

Worksheet: Simplifying Exponential Expressions



Q1: Write $7 \times 7 \times 7 \times 7$ in exponential form.

A $7 \times 7 \times 7 \times 7$

B 4×7^4

C 7^4

D 7×4

E 4^7

Q2: Write 3^4 in expanded form.

A $3 + 3 + 3 + 3$

B $4 + 4 + 4$

C 3×4

D $4 \times 4 \times 4$

E $3 \times 3 \times 3 \times 3$

Q3: What is the exponent in 6^{14} ?

A 14

B 6

Q4: Calculate $\left(-\frac{4}{5}\right)^3 \times \left(-\frac{4}{5}\right)^2$.

A $-\frac{4^5}{5}$

B $-\frac{4^5}{25}$

C $\left(\frac{16}{25}\right)^5$

D $\left(-\frac{4}{5}\right)^6$

E $\left(-\frac{4}{5}\right)^5$

Q5: Write $7 \cdot 7 \cdot 7 \cdot 7 \cdot a \cdot a \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot b \cdot b \cdot b$ using exponents.

A $7^{-4} \cdot a^{-2} \cdot 2^{-5} \cdot b^{-3}$

B $7^2 \cdot a^4 \cdot 2^3 \cdot b^5$

C $7^4 \cdot a^2 \cdot 2^5 \cdot b^3$

D $7^5 \cdot a^3 \cdot 2^4 \cdot b^2$

E $7^{-5} \cdot a^{-3} \cdot 2^{-4} \cdot b^{-2}$

Q6: Is the following correct: $2^4 = 2 \times 4$?

A yes

B no

Q7: Write $4^2 \times 9^5 \times 4^3 \times 9^4$ in the form $a^m b^n$, where a and b are prime numbers.



Question Video

A $2^5 \times 3^9$

B $2^{10} \times 9^{18}$

C $4^{10} \times 3^9$

D $2^{10} \times 3^{18}$

Q8: Write $343^2 \times 3^3 \times 343^4 \times 3^4$ in the form $a^m b^n$ where a and b are prime numbers.

A $7^{18} \times 3^7$

B $343^7 \times 3^6$

C $343^{18} \times 3^7$

D $7^6 \times 3^7$

Q9: Which of the following is equal to $2^{12} + 2^{11}$?

A 2×2^{11}

B 3×2^{11}

C 2^{23}

D 2^{22}

E 3×2^{12}

Q10: Calculate $\left(-\frac{1}{3}\right)^5 - \left(-\frac{1}{3}\right)^6$.

A $-\frac{4}{729}$

B $\frac{4}{729}$

C $\frac{2}{729}$

D $-\frac{2}{729}$

Q11: Calculate $6^9 + 6^9 + 6^9 + 6^9 + 6^9 + 6^9$.

A 6^{10}

B 6^{54}

C 6^9

D 36^9

Q12: What is $2^{310} + 4^{155}$?

A 6^{155}

B 4^{157}

C 4^{465}

D 2^{311}

E 4^{310}

Q13: Which of the following is equal to $2^{2,210} - 2^{2,209}$?

- A $2^{2,208}$
- B 2
- C 2,210
- D $2^{2,209}$
- E 2,209

Q14: Simplify $\frac{(25)^{\frac{3}{2}x} \times (8)^{x-\frac{5}{3}}}{(100)^{\frac{3}{2}x} \times \sqrt{100}}$.

- A 320
- B $\frac{16}{5}$
- C $\frac{5}{16}$
- D $\frac{1}{320}$

Q15: Determine the simplest form of $\frac{(16)^{\frac{3}{2}x} \times 27^{x-\frac{1}{3}}}{(144)^{\frac{3}{2}x} \times \sqrt{81}}$.

A 27

B $\frac{1}{3}$

C $\frac{1}{27}$

D 3

Q16: Simplify $\frac{(36)^{x+\frac{1}{2}} \times 8^{x+1}}{6^{x-1} \times (12)^{x+5} \times (\sqrt{16})^{x-1}}$.

A $\frac{1}{864}$

B 864

C $\frac{1}{216}$

D 216

Q17: Simplify the expression $\left(\frac{t^{\frac{3}{8}}v^{\frac{-5}{4}}}{t^{\frac{2}{3}}v^{\frac{1}{2}}}\right)^{\frac{-2}{3}}$.

A $t^{\frac{7}{6}}v^{\frac{7}{36}}$

B $t^{\frac{3}{2}}v^{\frac{1}{6}}$

C $t^{\frac{7}{3}}v^{\frac{7}{3}}$

D $t^{\frac{7}{36}}v^{\frac{7}{6}}$

E $t^{\frac{-7}{36}}v^{\frac{-7}{6}}$

Q18: Simplify the expression $\frac{t^{\frac{-3}{8}}v^{\frac{5}{4}}}{t^{\frac{-2}{3}}v^{\frac{-1}{2}}}$.

A $t^{\frac{-7}{27}}v^{\frac{-7}{4}}$

B $t^{\frac{24}{7}}v^{\frac{4}{7}}$

C $t^{\frac{7}{4}}v^{\frac{7}{4}}$

D $t^{\frac{7}{4}}v^{\frac{7}{24}}$

E $t^{\frac{7}{24}}v^{\frac{7}{4}}$

Q19: Which of the following is equal to $\left(-2\frac{1}{4}\right)^3$?

A $-2\frac{3}{12}$

B $-8\frac{1}{64}$

C $-11\frac{25}{64}$

D $-6\frac{3}{4}$

E $-\frac{27}{12}$

Q20: Which of the following is equal to $\left(-\frac{3}{4}\right)^3$?

A $-\frac{27}{64}$

B $\frac{64}{27}$

C $\frac{27}{64}$

D $-\frac{64}{27}$

E $-\frac{9}{12}$

Q21: Which of the following is equal to $(-3)^3 \times (-3)^4$?

- A 531 441
- B 108
- C 2 187
- D -2 187
- E 9^7

Q22: Which of the following has the same value as $(3^2)^4$?

- A 3^{16}
- B 3^6
- C 3^8
- D 36
- E 6^4

Q23: Simplify $\frac{1}{3}x^7 \times \frac{4}{5}x^3$.

A $\frac{4}{15}x^{21}$

B $\frac{4}{25}x^{10}$

C $\frac{17}{15}x^{21}$

D $\frac{4}{25}x^{21}$

E $\frac{4}{15}x^{10}$

Q24: Is it true that $(3^2)^5 = (3^5)^2$?

A No

B Yes

Q25: Which of the following is equal to $\left(-\frac{1}{3}\right)^2 \times \left(-\frac{1}{3}\right)^5$?

A $\left(\frac{1}{9}\right)^3$

B $\left(\frac{1}{3}\right)^7$

C 27

D $-\frac{1}{2187}$

E 59 049