Name _____ Date _____

CHAPTER 8

Chapter Test C

For use after Chapter 8

Simplify the expression. Write your answer using exponents.

1. $\frac{7^3 \cdot 7^8}{7^2}$

2. $\left(\frac{1}{8}\right)^3 \cdot 8^5$

3. $\left(\frac{2w^3}{v}\right)^3 \cdot \frac{1}{6w^3}$

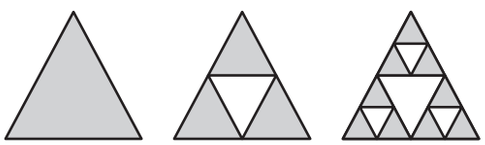
4. $(-6a^7b^4)(3a^3b^5)$

5. $[(k+2)^2]^8$

6. $5^8 \cdot 5 \cdot 5^{11}$

In Exercises 7–9, use the following information.

Draw an equilateral triangle with side lengths that are 1 unit long. Divide it into 3 new triangles by connecting the midpoints of the sides of the triangle, as shown in Step 1.



Step 0 Step 1 Step 2

7. Complete the table that shows the number of new shaded triangles and the side lengths of the new triangles for Steps 1–4.

Step	Number of new triangles	Side length of new triangle
1		
2		
3		
4		

8. Write and simplify an expression to find by how many times the number of new triangles increased from Step 2 to Step 7.

9. Write and simplify an expression to find the perimeter of a triangle formed in Step 6.

Simplify the expression.

10. 0^{-4}

11. $\frac{3^{-4}}{3^{-7}}$

12. $4^{-2}\left(\frac{6}{11^0}\right)$

13. $-3(3f^{-1}g^3)^{-2}$

14. $\left(\frac{-2c^4d^{-4}}{3c^{-1}d^{-2}}\right)^4$

15. $\left(\frac{q^2}{5}\right)^{-2}$

Answers

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. See left.

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

Name _____ Date _____

CHAPTER 8

Chapter Test C *continued*

For use after Chapter 8

Order the numbers from least to greatest.

16. $76{,}000{,}000;\ 7.3 \times 10^8;\ 4.668 \times 10^7;\ 66{,}005{,}000;\ 7.08 \times 10^6$

17. $0.0000284;\ 0.00020079;\ 3.4 \times 10^{-5};\ 4.07 \times 10^{-6};\ 0.00004$

Evaluate the expression. Write your answer in scientific notation.

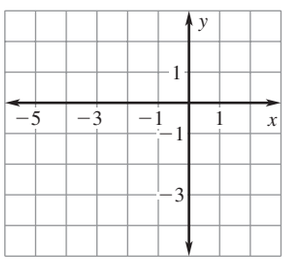
18. $\dfrac{(2{,}000{,}000{,}000)^3(0.00009)}{600{,}000{,}000}$

19. $\dfrac{1.2 \times 10^{-9}}{4 \times 10^{-7}}$

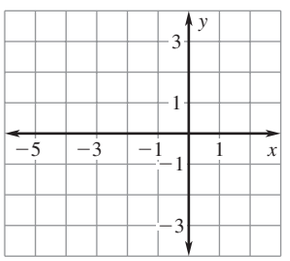
20. The radius of Earth is about 6.38×10^3 kilometers and the radius of a grain of sand is about 1×10^{-3} meter. Assume Earth and a grain of sand are spheres. Find the ratio of the volume of Earth to the volume of a grain of sand. Round your answer to the nearest hundredth. What does the ratio tell you?

Graph the function. Compare the graph with the graph of $y = 2^x$. Then identify its domain and range.

21. $y = -4 \cdot 2^x$

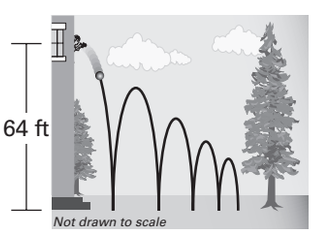


22. $y = \dfrac{1}{3} \cdot 2^x$



In Exercises 23–25, use the following information.

A ball is dropped from a height of 64 feet. It rebounds three-fourths of the height from which it falls every time it hits the ground.



23. Identify the initial height, the decay factor, and the decay rate.

24. Write a function that models the height of the ball over time.

25. Find the height of the ball after it hits the ground three times.

Answers

16. _____

17. _____

18. _____

19. _____

20. _____

21. See left.

22. See left.

23. _____

24. _____

25. _____