

1. Find the value of each expression. Which expression has a different value?

- a. $4^2 = 16$
- b. $2^4 = 2 \times 2 \times 2 \times 2 = 16$
- c. $8^2 = 8 \times 8 = 64$
- d. $16^1 = 16$

2. Evaluate

$$4^3 = 4 \times 4 \times 4 = 16 \times 4 = 64$$

3. At the beach, Tatiana is collecting shells. One day, she picked up three shells. Each day she picked up three times as many shells as the day before. Write an expression for the number of shells she picked up on the fifth day.

$$3^5$$

3 is the number that is repeating - 5 is how many times it repeats

4. What would you do first in the following:

$$15 - 5 \times 2 + \boxed{10^2} + 3$$

5. Solve the above equation – what step did you do **last**? Place a box around it.

$$15 - 5 \times 2 + \boxed{10^2} + 3$$

$$15 - \boxed{5 \times 2} + 100 + 3$$

$$\boxed{15 - 10} + 100 + 3$$

$$\boxed{5 + 100} + 3 = \boxed{108}$$

$$\boxed{105 + 3} \leftarrow \text{LAST STEP}$$

6. Which of these numbers is the result of squaring a whole number base?

- a. 3
- b. 6
- c. 8
- d. 25

$$5^2 = 25$$

7. Evaluate

$$\begin{aligned} & 3 + 9 \times 4 - 7 \\ & \boxed{3 + 36} - 7 \\ & 39 - 7 \\ & \boxed{32} \end{aligned}$$

8. Evaluate

$$\begin{aligned} & 4 - 2 + 3^3 - 15 + (10^1 \times 2^3) \\ & 4 - 2 + 3^3 - 15 + (10 \times 8) \\ & 4 - 2 + \boxed{3^3} - 15 + 80 \\ & \boxed{4 - 2 + 27} - 15 + 80 \\ & \boxed{2 + 27} - 15 + 80 \\ & \boxed{29 - 15} + 80 \\ & 14 + 80 \\ & \boxed{94} \end{aligned}$$

9. This number can be raised to any power and will still result in the same answer. What number is it?

$$\boxed{1} \quad 1^2 = 1 \quad 1^5 = 1 \quad 1^{157} = 1$$

10. Evaluate

$$\left[\frac{1}{3}\right]^4 = \frac{1}{3} \times \frac{1}{3} \times \frac{1}{3} \times \frac{1}{3} = \boxed{\frac{1}{81}}$$

11. Insert parentheses in the following expression so that its solution is 8

$$\begin{aligned} & 4 \times 3 \div 3 + (7 - 5) \times 2 \\ & 4 \times 3 \div 3 + (7 - 5) \times 2 \quad 4 + 4 \\ & \boxed{4 \times 3} \div 3 + 2 \times 2 \quad \nearrow \boxed{8} \\ & \boxed{2 \div 3} + 2 \times 2 \\ & 4 + 2 \times 2 \end{aligned}$$

12. What exponent would make this statement true

$$2^{\boxed{5}^k} = 32$$

$$2^? = 32$$

$$\begin{array}{ccccccc} 2 & \cdot & 2 & \cdot & 2 & \cdot & 2 \\ \downarrow & & \downarrow & & \downarrow & & \downarrow \\ 4 & & 8 & & 16 & & \boxed{32} \\ & & & & & & \downarrow \\ & & & & & & 64 \end{array}$$

13. Evaluate

⊕ Rule → add
8 zeros

$$10^8$$

$$100,000,000$$

14. Write 5^4 in expanded form

$$5 \times 5 \times 5 \times 5$$

For the following word problems, CURE the problem and then solve.

15. Mrs. Tuttle made cookies for her students. She put the cookies onto plates that could hold 12 cookies. She made 8 dozen cookies. How many plates would she need?

$$\text{dozen} = 12$$

8 plates

16. Marissa's dance team has a phone tree. The two team moms each call two other families and tell them that practice is cancelled. The pattern continues. How many families will be informed after the 4th round?

2 → number that repeats (base)
4 → # of times base repeats

$$2^4 = 2 \cdot 2 \cdot 2 \cdot 2$$

16 families

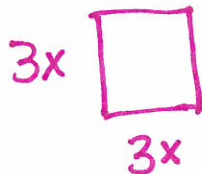
17. Devante received an alert to his phone that his favorite shirt was stolen and if he wanted it back, he had to be at the park in exactly 360 minutes. He received the message at 11:00 AM Saturday. What day and time will Devante have to be back at the park to receive his shirt?

$$\begin{array}{r} 60 \overline{) 360} \\ - 360 \\ \hline 0 \end{array}$$

60 minutes = 1 hour
6 hours later

$$\begin{array}{r} 11:00 \text{ AM} \\ + 6 \text{ HOURS} \\ \hline 5:00 \text{ PM on Saturday} \end{array}$$

BONUS: What is the area of a square who has a side length of $3x$?



$$3x \cdot 3x$$
$$\boxed{9x^2}$$