

Worksheet

- Choose the correct answer.
 - $3^5 \div 3^2 =$
 - 3^7
 - 3^3
 - 3^5
 - 3^{10}
 - The exponential form of $5^2 \times 5^5$ is
 - 5^3
 - 5^{10}
 - 5^{-3}
 - 5^7
 - If $5^n = \frac{1}{125}$, then the value of n is
 - 3
 - 3
 - 1
 - 2
 - $(4^0 + 5^0 + 6^0)^0 =$
 - 1
 - 0
 - 3
 - 15
 - The value of $(2^3)^2$ is
 - 8
 - 64
 - 4
 - 32
- Fill in the blanks.
 - The value of $3^0 \times 5^0$ is _____ .
 - The value of $(-1)^n$, where n is an odd number is _____ .
 - The value of $(-1)^n$, where n is an even number is _____ .
 - $(xy)^n =$ _____
- Express each of the following in exponential form.
 - $\frac{9}{4}$
 - $\frac{25}{64}$
 - $\frac{1}{1331}$
 - $\frac{243}{32}$
- Simplify:
 - $\frac{15 \times (3)^{-3} \times (5)^3}{(3)^{-4} \times (5)^4}$
 - $\frac{(3 \times 3^2)^4 \times 7^3}{147 \times 3^{10}}$
- Simplify and write the following in exponential form.
 - $\frac{12x^5y^{-1}z^2}{6x^0y^0z^3}$
 - $\left(\frac{32x^2y^4}{12x^4y^3}\right)^3$
- Find the value of each of the following.
 - $27^0 + 64^2$
 - $(16)^4 (64)^{-2}$
- Simplify the following and write the answer with positive exponents only.
 - $\frac{2x^4y^4z^{-3}}{x^2y^{-5}z^4}$
 - $\frac{36x^5y^3}{2x^4y}$
- Find the value of the following.
 - $6 \times \left(\frac{1}{5}\right)^2 - 3 \times \left(\frac{1}{5}\right)^1 + \left(\frac{1}{5}\right)^0$
 - $\left(\frac{2}{3}\right)^{-3} - \left(\frac{2}{3}\right)^2 - \left(\frac{2}{3}\right)^{-1} - \left(\frac{2}{3}\right)^0$

9. Simplify and write the answer in exponential form.
- a. $16 \times \left[\left\{ (2^2)^3 \right\}^3 \right]^{-1} \div 2^0 - (2)^{-3} + \left(\frac{1}{2} \right)^5$
- b. $(5^0 + 5^{-2}) \times 5^3 \times 5^0 \times \left(\frac{5}{3} \right)^{-3} \times 135 \times 3^2$
10. Simplify the following.
- a. $\frac{2^{x-1} \times 8^{-x}}{2^{3x+2} \times 8 \times 32^{-x}}$ b. $\frac{x^{-1} \times 2x^4}{x^{-5} \times x^5 \times x^2}$
11. Fill in the box:
- $$[6 \square]^4 \div 6^2 = \frac{1}{36}$$
12. Simplify : $\left(\frac{3}{5} \right)^3 \times \left(\frac{1}{5} \right)^{-1} - \left(\frac{3}{5} \right)^4 \times (81)^{-1} \div \left(\frac{1}{5} \right)^4$
13. Solve the following.
- a. $\frac{(7^5)^{10} \times 7^{-200}}{(7^{-5})^{30}}$ b. $\frac{3^{-20} \times 3^{-20} \times 3^{50}}{(3^{-6})^{-3}}$
14. Find the value of n if $4^n = 256 \div 2^4$.
15. Find the value of a if $\left(\frac{x}{y} \right)^{2a+3} = \left(\frac{y}{x} \right)^{4-5a}$
16. If $3 \times 3^2 \times 3^3 \times 3^4 \times 3^5 \times 3^6 \times 3^7 \times 3^8 = (3^x)^x$, then find x .
17. Evaluate:
- a. $3^2 + 4^2 + 5^2 + 6^2$ b. $1^0 + 2^0 + 3^0 + 4^0 + 5^0$
18. Using the pattern $25^2 = 2 \times 3$ (hundred) $+ 5^2 = 625$
 $35^2 = 3 \times 4$ (hundred) $+ 5^2 = 1225$
- Find:
- a. 55^2 b. 75^2 c. 45^2
19. Using the pattern $5^2 - 4^2 = 25 - 16 = 9$
 $6^2 - 5^2 = 36 - 25 = 11 = 6 + 5$
 $7^2 - 6^2 = 49 - 36 = 13 = 7 + 6$
- Find:
- a. $18^2 - 17^2$ b. $25^2 - 24^2$ c. $99^2 - 98^2$ d. $69^2 - 68^2$
20. Fill in the blanks.
- a. If $a = c^z$, $b = a^x$ and $c = b^y$, then xyz equals _____ .
- b. If $x = 4$, then $\frac{1}{x^{-1} + 2^{-1}}$ equals _____ .
- c. If $2^x + 2^x + 2^x + 2^x = 32$, then x equals _____ .
- d. If $\frac{x}{y} = \frac{3}{4}$, then $\frac{x^2 - y^2}{x^2 + y^2}$ equals _____ .

Answers to Worksheet

- | | | | | |
|------------------------------|---------------------------------------|-------------------------------|---------------------------|-------|
| 1. a. ii | b. iv | c. ii | d. i | e. ii |
| 2. a. 1 | b. -1 | c. 1 | d. $x^n y^n$ | |
| 3. a. $\frac{3^2}{2^2}$ | b. $\frac{5^2}{2^6}$ | c. $\frac{1}{11^3}$ | d. $\frac{3^5}{2^5}$ | |
| 4. a. 9 | b. 21 | 5. a. $\frac{2x^5 y^{-1}}{z}$ | b. $\frac{512y^3}{27x^6}$ | |
| 6. a. 4097 | b. 16 | | | |
| 7. a. $\frac{2x^2 y^9}{z^7}$ | b. $18xy^2$ | 8. a. $\frac{16}{25}$ | b. $\frac{31}{72}$ | |
| 9. a. $\frac{5}{2^5}$ | b. $2 \times 3^8 \times \frac{13}{5}$ | | | |
| 10. a. $\frac{1}{64}$ | b. $2x$ | 11. 0 | 12. $\frac{2}{25}$ | |
| 13. a. 1 | b. 3^{-8} | | | |
| 14. $n = 2$ | 15. $a = \frac{7}{3}$ | 16. 6 | | |
| 17. a. 86 | b. 5 | | | |
| 18. a. 3025 | b. 5625 | c. 2025 | | |
| 19. a. 35 | b. 49 | c. 197 | d. 137 | |
| 20. a. 1 | b. $\frac{4}{3}$ | c. 3 | d. $\frac{-7}{25}$ | |