

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. $\frac{m^{-6} n^{-3}}{m^{-13} n^{-1}}$

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

_____ 13. $\left(\frac{7}{10}\right)^3$

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

- _____ 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. $8(8.8 \times 10^{12})$
- 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 c. 7.9968×10^{13} miles
 b. 5.88×10^{12} miles d. 5.88×10^{13} miles
- _____ 19. $(9 \times 10^7)(7 \times 10^9)$
- a. 6.3×10^{64} b. 6.3×10^{17} c. 1.6×10^{64} d. 1.6×10^{17}
- _____ 20. $(0.4 \times 10^{-6})(0.7 \times 10^{-2})$
- 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

Name: _____

ID: A

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 Multiplication 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 Multiplication 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 Multiplication 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 Multiplication 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 | simplifying 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 Multiplication 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 Multiplication 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 Multiplication 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:

$$\begin{aligned}
 [4] \quad & \left(4.7 \times 10^{-14}\right)\left(4.1 \times 10^{16}\right) \\
 & = (4.7 \cdot 4.1) \times \left(10^{-14} \cdot 10^{16}\right) \\
 & = (19.27) \times \left(10^{-14+16}\right) \\
 & = 19.27 \times 10^2 \\
 & = 1.927 \times 10^3
 \end{aligned}$$

[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 Multiplication 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:

$$\begin{aligned}
 [4] \quad & (3m^{-1}n^4)^{-2}(2m^3n^{-5})^4 \\
 & = 3^{-2}m^2n^{-8} \cdot 2^4m^{12}n^{-20} \\
 & = (3^{-2})(2^4)m^2m^{12} \cdot n^{-8}n^{-20} \\
 & = (3^{-2})(2^4)m^{14} \cdot n^{-28} \\
 & = \left(\frac{1}{9}\right)(16)m^{14} \cdot \frac{1}{n^{28}} \\
 & = \frac{16m^{14}}{9n^{28}}
 \end{aligned}$$

[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