

7th Grade Chapter 3 Review

Find the value of the variable in each equation:

1) $M \times 6^2 = 360$

$M =$

2) $2 \times 3^B = 54$

$B =$

3) $k \times 10^3 = 62,50$

$k =$

4) $w \div 10^2 = 0.567$

$w =$

Rewrite each as a single base with a single exponent if possible.

5) $(3^4)^2 =$

6) $3^2 \times 4^2 =$

7) $5^5 \times 3^6 =$

8) $\frac{4^9}{4^2} =$

9) $3^3 \times 3^2 =$

10) simplify: $\frac{20b^6}{2} = 2b^5$

Evaluate:

11) $\frac{123^7}{123^7} =$

12) $(7^0)^5 =$

13) $1 \times (2^2)^3 =$

14) $4 \times (3^2)^0 =$

15) $\left(\frac{1}{2}\right)^3 =$

16) $3\text{cm} \times 3 \times 10^4 =$ _____ $\text{cm} =$ _____ m

17) $100\text{ft} \times 4 \times 10^3 =$ _____ ft

18) How many millions are there in one trillion?

19) Which is worth more: a million \$10 bills, or one billion \$1 bills? Explain.

Write in standard notation:

20) $1.34 \times 10^3 =$

21) $68 \times 10^5 =$

Are these written in scientific notation(yes or no)? If not, explain why not and change to scientific notation.

22) 0.3×10^3

23) 8.86×8^{10}

24) 162.3×10^4

25) 99.9×10^{51}

Write in scientific notation.

26) $44,000 =$

27) $700 =$

28) 5 million =

29) $4,306 \times 10^3 =$

30) Which of the 2 numbers below is greater?

2×10^{16} or 4×10^{15}

circle

31) Which of the 2 numbers below is greater?

7.1×10^{44} or 5.9×10^{44}

32) a. Complete the table:

X	0	1	2	3	4
2^x	1				
x^2	0				
$2x$	0				

b. Which expression in the table grows at a constant rate? Explain.

c. Which expression in the table grows exponentially? Explain

Do these sentences describe exponential growth, exponential decay or neither.

33) Each time a tennis ball is used its pressure is $\frac{90}{100}$ what it was after the previous use.

34) A star becomes twice as bright every 10 years.

35) It is predicted that the honor society membership will increase by 10 people each month.

36) The number of tickets sold in a national lottery is expected to increase by 1.5 times each year.

37) $3x^2$

38) $\left(\frac{3}{2}\right)^x$

39) Show how $\left(2^3\right)^4 = 2^{12}$

40) Show how $5^4 \times 5^3 = 5^7$

41) Simplify each expression below.

a) $\frac{2a^2 \times 6a}{4}$

b) $\frac{(2a)^2 \times 6a^3}{4a}$

c) $\left(\frac{(12a)^2 \times 6a^3}{144a^3}\right)^0$

43. Mr. Remer wants to take Ms. Owens to the Valentines Dance. To impress her, he makes a "bouncy substance" of something he calls "P-zine". If he formed it into a ball, it would bounce

$\frac{3}{2}$ of its original height each time it hits the ground.

a) Will the bounces of the ball made of "P-zine" exhibit exponential growth or exponential decay? How do you know?

b) Mr. Remer is not that tall, so he puts some on the bottom of his shoes right before he has to dance with Ms. Owens. If he originally jumps 8 inches off the ground, how high off the ground will he be after his third bounce?

c) (Bonus) The basketball hoop is 10 feet off the ground. How many bounces will Mr. Remer make before his feet are above the basketball hoop?