TEST NAME: **EE.1 Exponents**
TEST ID: **754746**
GRADE: **08 - Eighth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **School Assessment**

1. 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}

2. **What is the simplified form of the expression below?**

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

A. 2

B. 4

C. 2^3

D. 4^3

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

A. 4

B. 8

C. 16

D. 96

4. What is the value of the expression $8^{-2} \times 8^3$?

A. 64

B. 8

C. $\dfrac{1}{8}$

D. $\dfrac{1}{48}$

5. 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

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

A. $4 \cdot 20$

B. $6 \cdot 20$

C. 20^4

D. 20^6

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

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

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

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

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

8. **Which inequality is true?**

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

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

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

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

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

   A. 11^7

   B. 11^{10}

   C. 22^7

   D. 22^{10}

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

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

    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. **Which expression is equivalent to** $(2^6 \cdot 2^2)^2$ **?**

    A. 2^{16}

    B. 2^{24}

    C. 4^{16}

    D. 4^{64}

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

   A. 7^0

   B. 7^{13}

   C. 7^{14}

   D. 7^{30}

13. **Which is the greatest quantity?**

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

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

   C. $\left(3^{-3}\right)\left(3^{1}\right)\left(3^{-1}\right)$

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

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

   A. 64

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

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

   D. -64

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

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

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

   C. 100

   D. $10{,}000$

16. **Simplify** $5^{-2} \times 5^5 \times 5$.

   A. 125^{-10}

   B. 5^3

   C. 5^4

   D. 125^3

17. **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. $2^4 \times 2^5$

18. $\dfrac{\left(2^3\right)^3}{\left(3^3\right)^3} =$

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

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

    C. $(-6)^6$

    D. $(-6)^9$

19. **Which expression is equivalent to** $\dfrac{7^{15}}{7^5}$?

    A. 7^3

    B. 7^{10}

    C. 7^{20}

    D. 7^{75}

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

    A. -36

    B. -12

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

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

21. **Which expression is equivalent to** 900^{-2}?

    A. $\dfrac{1}{30^4}$

    B. 600^{-3}

    C. -30^{-4}

    D. $-\dfrac{1}{600^3}$

22. Which expression is equivalent to $(6^2)^3$?

   A. 6^5

   B. 6^6

   C. 12^3

23. **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. $3n \times 2q$

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

   A. 9^3

   B. 9^8

   C. 9^{16}

   D. 9^{48}

25. **What is the total number of zeros in the number** $(100{,}000{,}000)^2$?

   A. 10

   B. 12

   C. 16

   D. 18

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

   A. $\dfrac{1}{3^{10}}$

   B. $\dfrac{1}{3^6}$

   C. 3^2

   D. 3^4

27. **Which expression is equivalent to** $\left(5^6\right)^2$**?**

    A. 5^{12}

    B. 5^8

    C. 5^4

    D. 5^3

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

    A. $^-81$

    B. $^-12$

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

    D. $\dfrac{1}{81}$

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

    A. 16

    B. 4

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

    D. $\dfrac{1}{16}$

30. **Which expression is equivalent to** $\dfrac{5^{12} \cdot 7}{5^2 \cdot 7^2}$**?**

    A. $\dfrac{5^6}{7^2}$

    B. $\dfrac{5^6}{7}$

    C. $\dfrac{5^{10}}{7}$

    D. $\dfrac{5^{10}}{7^2}$

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

A. 64

B. 12

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

D. $\dfrac{1}{64}$

32. **Which of the following is equivalent to** $16 \cdot 4^3 \cdot 64$?

A. 2^{10}

B. 2^{14}

C. 2^{15}

D. 2^{16}

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

A. 2^9

B. 2

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

D. $\dfrac{1}{2^9}$

34. Which is equivalent to $\dfrac{3^3}{3^5} \times \dfrac{9}{1}$?

A. 81

B. 27

C. 9

D. 1

35. **Which expression is equivalent to** $\left(2 \times 3^2\right)^{-1}$?

   A. 6^{-2}

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

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

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

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 expression is equivalent to** $7^3 \cdot 7^5$?

   A. 7^8

   B. 7^{15}

   C. 49^8

   D. 49^{15}

38. Which expression is equivalent to $6^8 \div 6^4$?

   A. 6^4

   B. 6^2

   C. 1^4

   D. 1^2

39. Which choice is equivalent to $\dfrac{1}{27}$?

   A. 3^3

   B. 3^{-3}

   C. 9^3

   D. 9^{-3}

40. Which expression is equivalent to $\dfrac{6^{15}}{6^5}$?

   A. 6^3

   B. 6^{10}

   C. 6^{20}

   D. 6^{75}

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

   A. $\dfrac{10^2}{7^6}$

   B. $\dfrac{7^6}{10^2}$

   C. $\dfrac{1}{7^6 \times 10^2}$

   D. $7^6 \times 10^2$

42. Which number represents $9^4 \cdot 9^{-3}$?

   A. 9^{-12}

   B. 9

   C. 9^7

   D. 9^{12}

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

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

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

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

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

44. What is the value of $5^3 \div 5$?

   A. 3

   B. 10

   C. 25

45. Which expression is equivalent to $\dfrac{3^6}{3^2}$?

   A. 3^{12}

   B. 3^8

   C. 3^4

   D. 3^3

46. Which of these is equivalent to $\dfrac{(2^{-4})^2 \times 2^{-5}}{2^{-6}}$?

   A. 2^{-19}

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

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

   D. 2^3

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

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

   B. 1

   C. 5

   D. 25

48. Which is equivalent to $\dfrac{2^7}{2^5}$?

   A. 1^2

   B. 1^{12}

   C. 2^2

   D. 2^{12}

49. What is the value of $2^3 \div 2^5$?

   A. $\dfrac{1}{4}$

   B. 2

   C. 4

50. What is the value of the expression $(8^2) \div (8^3)$?

   A. $^-8$

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

   C. 8

51. **Which is equivalent to** $\dfrac{10 \times 10^4 \times 10^3}{10^9}$?

   A. 10^{-2}

   B. 10^{-1}

   C. 10^3

   D. 10^4

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

   A. $\dfrac{1}{4^2} + 2^3$

   B. $\dfrac{1}{4^{24}} + 2^3$

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

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

53. **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

54. Which choice is equivalent to $4^3 \times 4^{-4}$?

A. $^-4$

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

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

D. 4

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

A. $\frac{1}{10^8}$

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

C. $10,000$

D. 10^8

56. **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

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

A. $^-6$

B. $^-3$

C. $\dfrac{1}{6}$

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

58. Which value is equivalent to $\dfrac{5}{5 \times 5^3}$?

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

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

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

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

59. Which value is equivalent to $\frac{1}{2}(2^3 \times 2^{-4})$?

A. $^-12$

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

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

D. 1

60. 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

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

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

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

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

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

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

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

   A. 0

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

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

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

63. Which expression is equivalent to $2^3 \times 2^2$?

   A. 2^5

   B. 2^6

   C. 4^6

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

   A. $^-32$

   B. $^-16$

   C. 1

   D. 4

65. **Which fraction is equivalent to** 3^{-3}**?**

   A. $-\dfrac{1}{9}$

   B. $-\dfrac{1}{27}$

   C. $\dfrac{1}{9}$

   D. $\dfrac{1}{27}$

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

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

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

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

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

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

    A. 8^{0}

    B. 8^{19}

    C. 8^{20}

    D. 8^{60}

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

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

    B. $(4)(-2)$

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

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

69. $\dfrac{\left(4^{2}\right)^{3}}{\left(7^{3}\right)^{2}} =$

    A. $(-28)^{6}$

    B. $(-28)^{5}$

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

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

70. **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}

71. **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. $3^6 = 3^{-2} \cdot 3^2 \cdot 3^{-2}$

72. **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}

73.

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

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

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

C. 4

D. 16

74. **Which of the following is equivalent to $\dfrac{5}{49}$?**

A. $5\left(7^2\right)$

B. $\dfrac{1}{5\left(7^2\right)}$

C. $5 - 7^2$

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

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

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

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

C. -5

D. 4

76. Which expression is equivalent to $5^6 \div 5^3$?

    A. 5^2
    B. 5^3
    C. 5^9

77. Which number is equivalent to $\dfrac{7^{15}}{7^8}$?

    A. 7^{-23}
    B. 7^{-7}
    C. 7^7
    D. 7^{23}

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

    A. 3
    B. 7
    C. 10
    D. 25

79. What is the value of $4^{-3} \times 4^5$?

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

    B. 8

    C. 16

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

    A. 32

    B. 48

    C. 64

    D. 128

81. **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. $(-2)(-2)(-2)(-2)(-2)$

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

   A. 25^{-10}

   B. 5^{-10}

   C. 5^{3}

   D. 25^{3}

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

   A. 1^{5}

   B. 1^{12}

   C. 8^{5}

   D. 8^{12}

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

   A. $(8^{2})^{0}$

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

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

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

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

   A. 1^{4}

   B. 1^{9}

   C. 2^{4}

   D. 2^{9}

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86. Which expression is equivalent to $0.2^3 \times 0.2^7$?

    A. 0.2^{10}

    B. 0.2^{21}

    C. 0.4^{10}

    D. 0.4^{21}

87. **What is the value of 9^2?**

    A.   11
    B.   18
    C.   81
    D.   92

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

    A. 27

    B. 3

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

    D. $\dfrac{1}{27}$

89. **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. $3b \times 5a$

90. What is the value of $\dfrac{(2^{-3})(2^{-2})}{2^{-7}}$?

A. $\dfrac{1}{4}$

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

C. 2

D. 4

91. **Which expression has a value between 0 and 1?**

A. $\dfrac{3^8}{3^{-4}} \times 3^{-3}$

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

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

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

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

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

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

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

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

93. **Which expression is equivalent to** $\dfrac{4^{30}}{4^6}$ **?**

A. 4^5

B. 4^{24}

C. 4^{36}

D. 4^{180}

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

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

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

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

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

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

A. 0.57
B. 0.75
C. 1.33
D. 1.75

96. 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. $\dfrac{1}{2} \cdot \dfrac{1}{3^5}$

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

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

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

A. 4^{-9}
B. 4^{-8}
C. 4^{-6}
D. 4^{-4}

98. **Dividing an integer by $\frac{2}{3}$ 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

99. Which expression is equivalent to $(4^3)^4 \div 4^3$?

    A. 4^2

    B. 4^4

    C. 4^9

    D. 4^{10}

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

    A. 5^4

    B. 5^5

    C. 5^9

    D. 5^{11}

101. **Which expression is equivalent to $\dfrac{10^{-2}}{10^{-14}}$?**

    A. 10^7

    B. 10^{12}

    C. 10^{16}

    D. 10^{28}

102. **Which expression is equivalent to $3^8 \div 3^4$?**

    A. 0^2

    B. 1^4

    C. 3^2

    D. 3^4

103. $(-6)^2 =$

    A. -36

    B. -12

    C. 12

    D. 36

104.

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

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

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

    C. $(-35)^6$

    D. $(-35)^8$

105. **What is the value of** 3^0?

    A. 0

    B. 1

    C. 3

    D. 30

106. Which expression is equivalent to $\dfrac{1}{64}$?

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

    B. $\left(2^{-2}\right)^{-4}$

    C. $\left(\dfrac{(3\times2)^2}{3^2}\right)^{-3}$

    D. $\left(\dfrac{8^4}{8^{-3}\times8^9}\right)^{-1}$

107. What is the value of $7^3 \div 7^4$?

    A. -7

    B. $\dfrac{1}{7}$

    C. 7

108. **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.

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

    A. 9^0
    B. 9^{18}
    C. 9^{19}
    D. 9^{65}

110. What is the value of $\dfrac{9^2}{(3^2 \cdot 3^2)}$?

    A. 0

    B. $\dfrac{1}{81}$

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

    D. 1

111. **Which of the following is equivalent to** $\dfrac{9^2 \cdot 9^5 \cdot 9}{9^{12}}$?

    A. 9^{-5}

    B. 9^{-4}

    C. 9^{-2}

    D. 9^{-1}

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

    A. 4^6

    B. 4^4

    C. 4^{-4}

    D. 4^{-6}

113.

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

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

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

    C. 5^{-5}

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

114. Which expression has a solution of 64?

    A. $2^8 \times 2^2$

    B. $2^3 \times 2^2$

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

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

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

B. $\dfrac{1}{32}$

C. 32

D. 64

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

A. 4

B. 16

C. 72

D. 96

117. 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}

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

A. 2^{15}

B. 3^{15}

C. 15^2

D. 15^3

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

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

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

C. $^-18$

D. $^-27$

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

    A. 3^6

    B. 3^2

    C. 3^{-2}

    D. 3^{-8}

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

    A. -5

    B. -1

    C. 1

    D. 5

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

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

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

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

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

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

    A. $(^-3)^6$

    B. $(^-3)^8$

    C. $(9)^8$

124.

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

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

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

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

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

125. **Which value of *x* makes the following equation true?**

$2^x = 1$

A. 0

B. 1

C. 2

D. 3

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

A. dividing by 4

B. dividing by 16

C. multiplying by 8

D. multiplying by 16

127. Which expression is equivalent to $\dfrac{3^{16}}{3^4}$?

A. 3^4

B. 3^{12}

C. 3^{20}

D. 3^{64}

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128.

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

A. 6^3

B. 6^6

C. 6^{12}

D. 6^{27}

129. **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. $8^3 \times 4m$

130. **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}

131.

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

A. 2^{18}

B. 4^{18}

C. 2^{80}

D. 4^{80}

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132. **Which expression is equivalent to** $\dfrac{5 \cdot 5 \cdot 5 \cdot 8 \cdot 8 \cdot 8}{7 \cdot 7 \cdot 9 \cdot 9}$ **?**

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

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

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

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

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

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

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

    C. 2

    D. 8

134. **Which value is equivalent to** $2^3 \cdot 3^3 \cdot 9^0$ **?**

    A. 0

    B. 125

    C. 216

    D. 1,944

135. Which number is equivalent to $\dfrac{2^4 \cdot 2^5 \cdot 2^6}{2 \cdot 2^2 \cdot 2^3}$?

    A. 2^9

    B. 2^{10}

    C. 2^{20}

    D. 2^{21}

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

    A. 2^{-12}

    B. 2^4

    C. 2^3

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

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

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

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

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

138. Which value is equivalent to $\dfrac{2^6}{2^3}$?

A. 2^2

B. 2^3

C. 2^9

D. 2^{18}

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

A. $\left(2^4\right)\left(2^3\right)$

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

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

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

140. What is the value of r?

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

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

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

C. 3

D. 9

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

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

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

C. 0

D. 9

142. Simplify the expression below.

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

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

B. 1

C. 125

D. 625

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

A. 121^{-32}

B. 11^{-32}

C. 11^4

D. 121^4

144. What is the value of $(3^0)^3$?

A. 0

B. 1

C. 3

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

A. 3^{25}

B. 3^{10}

C. 3

D. 1

146. **Which expression is equivalent to $\dfrac{4^{24}}{4^8}$?**

   A. 1

   B. 3

   C. 4^3

   D. 4^{16}

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

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

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

   C. $(2)(-3)$

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

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

   A. $(4 \times {}^-3)(4 \times 6)$

   B. $(4 + {}^-3)(4 + 6)$

   C. $4 + 4 + 4$

   D. $4 \times 4 \times 4$

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

   A. 4^{12}

   B. 4^{13}

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

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

150. **Which statement is true?**

   A. $-5^2 - \left(6 - 3^2\right) < -14$

   B. $8^2 - \left(-9^2 + 2\right) > (-13)^2$

   C. $-7^2 - \left(4^3 - 10\right) > -102$

   D. $6^2 - \left(-5^2 + 1\right) < (-7)^2$

151. 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.
$$\frac{1}{2(xy)^6}$$

152. Which choice is equivalent to $\dfrac{9^8}{9^2}$?

A. 9^4

B. 9^6

C. 9^{10}

D. 9^{16}

153. $\dfrac{\left(3^5\right)^2}{\left(8^2\right)^5} =$

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

B. $(-24)^7$

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

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

154. Which is equivalent to $\frac{1}{81}$?

   A. $9^{-2} \times 9^{-1}$

   B. $3^{-3} \times 3^{-1}$

   C. $3^3 \times 3$

   D. 9×3^{-2}

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

   A.   0

   B.   1

   C.   6

   D.   9

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