

1. Which expression is equivalent to $\frac{10^{-2}}{10^{-14}}$?

A. 10^7

B. 10^{12}

C. 10^{16}

D. 10^{28}

2. Which expression is equivalent to $7^3 \cdot 7^5$?

A. 7^8

B. 7^{15}

C. 49^8

D. 49^{15}

3. Which expression is equivalent to $\frac{8^{15}}{8^3}$?

A. 1^5

B. 1^{12}

C. 8^5

D. 8^{12}

4. Which expression is equivalent to $\frac{2^{12}}{2^3}$?

A. 1^4

B. 1^9

C. 2^4

D. 2^9

5. Which expression is equivalent to $11^5 \cdot 11^2$?

A. 11^7

B. 11^{10}

C. 22^7

D. 22^{10}

6. $(-6)^2 =$

A. -36

B. -12

C. 12

D. 36

7. Which statement is true?

- A. $-5^2 - (6 - 3^2) < -14$
- B. $8^2 - (-9^2 + 2) > (-13)^2$
- C. $-7^2 - (4^3 - 10) > -102$
- D. $6^2 - (-5^2 + 1) < (-7)^2$

8. Without using any negative exponents, what is $\left(\frac{7^{-3}}{10}\right)^{-2}$ in simplified form?

- A. $\frac{10^2}{7^6}$
- B. $\frac{7^6}{10^2}$
- C. $\frac{1}{7^6 \times 10^2}$
- D. $7^6 \times 10^2$

9. Which number is equivalent to $(2)^3 \left(\frac{2}{3}\right)^2 (3)^3$?

- A. 4
- B. 16
- C. 72
- D. 96

10. Yuri's solution to evaluate $4[5(2+3)^2 + (4+2)^2] - (5-7)(8-12)$ is shown below.

Step 1: $4[5(5)^2 + 6^2] - (5-7)(8-12)$

Step 2: $4[5(10) + 12] - (-2)(-4)$

Step 3: $4(50 + 12) - (-2)(-4)$

Step 4: $4(62) - 8$

Step 5: $248 - 8$

Step 6: 240

Which statement about Yuri's solution is correct?

- A. Yuri first made a mistake in Step 1.
- B. Yuri first made a mistake in Step 2.
- C. Yuri first made a mistake in Step 4.
- D. Yuri's solution is correct.

11. Mary Ann's solution to evaluate $3(14-5)^2 + 2(9-8)^3 - (7+5)(4-2)$ is shown below.

Step 1: $3(9)^2 + 2(1)^3 - (12)(2)$

Step 2: $3(81) + 2(3) - 24$

Step 3: $243 + 6 - 24$

Step 4: 225

Which statement about Mary Ann's solution is true?

- A. Mary Ann made the first mistake in Step 1.
- B. Mary Ann made the first mistake in Step 2.
- C. Mary Ann made the first mistake in Step 3.
- D. Mary Ann's solution is correct.

12. What is the value of r ?

$$\left(\frac{1}{3}\right)^r = \frac{1}{27}$$

A. $\frac{1}{9}$

B. $\frac{1}{3}$

C. 3

D. 9

13. Which number is equivalent to $\left(\frac{1}{2}\right)^4 (2)^3 (4)^2$?

A. 4

B. 8

C. 16

D. 96

14. Which inequality is true?

A. $5^{-8} > \frac{1}{3^7} > \frac{1}{32,000}$

B. $5^{-8} > \frac{1}{32,000} > \frac{1}{3^7}$

C. $\frac{1}{3^7} > \frac{1}{32,000} > 5^{-8}$

D. $\frac{1}{32,000} > \frac{1}{3^7} > 5^{-8}$

15. Which of the following is equivalent to $10 \times 10^4 \times 10^3 \times 10^{-5}$?

A. 10^2

B. 10^3

C. 10^7

D. 10^{13}

16. A cube has a volume of $(0.875)^3$ cubic centimeters. What is the volume of the cube expressed as a fraction?

A. $\frac{64}{125}$ cubic centimeters

B. $\frac{125}{216}$ cubic centimeters

C. $\frac{343}{512}$ cubic centimeters

D. $\frac{512}{729}$ cubic centimeters

17. Which expression is equivalent to $(2 \times 3^2)^{-1}$?

A. 6^{-2}

B. $\frac{1}{2 \times 3^2}$

C. $-(2 \times 3^2)$

D. $\frac{2}{3^2}$

18. Cybil worked on a problem which required her to simplify the expression $2^3 \times 2^3$. Her result was 2^6 . What value is equivalent to 2^6 ?

A. 12

B. 32

C. 36

D. 64

19. Which number is closest in value to the expression below?

$$\frac{5}{2^{100}}$$

A. 0

B. $\frac{1}{40}$

C. $\frac{1}{20}$

D. $\frac{5}{2}$

20. Which expression has a value between 0 and 1?

A. $\frac{3^9}{3^{-4}} \times 3^{-3}$

B. $\frac{3^7}{3^{-2}} \times 3^{-4}$

C. $\frac{3^6}{3^5} \times 3^{-2}$

D. $\frac{3^{-5}}{3^{-9}} \times 3^{-3}$

21. Which expression is equivalent to $(5^6)^2$?

A. 5^{12}

B. 5^8

C. 5^4

D. 5^3

22. Which expression is equivalent to the square of $\frac{4}{256}$?

A. 4^{-10}

B. 4^{-8}

C. 4^{-6}

D. 4^{-4}

23. Ernie is planning to buy a computer and his friend advised him to get one with a RAM size of 2^9 megabytes. Which is equivalent to 2^9 megabytes?
- A. 18 megabytes
 - B. 81 megabytes
 - C. 256 megabytes
 - D. 512 megabytes
24. Which expression is equivalent to $3^8 \div 3^4$?
- A. 0^2
 - B. 1^4
 - C. 3^2
 - D. 3^4
25. Which expression is equivalent to $(2^6 \cdot 2^2)^2$?
- A. 2^{16}
 - B. 2^{24}
 - C. 4^{16}
 - D. 4^{64}
26. Which expression is equivalent to $\frac{7^{15}}{7^5}$?

A. 7^3

B. 7^{10}

C. 7^{20}

D. 7^{75}

27. Which value is equivalent to $2^3 \times 3^3 \times 9^0$?

A. 0

B. 125

C. 216

D. 1944

28. Dividing an integer by 3^2 is the same as performing which of the following computations?

A. dividing by $\frac{1}{9}$

B. dividing by 6

C. multiplying by $\frac{1}{9}$

D. multiplying by 6

29. Multiplying an integer by $\frac{1}{4^2}$ is the same as performing which computation below?

- A. dividing by 4
- B. dividing by 16
- C. multiplying by 8
- D. multiplying by 16

30. Ten billion divided by which value below results in a quotient of 1000?

- A. 10^6
- B. 10^7
- C. 10^8
- D. 10^9

31. Which of the following is equivalent to $16 \times 4^3 \times 64$?

- A. 2^{10}
- B. 2^{14}
- C. 2^{15}
- D. 2^{16}

32. Which value is equivalent to $\frac{2^6}{2^3}$?

- A. 2^2

B. 2^3

C. 2^9

D. 2^{18}

33. Which number is equivalent to $\frac{2^4 \times 2^5 \times 2^6}{2 \times 2^2 \times 2^3}$?

A. 2^{21}

B. 2^{20}

C. 2^{10}

D. 2^9

34. Which number is equivalent to $\frac{(10)^2}{(10)^6}$?

A. $\frac{1}{10^6}$

B. $\frac{1}{10,000}$

C. 10,000

D. 10^8

35. Which of the following represents $\frac{1}{16} \times \frac{1}{8}$ using exponential notation?

A. $(2^4)(2^3)$

B. $(2^4)(2^{-3})$

C. $(2^{-4})(2^3)$

D. $(2^{-4})(2^{-3})$

36. Which number is equivalent to $(3)^4 \cdot (3)^4$?

A. 3^0

B. 3^4

C. 3^8

D. 3^{16}

37. Which number is equivalent to $\frac{7^{15}}{7^8}$?

A. 7^{-23}

B. 7^{-7}

C. 7^7

D. 7^{23}

38. Which value is equivalent to $\frac{5}{5 \times 5^3}$?

A. $\frac{1}{5}$

B. $\frac{1}{25}$

C. $\frac{1}{125}$

D. $\frac{1}{625}$

39. What is $\left(\frac{10^3}{10^5}\right)^2$ written in simplest form?

A. $\frac{1}{10,000}$

B. $\frac{1}{100}$

C. 100

D. 10,000

40. What is $\left(\frac{(1^2)^3}{2^3}\right)^2$ written as a fraction in simplest form?

A. $\frac{1}{64}$

B. $\frac{1}{8}$

C. $\frac{3}{16}$

D. $\frac{3}{4}$

41.

$$\frac{(7^4)^2}{(5^2)^4} =$$

A. $\left(\frac{7}{5}\right)^6$

B. $\left(\frac{7}{5}\right)^8$

C. $(-35)^6$

D. $(-35)^8$

42. If $(-3)^5 \times (-3)^2 = (-3)^x$, what is the value of x ?

A. 3

B. 7

C. 10

D. 25

43. What is $\left(\frac{5}{6}\right)^3$?

A. $\frac{625}{1296}$

B. $\frac{125}{216}$

C. $\frac{125}{6}$

D. $\frac{625}{6}$

44. Which is equivalent to 5^{-1} ?

A. $\frac{1}{25}$

B. $\frac{1}{5}$

C. -5

D. 4

45. Which expression is equivalent to $20^8 \div 20^2$?

A. $4 \cdot 20$

B. $6 \cdot 20$

C. 20^4

D. 20^6

46. Which expression is equivalent to $\frac{5 \cdot 5 \cdot 5 \cdot 8 \cdot 8 \cdot 8}{7 \cdot 7 \cdot 9 \cdot 9}$?

A. $\frac{(5 \cdot 8)^3}{(7 \cdot 9)^2}$

B. $\frac{(5 \cdot 8)^6}{(7 \cdot 9)^4}$

C. $\frac{(5 \cdot 8)^6}{(7 \cdot 9)^2}$

D. $\frac{(5 \cdot 8)^9}{(7 \cdot 9)^4}$

47. Which is equivalent to 6^{-2} ?

A. -36

B. -12

C. $\frac{1}{36}$

D. $\frac{1}{12}$

48. Which expression is equivalent to $2^3 \cdot 2^5 \cdot 2^{10}$?

A. 2^{18}

B. 2^{150}

C. 6^{18}

D. 6^{150}

49. Which expression is equivalent to $15^6 \div 15^3$?

A. 2^{15}

B. 3^{15}

C. 15^2

D. 15^3

50. Which of the following is equivalent to $\frac{9^2 \times 9^5 \times 9}{9^{12}}$?

A. 9^{-5}

B. 9^{-4}

C. 9^{-2}

D. 9^{-1}

51. $\frac{(4^7)^2}{(7^5)^2} =$

A. $(-28)^6$

B. $(-28)^5$

C. $\left(\frac{4}{7}\right)^6$

D. $\left(\frac{4}{7}\right)^5$

52. What is $\frac{14^2}{7^3}$ expressed as a decimal to the nearest hundredth?

A. 0.57

B. 0.75

C. 1.33

D. 1.75

53. Which expression is equivalent to 2^5 ?

A. 2×5

B. $2 + 5$

C. $2 + 2 + 2 + 2 + 2$

D. $2 \times 2 \times 2 \times 2 \times 2$

54. $\frac{(3^4)^2}{(8^2)^4} =$

A. $(-24)^{10}$

B. $(-24)^7$

C. $\left(\frac{3}{8}\right)^{10}$

D. $\left(\frac{3}{8}\right)^7$

55. What is the value of $\left(\frac{3}{4}\right)^2$?

A. $\frac{3}{16}$

B. $\frac{9}{16}$

C. $\frac{3}{2}$

D. $\frac{9}{4}$

56. Which expression is equivalent to $\frac{6^{15}}{6^5}$?

A. 6^3

B. 6^{10}

C. 6^{20}

D. 6^{75}

57. Which expression is equivalent to $\frac{3^{16}}{3^4}$?

A. 3^4

B. 3^{12}

C. 3^{20}

D. 3^{64}

58. Which expression is equivalent to $8^{15} \times 8^4 \times 8$?

A. 8^0

B. 8^{19}

C. 8^{20}

D. 8^{60}

59. Which expression is equivalent to $9^{12} \times 9^4$?

A. 9^3

B. 9^8

C. 9^{16}

D. 9^{48}

60. Which expression is equivalent to $7^3 \cdot 7 \cdot 7^{10}$?

A. 7^0

B. 7^{13}

C. 7^{14}

D. 7^{30}

61. Which expression is equivalent to $\frac{4^{30}}{4^6}$?

A. 4^5

B. 4^{24}

C. 4^{36}

D. 4^{180}

62. Which of the following is equivalent to $\frac{5}{49}$?

A. $5(7^2)$

B. $\frac{1}{5(7^2)}$

C. $5 - 7^2$

D. $5(7^{-2})$

63. Which expression is equivalent to $\frac{4^{24}}{4^8}$?

A. 1

B. 3

C. 4^3

D. 4^{16}

64. Which expression is equivalent to $9 \cdot 9^5 \cdot 9^{13}$?

A. 9^0

B. 9^{18}

C. 9^{19}

D. 9^{65}

65. Which value is a simplified form of $\frac{3^5}{3^{-5}}$?

A. 3^{25}

B. 3^{10}

C. 3

D. 1

66. Simplify $5^{-2} \times 5^5 \times 5$.

A. 125^{-10}

B. 5^3

C. 5^4

D. 125^3

67. What is the simplified form of the expression below?

$$(2^2)^4 \times 2^{-5}$$

A. 2

B. 4

C. 2^3

D. 4^3

68. What is the value of 4^{-2} ?

A. $-\frac{1}{8}$

B. $-\frac{1}{16}$

C. $\frac{1}{16}$

D. $\frac{1}{8}$

69. The number 7^5 can also be interpreted as

A. 7×5 .

B. 7×10^5 .

C. $7 \times 7 \times 7 \times 7 \times 7$.

D. $7 \div 7 \div 7 \div 7 \div 7$.

70. Which is the greatest quantity?

A. $(3^2)(3^{-1})(3^{-2})$

B. $(3^{-2})(3^{-2})(3^{-1})$

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

D. $(3^{-3})(3^{-2})(3^1)$

71. What is the value of 3^0 ?

A. 0

B. 1

C. 3

D. 30

72. Which value of x makes the following equation true?

$$2^x = 1$$

A. 0

B. 1

C. 2

D. 3

73. What is the value of 9^2 ?

A. 11

B. 18

C. 81

D. 92

74. What does the expression 2^3 mean?

A. 2×2

B. 3×3

C. 2×3

D. $2 \times 2 \times 2$

75. Which number is equivalent to $\frac{3^3 \times 3^{-3}}{3^2}$?

A. $\frac{1}{3^{11}}$

B. $\frac{1}{9}$

C. 0

D. 9

76. Which number represents $9^4 \times 9^{-3}$?

A. 9^7

B. 9

C. 9^{-1}

D. 9^{-12}

77. $\frac{(2^3)^2}{(3^3)^2} =$

A. $\left(\frac{2}{3}\right)^6$

B. $\left(\frac{2}{3}\right)^9$

C. $(-6)^6$

D. $(-6)^9$

78. Which expression is equivalent to $6^{14} \cdot 6^3 \cdot 6^4$?

A. 6^{21}

B. 6^{168}

C. 18^{21}

D. 18^{168}

79. Which is equivalent to $\frac{10 \times 10^4 \times 10^3}{10^9}$?

A. 10^{-2}

B. 10^{-1}

C. 10^3

D. 10^4

80. Which of the following statements is correct?

A. $3^{-1} = 3^{-3} \cdot 3^2$

B. $3^{-3} = 3^{-1} \cdot 3^3$

C. $3^4 = 3^{-2} \cdot 3^{-2}$

D. $3^6 = 3^{-2} \cdot 3^2 \cdot 3^{-2}$

81. Which expression is equivalent to 3^5 ?

A. $5 \times 5 \times 5$

B. $5 + 5 + 5$

C. $3 \times 3 \times 3 \times 3 \times 3$

D. $3 + 3 + 3 + 3 + 3$

82. Which expression is equivalent to 4^{-2} ?

A. $\frac{1}{4} \times \frac{1}{4}$

B. $(4)(-2)$

C. $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$

D. $(-2)(-2)(-2)(-2)$

83. Which expression is equivalent to 6^3 ?

A. $6 \times 6 \times 6$

B. $6 + 6 + 6$

C. $3 \times 3 \times 3 \times 3 \times 3 \times 3$

D. $3 + 3 + 3 + 3 + 3 + 3$

84. Which expression is equivalent to 2^5 ?

A. 5×5

B. $5 + 5$

C. $2 \times 2 \times 2 \times 2 \times 2$

D. $2 + 2 + 2 + 2 + 2$

85. Which expression is equivalent to 6^{-3} ?

A. $\frac{1}{6} \times \frac{1}{6} \times \frac{1}{6}$

B. $(-6)(-6)(-6)$

C. $\frac{1}{3} \times \frac{1}{3} \times \frac{1}{3} \times \frac{1}{3} \times \frac{1}{3} \times \frac{1}{3}$

D. $(-3)(-3)(-3)(-3)(-3)(-3)$

86. Which expression is equivalent to 3^4 ?

A. $4 \times 4 \times 4$

B. $3 \times 3 \times 3 \times 3$

C. $4 + 4 + 4$

D. $3 + 3 + 3 + 3$

87. Which expression is equivalent to 4^3 ?

A. $4 \times 4 \times 4$

B. $3 \times 3 \times 3 \times 3$

C. $4 + 4 + 4$

D. $3 + 3 + 3 + 3$

88. Which expression is equivalent to 3^{-4} ?

A. $\frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{4}$

B. $\frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3}$

C. $(-4)(-4)(-4)$

D. $(-3)(-3)(-3)(-3)$

89. Which expression is equivalent to 2^{-5} ?

A. $\frac{1}{5} \times \frac{1}{5}$

B. $(-5)(-5)$

C. $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$

D. $(-2)(-2)(-2)(-2)(-2)$

90. Which expression is equivalent to 2^{-3} ?

A. $\frac{1}{3} \cdot \frac{1}{3}$

B. $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$

C. $(2)(-3)$

D. $(-2)(-2)(-2)$

91. What is the exponential form of $n \times n \times n \times q \times q$?

A. $n^2 q^3$

B. $n^3 q^2$

C. $2n \times 3q$

D. $3n \times 2q$

92. Which exponential form is equivalent to $a \times a \times a \times b \times b \times b \times b \times b$?

A. $a^3 b^5$

B. $a^5 b^3$

C. $3a \times 5b$

D. $3b \times 5a$

93. Which exponential form below does NOT have a value of 128?

A. 2^7

B. 2×4^3

C. $2^3 \times 4^2$

D. $2^4 \times 2^5$

94. Which exponential form is equivalent to $8 \times 8 \times 8 \times m \times m \times m \times m$?

A. $3^8 \times m^4$

B. $3^8 \times 4m$

C. $8^3 \times m^4$

D. $8^3 \times 4m$

95. How is 4^5 represented as repeated multiplication?

A. $5 \times 5 \times 5 \times 5$

B. $4 \times 5 \times 4 \times 5$

C. $4 \times 4 \times 4 \times 4 \times 5$

D. $4 \times 4 \times 4 \times 4 \times 4$

96. What is the value of $\frac{2^4}{6^2}$?

A. $\frac{2}{3}$

B. $\frac{4}{9}$

C. 20

D. 144

97. Which expression is equivalent to $\frac{1}{32}$?

A. -8^4

B. -2^5

C. 2^{-5}

D. 8^{-4}

98. What is the value of $(9^3 \times 3^{-4})^{-2}$?

A. 27^{-3}

B. 27^{-2}

C. 9^{-2}

D. 9^2

99. Which expression is equivalent to $\frac{8^2}{8^{-3}}$?

A. 8^6

B. 8^5

C. 8^{-1}

D. 8^{-6}

100. Which expression is equivalent to 2^6 ?

A. $(2^0)^6$

B. $(2^3)^2$

C. $(2^3)^3$

D. $(2^3)^6$

101. Which expression is equivalent to $4^2 \div (4^2)^{-3}$?

A. 4^{-4}

B. 4^{-3}

C. 4^4

D. 4^8

102. Which expression is equivalent to $5^2 \times 5^{-3}$?

A. 25^{-6}

B. 25^{-1}

C. 5^{-6}

D. 5^{-1}

103. Which expression is equivalent to $12^{-5} \div (12^{-3})^2$?

A. 12^{-11}

B. 12^{-10}

C. $\frac{1}{12}$

D. 12

104. What is the value of $4^4 \cdot (4^{-2})^3$?

A. $^{-}16$

B. $^{-}8$

C. $\frac{1}{16}$

D. $\frac{1}{8}$

105. What is the value of $\frac{2^{-4}}{2^{-2}}$?

A. $\frac{1}{64}$

B. $\frac{1}{4}$

C. 4

D. 64

106. Which expression is equivalent to $(4^{-2})^2 \times 4^6$?

A. 4^6

B. 4^2

C. 4^{-10}

D. 4^{-24}

107. What is the value of $(3^2)^{-2} \div 9^{-2}$?

A. 27^{-6}

B. 27^{-2}

C. 3^{-6}

D. 3^0

108. Which expression is equivalent to $(2^3)^2 \div (2)^{-3}$?

A. 2^9

B. 2^8

C. 2^3

D. 2^2

109. Which expression is equivalent to $(9^2)^4 \cdot (9^3)^5$?

A. 9^{120}

B. 9^{23}

C. 9^{14}

D. 9^7

110. What is the value of the expression $\frac{(4^3)^{-2}}{8^{-2}}$?

A. $\frac{1}{64}$

B. $\frac{1}{16}$

C. $\frac{1}{4}$

D. $\frac{3}{2}$

111. What is the value of the expression $3^4 \cdot 3^2$?

- A. 18
- B. 72
- C. 729
- D. 6,561

112. Which expression is equivalent to $4^{-2} \div 4^3 \bullet 4^2$?

- A. 4^4
- B. 4^3
- C. $\frac{1}{4^3}$
- D. $\frac{1}{4^4}$

113. What is the value of $-4^3 \div (2^2)^2$?

- A. -8
- B. -4
- C. $-1\frac{1}{2}$
- D. $-\frac{3}{4}$

114. Which expression is equivalent to $(2^{-4})^2 \div 2^2$?

A. 2^{-10}

B. 2^{-8}

C. 2^{-6}

D. 2^{-4}

115. Which expression is equivalent to $6^{-3} \div (6^3)^{-1}$?

A. 6^6

B. 6^1

C. 1

D. 0

116. What is the value of the expression $36^2 \div 6^4$?

A. 0

B. 1

C. 6

D. 36

117. Which expression is equivalent to $\frac{4^{-3}}{4^{-8}}$?

A. 4^{11}

B. 4^5

C. 4^{-5}

D. 4^{-11}

118. What is the value of the expression $(4^5)^2 \div (4^3)^4$?

A. $\frac{1}{16}$

B. $\frac{1}{8}$

C. 8

D. 16

119. What is the value of $3^4 \div (3^2)^3$?

A. 9

B. 3

C. $\frac{1}{3}$

D. $\frac{1}{9}$

120. What is the value of the expression $27^2 \div (3^{-2})^{-2}$?

A. 3

B. 9

C. 27

D. 81

121. Which expression is equivalent to $2^3 \cdot 2^4 + 3^2$?

A. $2^7 + 3^2$

B. $2^{12} + 3^2$

C. 5^9

D. 7^9

122. Which expression is equivalent to $(8^2)^{-3} \times 8^4$?

A. 8^{-1}

B. 8^{-2}

C. 8^{-20}

D. 8^{-24}

123. What is the value of the expression below?

$$(5^3)^2 \cdot 2^5 \cdot 5^{-4} \cdot (2^2)^{-2}$$

A. $\frac{1}{50}$

B. $\frac{1}{10}$

C. 10

D. 50

124. Which expression is equivalent to $3^{-3} \times (3^3)^3$?

A. 3^{-27}

B. 3^{-9}

C. 3^3

D. 3^6

125. Which expression is equivalent to $(3^{-3})^2 \cdot 3^4$?

A. 3^{-24}

B. 3^{-20}

C. 3^{-10}

D. 3^{-2}

126. Which expression is equivalent to 6^{-4} ?

A. $6 \cdot -4$

B. $-6 \cdot -6 \cdot -6 \cdot -6$

C. $\frac{1}{6 \cdot 6 \cdot 6 \cdot 6}$

D. $\frac{-1}{6 \cdot 6 \cdot 6 \cdot 6}$

127. What is the value of $7^{-4} \times 7^3$?

A. -49

B. -7

C. $\frac{1}{7}$

D. $\frac{1}{49}$

128. Which expression is equivalent to $(2^2 \times 3^4)^2 (3^5)$?

A. $2^4 \times 3^{11}$

B. $2^4 \times 3^{13}$

C. $2^4 \times 9^{11}$

D. $2^4 \times 9^{13}$

129. What is the value of x in the equation $(2^3)^x \cdot 2^5 = 2^{-7}$?

A. -12

B. -4

C. -2

D. -1

130. In which choice are the two expressions equivalent?

A. $\frac{(4^2)^{-1} \cdot 2^3}{16}$ and $\frac{1}{2}$

B. $\frac{(2^3)^{-3} \cdot 16}{4^{-2}}$ and 1

C. $\frac{(2^{-3})^{-3} \cdot 4^{-2}}{16}$ and 2

D. $\frac{(4^{-2})^{-1} \cdot 16}{2^{-2}}$ and 4

131.

Which expression is equivalent to $\left(\frac{2^{-1}}{3^2}\right)^{-2}$?

A. $2^{-2} \cdot 3^4$

B. $2^2 \cdot 3^4$

C. $\frac{2^{-2}}{3^4}$

D. $\frac{2^2}{3^4}$

132. Which expression is equivalent to $[(27)^2(8^2)^2] \div [(2^2)^3(3^3)^2]$?

A. 2^{-8}

B. 2^{-2}

C. 2^6

D. 2^{16}

133. What is the value of $(2^{-2})^3 \div 4^{-2}$?

A. 0.0625

B. 0.25

C. 4

D. 32

134. Which expression is equivalent to $(7^3)^{-2} \div 7^3$?

A. 7^9

B. 7^3

C. $\frac{1}{7^3}$

D. $\frac{1}{7^9}$

135. Which choice is equivalent to $8^5 \div 8^2$?

A. 8^{10}

B. 8^7

C. 8^3

D. $8^{2.5}$

136. Which expression is equivalent to $(3^{-3})^3 \div (3^2)^4$?

A. 3^{-17}

B. 3^{-1}

C. 3^0

D. 3^{12}

137. What is the value of $\frac{16}{2^2} \cdot \frac{2^{-1}}{2^{-2}}$?

A. 2

B. 4

C. 8

D. 16

138. Which expression is equivalent to $(7^4)^2 \cdot 7^4$?

A. 7^{32}

B. 7^{12}

C. 7^{10}

D. 7^2

139. Which expression is equivalent to $(2^3)^2 \cdot 4^4$?

A. 2^{14}

B. 4^8

C. 6^{10}

D. 8^{12}

140. What is the value of the expression below?

$$\frac{(3^2)^4 \cdot (2^3)^5}{(4^2)^3 \cdot (9^2)^3}$$

A. $\frac{1}{324}$

B. $\frac{8}{81}$

C. $\frac{5}{12}$

D. $\frac{4}{9}$

141. What is the value of the expression $\frac{(4^{-6} \times 8^2)^{-2}}{(4^3)^3}$?

A. $\frac{1}{64}$

B. $\frac{1}{24}$

C. $\frac{1}{16}$

D. $\frac{1}{2}$

142. What is the value of $(3^2)^4 \div 3^5$?

A. $\frac{1}{3}$

B. 3

C. 9

D. 27

143. What is the value of $-2^4 \times 2^{-3}$?

A. 2

B. $\frac{1}{2}$

C. $-\frac{1}{2}$

D. -2

144. What is the value of $-(3)^4$?

A. -81

B. -12

C. 12

D. 81

145. What is the value of $\left(\frac{3}{5}\right)^2 \cdot \left(\frac{6}{5}\right)^{-3}$?

A. $\frac{5}{24}$

B. $\frac{1}{2}$

C. $\frac{1,944}{3,125}$

D. $\frac{25}{18}$

146. What is the value of the expression below?

$$\frac{(3^3)^2 \cdot (4^2)^4}{(4^2)^4 \cdot (3^3)^2}$$

A. $\frac{1}{12}$

B. $\frac{16}{27}$

C. $\frac{5}{6}$

D. $\frac{35}{36}$

147. What is the value of $4^6 \cdot (4^2)^{-3}$?

- A. 1
- B. 4
- C. 20
- D. 24

148. Which expression is equivalent to $5^2 \cdot 5^6 \div 5^{-3}$?

- A. 5^4
- B. 5^5
- C. 5^9
- D. 5^{11}

149. Which choice is equivalent to $\frac{1}{27}$?

- A. 3^3
- B. 3^{-3}
- C. 9^3
- D. 9^{-3}

150. Which expression is equivalent to $4^{-3} \cdot 4^6$?

- A. $(4 \cdot -3)(4 \cdot 6)$
- B. $(4 + -3)(4 + 6)$
- C. $4 + 4 + 4$
- D. $4 \cdot 4 \cdot 4$

151. Which choice is equivalent to $\frac{9^8}{9^2}$?

- A. 9^4
- B. 9^6
- C. 9^{10}
- D. 9^{16}

152. Which choice is equivalent to $(3^2)^0$?

- A. 0
- B. 1
- C. 6
- D. 9

153. What is the value of the expression $(3^{-2})^3 \div 3^{-2}$?

A.

$$27$$

B.

$$3$$

C.

$$\frac{1}{27}$$

D.

$$\frac{1}{81}$$

154. What is the value of $(2^{-3})(4^2)(2^{-1})$?

A. -32

B. -16

C. 1

D. 4

155. Which expression is equivalent to $4^2 \div 4^8$?

A. 4^6

B. 4^4

C. 4^{-4}

D. 4^{-6}

156. Which expression is equivalent to $\frac{3^6}{3^2}$?

A. 3^{12}

B. 3^8

C. 3^4

D. 3^3

157. Which expression is equivalent to 5^{10} ?

A. $5^5 \cdot 5^2$

B. $5^{10} \cdot 5^1$

C. $5^{15} \div 5^5$

D. $5^{20} \div 5^2$

158. Which choice is equivalent to $(3^{-2})(9^{-1})(3^3)$?

A.

B.

$$3$$

C.

$$\frac{1}{3}$$

D.

$$\frac{1}{27}$$

159. Which choice is equivalent to $5^2 \cdot 5^{-3} \cdot 5$?

A.

$$\frac{1}{5}$$

B.

$$1$$

C.

$$5$$

D.

25

160. Which numerical expression is equivalent to $2^{-2} \cdot 2^{-3}$?

A.

$$\frac{1}{64}$$

B.

$$\frac{1}{32}$$

C.

32

D.

64

161. Which choice is equivalent to $\frac{2^3}{2^{-2}}$?

A. -2

B. 2

C. 10

D. 32

162. What value for n makes the equation below true?

$$3^n \div 3^3 = \frac{1}{9}$$

A. -2

B. -1

C. 1

D. 2

163. What is the value of $7^3 \cdot 7^{-5}$?

A. $\frac{1}{14}$

B. $\frac{1}{49}$

C. $^{-}14$

D. $^{-}49$

164. What is the value of $4^{-4} \div 4^{-2}$?

A.

$$\frac{1}{16}$$

B.

$$\frac{1}{8}$$

C. 2

D. 8

165. What is the value of the expression $4^3 \cdot \left(\frac{1}{2}\right)^4$?

A. 32

B. 16

C. 8

D. 4

166. If $4^x \cdot 4^{x-3} \cdot 4^{5-x} = 4^8$, what is the value of x ?

A. 0

B. 2

C. 6

D. 10

167. Which expression is equivalent to $\frac{(3^2 \cdot 3^{-4})}{3^2}$?

A.

$$-81$$

B.

$$-12$$

C.

$$\frac{1}{12}$$

D.

$$\frac{1}{81}$$

168. Which expression is equivalent to $5^{-2} \cdot 5^5$?

A. 25^{-10}

B. 5^{-10}

C. 5^3

D. 25^3

169. What is the value of the expression $(3^3)(2^4)(3^{-4})(2^{-3})$?

A.

$$^{-6}$$

B.

$$^{-3}$$

C.

$$\frac{1}{6}$$

D.

$$\frac{2}{3}$$

170. Which value is equivalent to $(4^2)(4^{-3})$?

A.

$$16$$

B.

$$4$$

C.

$$\frac{1}{4}$$

D.

$$\frac{1}{16}$$

171. What is the value of $\frac{6^2}{6^4}$?

A. $\frac{1}{36}$

B. $\frac{1}{2}$

C. 4

D. 36

172. Which expression is equivalent to $\frac{(7^2)^4}{(7^{-2})(7^4)}$?

A. 7^0

B. 7^1

C. 7^4

D. 7^{26}

173. What is the simplified form of $\frac{3^{-4} \times 5^2}{3^{-2} \times 5^{-5}}$?

A. $3^2 \times 5^7$

B. $3^{-2} \times 5^7$

C. $\frac{5^7}{3^2}$

D. $\frac{1}{3^6 \times 5^3}$

174. What is the value of $\left(\frac{2}{5}\right)^3$?

A. $\frac{8}{5}$

B. $\frac{8}{15}$

C. $\frac{6}{15}$

D. $\frac{8}{125}$

175. Which expression is equivalent to 46,656?

- A. $(6^2)^2$
- B. $6^3 \cdot 6^2$
- C. $\left(\frac{6^{12}}{6^9}\right)^2$
- D. $\left(\frac{6^{18}}{6^{20}}\right)^3$

176. Which expression is equivalent to $\frac{2^8 \cdot 3^6}{2^2 \cdot 3^{-2}}$?

- A. $2^{10} \cdot 3^4$
- B. $2^6 \cdot 3^8$
- C. $2^6 \cdot 3^{-8}$
- D. $2^4 \cdot 3^{-3}$

177. What is the value of $\left(\frac{2}{3}\right)^{-3}$?

- A. $\frac{8}{27}$
- B. $\frac{3}{8}$
- C. $3\frac{3}{8}$
- D. $4\frac{1}{2}$

178. What is the value of $(2^4)^0 \div 2^{-2}$?

- A. 4
- B. 8
- C. 16
- D. 64

179. Which is equivalent to $40 \cdot 3^3 \cdot 7^{-2}$?

- A. 5,040
- B. $\frac{360}{14}$
- C. 52,290
- D. $\frac{1,080}{49}$

180. What is the value of the expression $\frac{10^2 \cdot 3^3}{3^2 \cdot 5^2}$?

- A. 3
- B. 12
- C. 15
- D. 30

181. What is the value of $(6^2)^1$?

- A. 0
- B. 6
- C. 36
- D. 216

182. What is the value of the expression $\frac{4^4 \cdot 2^5}{4^8}$?

- A. $\frac{1}{64}$
- B. $\frac{1}{8}$
- C. 2
- D. 16

183. Which expression is equivalent to $\frac{5^{-2}}{5^{-3} \cdot 5^4}$?

- A. $\frac{5^2}{5^7}$
- B. $\frac{1}{5^3}$
- C. $\frac{5^5}{5^4}$
- D. $\frac{1}{5}$

184. Which expression is equivalent to $(8^3)^{-6} \div 8^{-10}$?

A. 8^{-28}

B. 8^{-8}

C. 8^7

D. 8^{10}

185. What is the value of $(9^2)^2 \div 3^4$?

A. 9

B. 81

C. 243

D. 6,561

186. Which expression is equivalent to $3^2 \cdot (3^4)^2 \cdot \frac{1}{3^8}$?

A. $\frac{3^8}{3^4}$

B. 3^{14}

C. 3^6

D. $\frac{1}{3^6}$

187. What is the value of $(5^2)^5 \div 5^{12}$?

A. $\frac{1}{25}$

B. $\frac{1}{5}$

C. 5

D. 125

188. Which expression is equivalent to $(2^3)^2 \div (2^2)^5$?

A. 2^4

B. 2^2

C. $\frac{1}{2^2}$

D. $\frac{1}{2^4}$

189. Which expression is equivalent to $\frac{1}{(4^2)^3} \div \frac{(4^5 \cdot 3^2)^3}{4^5 \cdot 3^5}$?

A. $\frac{3}{4^6}$

B. $\frac{3^{11}}{4^{11}}$

C. $\frac{3^{11}}{4^6}$

D. $\frac{1}{4^{10} \cdot 3^{11}}$

190. Which expression is equivalent to $(3^2)^4 \cdot \left(\frac{2^{10}}{2^4}\right)$?

A. $3^8 \cdot 2^{14}$

B. $3^6 \cdot 2^6$

C. $3^8 \cdot 2^6$

D. $\frac{3^8}{2^6}$

191. What is the value of the expression $(2^2)(2^{-2}) \div (2^{-3})$?

A. 8

B. 2

C. $\frac{1}{2}$

D. $\frac{1}{8}$

192. Which expression is equivalent to $-2^4 \times 2^{-3}$?

A. -4

B. -4^{-12}

C. -2

D. -2^{-7}

193. What is the value of $\frac{10^3 \cdot 10^{-2} \cdot 5^2}{10^{-1} \cdot 5^4 \cdot 5^{-2}}$?

- A. 5
- B. 10
- C. 50
- D. 100

194. Which expression is equivalent to $\frac{3^2 \cdot 2^4}{2^8 \cdot 3^{-4}}$?

- A. $\frac{1}{3^2 \cdot 2^4}$
- B. 6^2
- C. $\frac{3^6}{2^4}$
- D. 6^{-4}

195. Which expression is equivalent to $3^2 \cdot 3^3 \cdot 3^{-1}$?

- A. 3^{-6}
- B. 3^{-4}
- C. 3^4
- D. 3^5

196. Which expression is equivalent to $\frac{(3^3)^2}{(3^3)^6}$?

- A. 3^3
- B. 3^{-3}
- C. 3^{-4}
- D. 3^{-12}

197. Which expression is equivalent to $8^{-4} \div 8^{-2}$?

- A. 8^{-4}
- B. 8^{-2}
- C. 8^3
- D. 8^8

198. Which expression is equivalent to $(5^{-3})^2 \div (5^4)$?

- A. 5^{-1}
- B. 5^{-2}
- C. 5^{-5}
- D. 5^{-10}

199. What is the value of the expression $\frac{3^4 \cdot 3^{-1} \cdot 4^{-3}}{3^5 \cdot 4^{-2}}$?

A. $\frac{1}{36}$

B. $\frac{1}{9}$

C. 9

D. 36

200. Which expression is equivalent to $\frac{7^{-3}}{7^6}$?

A. 7^9

B. 7^3

C. $\frac{1}{7^3}$

D. $\frac{1}{7^9}$

201. What is the value of the expression $\frac{(8^2)^2}{(2^3)^2}$?

A. 16

B. 32

C. 64

D. 128

202. Which expression is equivalent to $(3^2)^3 \cdot (3^3)^2$?

A. 3^{10}

B. 3^{12}

C. 3^{25}

D. 3^{36}

203. Which expression is equivalent to $(8^{-3})^{-1} \cdot 8^4$?

A. 8^{12}

B. 8^7

C. 8^1

D. 8^0

204. Which expression is equivalent to $-9^2 \cdot 9^{-8}$?

A. -9^6

B. -9^{-6}

C. 9^6

D. 9^{-6}

205.

What is the value of the expression $\frac{5^3(5^2)^3}{5^2(5^4)^2}$?

A. $\frac{1}{25}$

B. $\frac{1}{5}$

C. 1

D. 5

206. Which expression is equivalent to $\frac{8^6}{8^3}$?

A. 8^3

B. 8^2

C. 8^{-2}

D. 8^{-3}

207. Which expression is equivalent to $5^2 \div 5^{-4}$?

A. 5^{-8}

B. 5^{-6}

C. 5^{-2}

D. 5^6

208. Which expression is equivalent to $\frac{9^0 \cdot 9^4}{9^{-3} \cdot 9^1}$?

A. 9^6

B. 9^2

C. 1

D. 0

209. Which expression is equivalent to $2x^{-2}y^{-4}$?

A. $\frac{2}{(xy)^6}$

B. $\frac{2}{x^2y^4}$

C. $\frac{1}{2x^2y^4}$

D. $\frac{1}{2(xy)^6}$

210. What is the value of the expression $\frac{2^{-6}}{2^4} \times 2^8$?

A. $\frac{1}{16}$

B. $\frac{1}{4}$

C. 4

D. 16

211. Which expression is equivalent to $2^8 \cdot 2^{10}$?

A. 2^{18}

B. 4^{18}

C. 2^{80}

D. 4^{80}

212. Which expression is equivalent to $8^3 \cdot 8^{-2}$?

A. $8 \cdot 8 \cdot 8 \cdot -8 \cdot -8$

B. $8 \cdot 8 \cdot 8 \cdot \frac{1}{8} \cdot \frac{1}{8}$

C. $(8 \cdot 8 \cdot 8) + (-8 \cdot -8)$

D. $(8 + 8 + 8) \cdot \left(\frac{1}{8} + \frac{1}{8} \right)$

213. Which expression is equivalent to 6^{30} ?

A. $(6^{15})^{15}$

B. $6^{-10} \cdot 6^{-20}$

C. $6^5 \cdot 6^6$

D. $6^{12} \cdot 6^{18}$

214. Which expression does **not** have the value of $\frac{1}{3,125}$?

A. $5^{-3} \cdot 5^{-2}$

B. $-5^3 \cdot -5^2$

C. 5^{-5}

D. $(5^5)^{-1}$

215. A teacher wrote the expression shown on the board.

$$(7^5 \times 7^4)^3$$

Which expression, when cubed, is equivalent to $(7^5 \times 7^4)^3$?

A. 7^1

B. 7^9

C. 7^{20}

D. 7^{27}

216.

Which expression is equivalent to $\frac{1}{64}$?

A. $(8^2)^0$

B. $(8^{-2})^0$

C. $8^2 \times 8^0$

D. $8^{-2} \times 8^0$

217.

Simplify $\frac{6^9}{6^3}$.

- A. 6^3
- B. 6^6
- C. 6^{12}
- D. 6^{27}

218. Which expression is equivalent to $2^3 \times 2^4 \times 2^{-1}$?

- A. 8^{-12}
- B. 2^{-12}
- C. 2^6
- D. 8^6

219. Which expression is equivalent to $(4^{-6} \cdot 4^4) + \left(\frac{2^6}{2^3}\right)$?

- A. $\frac{1}{4^2} + 2^3$
- B. $\frac{1}{4^{24}} + 2^3$

C. $\frac{1}{4^2} + 2^2$

D. $\frac{1}{4^{24}} + 2^2$

220. Mrs. Jones asked her students to write an equivalent numerical expression to $(2^{-4} \cdot 3^{-3})^3 \div (2^{-3} \cdot 3^{-2})^2$. Which of these responses is correct?

A. 2^0

B. $\frac{1}{2} \cdot \frac{1}{3^5}$

C. $2^{-6} \cdot 3^{-5}$

D. $2^{-18} \cdot 3^{-13}$

221.

$$\frac{(2^{-4})^2 \times 2^{-5}}{2^{-6}}?$$

Which of these is equivalent to

A. 2^{-19}

B. $\frac{1}{2^7}$

C. $\frac{1}{2}$

D. 2^3

222. Which numerical expression is equivalent to $(4^4)^3 \times 4 \times 3^0$?

A. 4^{12}

B. 4^{13}

C. $4^{12} \times 3$

D. $4^{13} \times 3$

223. For what value of n is $\frac{9^2}{9^n} = 729$?

A. -5

B. -1

C. 1

D. 5

224. What is the value of $-4^4 \cdot 4^{-7}$?

A. 64

B. $\frac{1}{64}$

C. $-\frac{1}{64}$

D. -64

225. Simplify the expression below.

$$\frac{5^2 \times 5^3}{5^6}$$

A. $\frac{1}{5}$

B. 1

C. 125

D. 625

226. Which expression is equivalent to $11^{-4} \times 11^8$?

A. 121^{-32}

B. 11^{-32}

C. 11^4

D. 121^4

227. Which expression is equivalent to $\frac{1}{64}$?

A. $(4^8)^{-2}$

B. $(2^{-2})^{-4}$

C. $\left(\frac{(3 \times 2)^2}{3^2}\right)^{-3}$

D. $\left(\frac{8^4}{8^{-3} \times 8^9}\right)^{-1}$

228.