

Name: _____

Date: _____

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Exponents Worksheet

Find the value, simplify or solve the problems. Show your working where needed.

1. Find the value of each power.

- | | |
|------------------|-------------------|
| a) $2^3 =$ _____ | f) $6^3 =$ _____ |
| b) $3^2 =$ _____ | g) $10^2 =$ _____ |
| c) $5^2 =$ _____ | h) $9^2 =$ _____ |
| d) $4^3 =$ _____ | i) $8^3 =$ _____ |
| e) $7^2 =$ _____ | j) $11^2 =$ _____ |

2. Simplify the expressions.

- | | |
|-----------------------------|-----------------------------|
| a) $2^3 \times 2^2 =$ _____ | f) $4^2 \times 6^2 =$ _____ |
| b) $5^4 \times 5^1 =$ _____ | g) $8^3 \div 4^3 =$ _____ |
| c) $3^2 \times 3^3 =$ _____ | h) $9^1 \times 9^6 =$ _____ |
| d) $7^5 \div 7^2 =$ _____ | i) $12^4 \div 12^2 =$ _____ |
| e) $10^3 \div 10^1 =$ _____ | j) $2^5 \times 3^5 =$ _____ |

3. Write each number in exponential form.

- | | |
|-------------------|-------------------|
| a) $8 =$ _____ | f) $16 =$ _____ |
| b) $27 =$ _____ | g) $81 =$ _____ |
| c) $64 =$ _____ | h) $343 =$ _____ |
| d) $125 =$ _____ | i) $625 =$ _____ |
| e) $1000 =$ _____ | j) $1296 =$ _____ |

4. Find the value of each power with a negative exponent.

- | | |
|----------------------|----------------------|
| a) $2^{-1} =$ _____ | f) $4^{-1} =$ _____ |
| b) $3^{-2} =$ _____ | g) $6^{-2} =$ _____ |
| c) $5^{-1} =$ _____ | h) $8^{-3} =$ _____ |
| d) $7^{-3} =$ _____ | i) $9^{-1} =$ _____ |
| e) $10^{-2} =$ _____ | j) $12^{-2} =$ _____ |

5. Evaluate the expressions.

- | | |
|------------------------|-------------------------|
| a) $2^3 + 3^2 =$ _____ | f) $5^3 + 2^2 =$ _____ |
| b) $4^2 - 2^3 =$ _____ | g) $8^2 - 6^2 =$ _____ |
| c) $6^2 + 5^2 =$ _____ | h) $10^3 - 7^2 =$ _____ |
| d) $7^3 - 4^2 =$ _____ | i) $12^2 + 5^3 =$ _____ |
| e) $9^2 - 3^3 =$ _____ | j) $15^2 - 9^2 =$ _____ |

6. Solve the word problems.

- A square has a side length of 6. Find the area of the square. (Use 6^2 .)
Answer: _____
- A cube has a side length of 4. Find the volume of the cube. (Use 4^3 .)
Answer: _____
- A number is raised to the power of 3 and equals 125. What is the number?
Answer: _____

7. Choose the correct answer.

- 5^2 is equal to
☐ 10 ☐ 25 ☐ 50 ☐ 100
- 3^3 is equal to
☐ 9 ☐ 27 ☐ 81 ☐ 12
- 10^{-2} is equal to
☐ 0.01 ☐ 0.1 ☐ 1 ☐ 100
- 2^4 is equal to
☐ 8 ☐ 16 ☐ 32 ☐ 64

8. Challenge!

- Without using a calculator, find the value of $6^3 - 4^3$.
Answer: _____
- Find the value of $(3^2)^3$.
Answer: _____
- Simplify: $2^4 \times 5^3 + 10^2$.
Answer: _____
- Which is greater: 3^4 or 4^3 ?
Answer: _____

