

Write the number in standard notation.

____ 15. 9×10^4

a. 9,000 b. 90^4 c. 90,000 d. 360

____ 16. 9.07×10^{-2}

a. 0.0907 b. 0.907 c. 0.00907 d. –181.4

Simplify the expression. Write the answer using scientific notation.

____ 17. $8\left(8.8 \times 10^{12}\right)$

a. 70.4×10^{12} b. 70.4×10^{24} c. 7.04×10^{13} d. 1.68×10^{13}

____ 18. Astronomers measure large distances in light-years. One light-year is the distance that light can travel in one year, or approximately 5,880,000,000,000 miles. Suppose a star is 13.6 light-years from Earth. In scientific notation, how many miles away is it?

a. 1.36×10^{12} miles
b. 5.88×10^{12} miles
c. 7.9968×10^{13} miles
d. 5.88×10^{13} miles

____ 19. $\left(9 \times 10^7\right)\left(7 \times 10^9\right)$

a. 6.3×10^{64} b. 6.3×10^{17} c. 1.6×10^{64} d. 1.6×10^{17}

____ 20. $\left(0.4 \times 10^{-6}\right)\left(0.7 \times 10^{-2}\right)$

a. 2.8×10^{-9} b. 2.8×10^{-8} c. 2.8×10^{-7} d. 0.28×10^{-9}

Complete the equation, by supplying the missing exponent.

____ 21. $m^{\blacksquare} \cdot n^2 \cdot m^3 = m^{11}n^2$

a. 4 b. –3 c. –8 d. 8

Short Answer

22. Write $32x^5y^5$ with only one exponent. Use parentheses.

23. Solve the equation. Show your work.
$16^3 = 4^x$

Essay

24. Write the answer in scientific notation.

A virus has a volume of approximately 4.7×10^{-14} cubic centimeters. Calculate the estimated volume of 4.1×10^{16} viruses. Show your work.

25. Simplify. Show your work.

$(3m^{-1}n^4)^{-2}(2m^3n^{-5})^4$

Algebra 1 Chapter 07 review
Answer Section

MULTIPLE CHOICE

1. ANS: D PTS: 1 DIF: L2 REF: 7-1 Zero and Negative Exponents
   OBJ: 7-1.1 Zero and Negative Exponents STA: CA A1 2.0
   TOP: 7-1 Example 1
   KEY: zero as an exponent | negative exponent | simplfying a power
2. ANS: C PTS: 1 DIF: L2 REF: 7-1 Zero and Negative Exponents
   OBJ: 7-1.1 Zero and Negative Exponents STA: CA A1 2.0
   TOP: 7-1 Example 2
   KEY: zero as an exponent | negative exponent | simplifying an exponential expression
3. ANS: C PTS: 1 DIF: L3 REF: 7-1 Zero and Negative Exponents
   OBJ: 7-1.1 Zero and Negative Exponents STA: CA A1 2.0
   TOP: 7-1 Example 1
   KEY: negative exponent | simplifying an exponential expression
4. ANS: D PTS: 1 DIF: L2
   REF: 7-3 Mulitplication Properties of Exponents OBJ: 7-3.1 Multiplying Powers
   STA: CA A1 2.0 | CA A1 10.0 TOP: 7-3 Example 1
   KEY: multiplying powers with the same base | exponential expression | simplifying an exponential expression
5. ANS: D PTS: 1 DIF: L2
   REF: 7-3 Mulitplication Properties of Exponents OBJ: 7-3.1 Multiplying Powers
   STA: CA A1 2.0 | CA A1 10.0 TOP: 7-3 Example 1
   KEY: multiplying powers with the same base | exponential expression | simplifying an exponential expression
6. ANS: C PTS: 1 DIF: L2
   REF: 7-3 Mulitplication Properties of Exponents OBJ: 7-3.1 Multiplying Powers
   STA: CA A1 2.0 | CA A1 10.0 TOP: 7-3 Example 2
   KEY: exponential expression | simplifying an exponential expression | multiplying powers with the same base
7. ANS: A PTS: 1 DIF: L2
   REF: 7-3 Mulitplication Properties of Exponents OBJ: 7-3.1 Multiplying Powers
   STA: CA A1 2.0 | CA A1 10.0 TOP: 7-1 Example 2
   KEY: exponential expression | simplifying an exponential expression | multiplying powers with the same base
8. ANS: C PTS: 1 DIF: L2
   REF: 7-4 More Multiplication Properties of Exponents OBJ: 7-4.1 Raising a Power to a Power
   STA: CA A1 2.0 | CA A1 10.0 TOP: 7-4 Example 1
   KEY: raising a power to a power | exponential expression | simplifying an exponential expression
9. ANS: A PTS: 1 DIF: L2
   REF: 7-4 More Multiplication Properties of Exponents
   OBJ: 7-4.2 Raising a Product to a Power STA: CA A1 2.0 | CA A1 10.0
   TOP: 7-4 Example 4
   KEY: raising a product to a power | exponential expression | simplifying an exponential expression

10. ANS: A PTS: 1 DIF: L3
REF: 7-4 More Multiplication Properties of Exponents
OBJ: 7-4.2 Raising a Product to a Power STA: CA A1 2.0 | CA A1 10.0
TOP: 7-4 Example 4
KEY: exponential expression | raising a product to a power | simplifying an exponential expression
11. ANS: A PTS: 1 DIF: L2
REF: 7-5 Division Properties of Exponents
OBJ: 7-5.1 Dividing Powers With the Same Base STA: CA A1 2.0 | CA A1 10.0
TOP: 7-5 Example 1
KEY: dividing powers with the same base | exponential expression
12. ANS: C PTS: 1 DIF: L2
REF: 7-5 Division Properties of Exponents
OBJ: 7-5.1 Dividing Powers With the Same Base STA: CA A1 2.0 | CA A1 10.0
TOP: 7-5 Example 1
KEY: dividing powers with the same base | exponential expression
13. ANS: A PTS: 1 DIF: L2
REF: 7-5 Division Properties of Exponents
OBJ: 7-5.2 Raising a Quotient to a Power STA: CA A1 2.0 | CA A1 10.0
TOP: 7-5 Example 3 KEY: raising a quotient to a power | exponential expression
14. ANS: B PTS: 1 DIF: L3 REF: 7-1 Zero and Negative Exponents
OBJ: 7-1.2 Evaluating Exponential Expressions STA: CA A1 2.0
TOP: 7-1 Example 4
KEY: evaluating exponential expression | simplfying a power | word problem | problem solving
15. ANS: C PTS: 1 DIF: L2 REF: 7-2 Scientific Notation
OBJ: 7-2.1 Writing Numbers in Scientific and Standard Notations
STA: CA A1 2.0 TOP: 7-2 Example 3
KEY: scientific notation | standard notation
16. ANS: A PTS: 1 DIF: L2 REF: 7-2 Scientific Notation
OBJ: 7-2.1 Writing Numbers in Scientific and Standard Notations
STA: CA A1 2.0 TOP: 7-2 Example 3
KEY: scientific notation | standard notation
17. ANS: C PTS: 1 DIF: L2 REF: 7-2 Scientific Notation
OBJ: 7-2.2 Using Scientific Notation STA: CA A1 2.0 TOP: 7-2 Example 6
KEY: scientific notation | multiply a number using scientific notation
18. ANS: C PTS: 1 DIF: L3 REF: 7-2 Scientific Notation
OBJ: 7-2.2 Using Scientific Notation STA: CA A1 2.0 TOP: 7-2 Example 6
KEY: scientific notation | multiply a number using scientific notation | word problem | problem solving
19. ANS: B PTS: 1 DIF: L2
REF: 7-3 Mulitplication Properties of Exponents
OBJ: 7-3.2 Working With Scientific Notation STA: CA A1 2.0 | CA A1 10.0
TOP: 7-3 Example 3
KEY: multiply a number using scientific notation | scientific notation | multiplying powers with the same base | exponential expression

20. ANS: A PTS: 1 DIF: L3
REF: 7-3 Mulitplication Properties of Exponents
OBJ: 7-3.2 Working With Scientific Notation STA: CA A1 2.0 | CA A1 10.0
TOP: 7-3 Example 3
KEY: multiply a number using scientific notation | scientific notation | multiplying powers with the same base | exponential expression

21. ANS: D PTS: 1 DIF: L3
REF: 7-3 Mulitplication Properties of Exponents OBJ: 7-3.1 Multiplying Powers
STA: CA A1 2.0 | CA A1 10.0
KEY: multiplying powers with the same base | simplifying an exponential expression | exponential expression

SHORT ANSWER

22. ANS:
$(2xy)^5$

PTS: 1 DIF: L3 REF: 7-4 More Multiplication Properties of Exponents
OBJ: 7-4.2 Raising a Product to a Power STA: CA A1 2.0 | CA A1 10.0
KEY: raising a product to a power | multiplying powers with the same base | raising a power to a power

23. ANS:
$16^3 = 4^x$

$(4^2)^3 = 4^x$

$4^6 = 4^x$

$6 = x$

PTS: 1 DIF: L4 REF: 7-4 More Multiplication Properties of Exponents
OBJ: 7-4.1 Raising a Power to a Power STA: CA A1 2.0 | CA A1 10.0
KEY: raising a power to a power | exponential expression | simplifying an exponential expression

ESSAY

24. ANS:

[4] $\left(4.7\times10^{-14}\right)\left(4.1\times10^{16}\right)$

$=(4.7\cdot4.1)\times\left(10^{-14}\cdot10^{16}\right)$

$=(19.27)\times\left(10^{-14+16}\right)$

$=19.27\times10^{2}$

$=1.927\times10^{3}$

[3] final answer correct but not written in scientific notation
[2] one computational error
[1] two or more computational errors

PTS: 1 DIF: L4 REF: 7-3 Mulitplication Properties of Exponents
OBJ: 7-3.2 Working With Scientific Notation STA: CA A1 2.0 | CA A1 10.0
TOP: 7-3 Example 4
KEY: word problem | problem solving | rubric-based question | extended response | exponential expression | scientific notation | multiplying powers with the same base

25. ANS:

[4] $(3m^{-1}n^{4})^{-2}(2m^{3}n^{-5})^{4}$

$=3^{-2}m^{2}n^{-8}\cdot2^{4}m^{12}n^{-20}$

$=(3^{-2})(2^{4})m^{2}m^{12}\cdot n^{-8}n^{-20}$

$=(3^{-2})(2^{4})m^{14}\cdot n^{-28}$

$=\left(\frac{1}{9}\right)(16)m^{14}\cdot\frac{1}{n^{28}}$

$=\frac{16m^{14}}{9n^{28}}$

[3] one computational error
[2] incorrect application of a law of exponents OR two computational errors
[1] more than two computational errors

PTS: 1 DIF: L3 REF: 7-4 More Multiplication Properties of Exponents
OBJ: 7-4.2 Raising a Product to a Power STA: CA A1 2.0 | CA A1 10.0
KEY: raising a product to a power | exponents | multiplying powers with the same base | extended response | rubric-based question