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CHAPTER



Exponents

Lesson 1.1 Exponential Notation

Identify the base and exponent in each expression.

1. 5^2

2. 8^4

3. $(-3)^8$

4. $\left(\frac{3}{7}\right)^9$

5. $(-2)^4$

6. 1.7^8

Tell whether each statement is correct. If it is incorrect, state the reason.

7. $8^3 = -8 \cdot -8 \cdot -8$

8. $17^4 = 17 \cdot 17 \cdot 17 \cdot 17$

Write in exponential notation.

9. $6.7 \cdot 6.7 \cdot 6.7 \cdot 6.7$

10. $\frac{2}{9} \cdot \frac{2}{9} \cdot \frac{2}{9}$

11. $27 \cdot 27 \cdot 27 \cdot 27$

12. $(-9) \cdot (-9) \cdot (-9)$


13. $ab \cdot ab \cdot ab \cdot ab$

14. $w \cdot w \cdot w \cdot w \cdot w \cdot w$

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Expand and evaluate each expression.

15.  $(-8.8)^3$

16. 3^2

17. 5^3

18. $\left(\frac{4}{9}\right)^3$

Write the prime factorization of each number in exponential notation.

19. 1,568

20. 18,225

21. 60

Order the following expressions from least to greatest.

22. -8^4 , 8^4 , and -4^8

23. $(-6)^2$, $(-2)^6$, -2^6

Solve. Show your work.

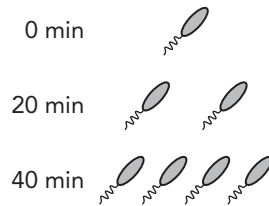
24. The mass of Mars is approximately 100,000,000,000,000,000,000 kilograms, and that of Neptune is about 100,000,000,000,000,000,000,000 kilograms. Write each mass as 10 raised to a power.

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Solve. Show your work.

25. Bacteria are single-celled organisms that can divide and multiply very rapidly when moisture and nutrients are present. The diagram shows the cell division of one bacterium.



Find the number of bacteria present after 80 minutes if there were two bacteria at 0 minutes. Give your answer in exponential notation.

26. Kelly folded a large piece of square paper along its diagonal. She noticed that two triangles were formed. Then she made a second fold and four triangles were formed. The following table shows the result of her folds of the square paper.



Number of Folds	Number of Triangles Formed on Square Paper
1	2
2	4
3	8

How many folds must Kelly make to obtain 128 triangles on the square paper?