

A **sequence** is a set of numbers which follows a mathematical rule.

5, 10, 20, 40, ...

In this multiplication sequence, each term after the first is multiplied by 2.

Directions: Use the information on page 33 to help you complete these sequences by filling in the missing information.

1. 4, 8, 16, 32, _____, _____, _____, _____

2. 3, 9, 27, _____, _____, _____, _____

3. 4, 12, 36, _____, _____, _____, _____

4. 1, 5, 25, 125, _____, _____, _____, _____

5. 1, 4, 16, 64, _____, _____, _____, _____

6. 1, 7, 49, _____, _____, _____, _____

Directions: In these sequences two operations are used. Write a mathematical explanation and math sentence. Complete each sequence.

7. 2, 5, 11, 23, _____, _____, _____, _____

Written Explanation: _____

Math Sentence: _____

8. 3, 5, 9, 17, 33, _____, _____, _____, _____

Written Explanation: _____

Math Sentence: _____

9. 4, 11, 32, 95, _____, _____, _____, _____

Written Explanation: _____

Math Sentence: _____

10. 5, 13, 29, 61, _____, _____, _____, _____

Written Explanation: _____

Math Sentence: _____

A number multiplied by itself can be written as an exponent.

The **exponent** tells how many times to multiply the base number by itself.

5² is 5 squared or “5 to the second power.”

$$5^2 = 25$$

5³ is “5 cubed” or “5 to the third power.”

$$5^3 = 5 \times 5 \times 5$$

$$5 \times 5 = 25$$

$$25 \times 5 = 125$$

Directions: For each of the terms below, write an equation and solve it. The first one is done for you.

1. 3^2 3 x 3 = 9

6. 8^2 _____ x _____ = _____

2. 7^2 _____ x _____ = _____

7. 10^2 _____ x _____ = _____

3. 4^2 _____ x _____ = _____

8. 6^2 _____ x _____ = _____

4. 9^2 _____ x _____ = _____

9. 11^2 _____ x _____ = _____

5. 2^2 _____ x _____ = _____

10. 12^2 _____ x _____ = _____

Directions: For each of the terms below, write two equations and solve them. The first one is done for you.

11. 2^3 2 x 2 = 4
 4 x 2 = 8

16. 6^3 _____ x _____ = _____
 _____ x _____ = _____

$$2^3 = 8$$

$$6^3 = \underline{\hspace{2cm}}$$

12. 3^3 _____ x _____ = _____
 _____ x _____ = _____

17. 10^3 _____ x _____ = _____
 _____ x _____ = _____

$$3^3 = \underline{\hspace{2cm}}$$

$$10^3 = \underline{\hspace{2cm}}$$

13. 5^3 _____ x _____ = _____
 _____ x _____ = _____

18. 9^3 _____ x _____ = _____
 _____ x _____ = _____

$$5^3 = \underline{\hspace{2cm}}$$

$$9^3 = \underline{\hspace{2cm}}$$

14. 7^3 _____ x _____ = _____
 _____ x _____ = _____

19. 11^3 _____ x _____ = _____
 _____ x _____ = _____

$$7^3 = \underline{\hspace{2cm}}$$

$$11^3 = \underline{\hspace{2cm}}$$

15. 4^3 _____ x _____ = _____
 _____ x _____ = _____

20. 12^3 _____ x _____ = _____
 _____ x _____ = _____

$$4^3 = \underline{\hspace{2cm}}$$

$$12^3 = \underline{\hspace{2cm}}$$

..... Multiplying with Higher-Power Exponents

The **exponent** tells how many times to multiply the base number by itself.

$$2^4 \text{ means } 2 \times 2 \times 2 \times 2$$

$$2 \times 2 = 4$$

$$4 \times 2 = 8$$

$$8 \times 2 = 16$$

$$2^4 = 16$$

$$3^4 \text{ means } 3 \times 3 \times 3 \times 3$$

$$3 \times 3 = 9$$

$$9 \times 3 = 27$$

$$27 \times 3 = 81$$

$$3^4 = 81$$

Directions: For each of the problems below, write the correct equation and solve it. The first one has been started for you.

$$1. \quad 2^5 \quad \frac{2}{4} \times \frac{2}{2} = \frac{4}{8}$$

$$\frac{8}{16} \times \frac{2}{2} = \frac{16}{16}$$

$$2^5 = \underline{\hspace{2cm}}$$

$$2. \quad 3^4 \quad \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$3^4 = \underline{\hspace{2cm}}$$

$$3. \quad 5^4 \quad \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$5^4 = \underline{\hspace{2cm}}$$

$$4. \quad 3^5 \quad \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$3^5 = \underline{\hspace{2cm}}$$

$$5. \quad 6^4 \quad \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$6^4 = \underline{\hspace{2cm}}$$

$$6. \quad 6^5 \quad \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$6^5 = \underline{\hspace{2cm}}$$

$$7. \quad 7^4 \quad \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$7^4 = \underline{\hspace{2cm}}$$

$$8. \quad 7^5 \quad \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$7^5 = \underline{\hspace{2cm}}$$

$$9. \quad 2^6 \quad \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$2^6 = \underline{\hspace{2cm}}$$

$$10. \quad 3^6 \quad \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$3^6 = \underline{\hspace{2cm}}$$