



Exponents - Negative, Fractional, and Power Law

1 Find the answer when these terms are multiplied

$$y^2 \cdot y^2 \cdot y^2$$

A y^0	B y^{60}	C y^6
D y^4	E y^5	

2 Find the answer when these terms are multiplied

$$\frac{1}{b} \cdot \frac{1}{b}$$

A $\frac{1}{b^{20}}$	B b	C b^0
D $\frac{1}{b^2}$	E $\frac{1}{b}$	

3 Find the answer when these terms are multiplied

$$2^2 \cdot 2^2 \cdot 2^2 \cdot 2^2$$

A 2^7	B 2^9
C 2^0	D 2^8

4 Find the answer when these terms are multiplied

$$\frac{1}{11^3} \cdot \frac{1}{11^3} \cdot \frac{1}{11^3}$$

A 1	B $\frac{1}{11^8}$
C $\frac{1}{11^9}$	D $\frac{1}{11^{10}}$

5 Find the answer when these terms are multiplied

$$35^2 \cdot 35^2 \cdot 35^2 \cdot 35^2$$

A 35^{800}	B 35^8
C 35^{80}	D 35^0
E 35^6	

6 Find the answer when these terms are multiplied

$$\frac{1}{22^3} \cdot \frac{1}{22^3} \cdot \frac{1}{22^3} \cdot \frac{1}{22^3}$$

A 22^0	B 1
C $\frac{1}{22^{13}}$	D $\frac{1}{22^{12}}$

7 Find the answer when this term is raised to its exponent

$$(x^4)^2$$

A x^9	B x^8
C x^6	D x^{80}

8 Find the answer when this term is raised to its exponent

$$(p^{-3})^5$$

A $p^{-1,500}$	B p^{-14}
C p^{-15}	D p^{-1}
E p^2	



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9 Find the answer when these terms are multiplied

$$c^{-2} \cdot c^{-2}$$

A	$\frac{1}{c^3}$	B	$\frac{1}{c^4}$
C	1	D	c^0

10 Find the answer when these terms are multiplied

$$\frac{1}{r^5} \cdot \frac{1}{r^5} \cdot \frac{1}{r^5} \cdot \frac{1}{r^5}$$

A	r^{-21}	B	r^{-20}
C	$r^{-2,000}$	D	r^{-1}
E	r^{-17}		

11 Find the answer when this number is raised to its exponent

$$75^{\left(\frac{1}{2}\right)}$$

A	5	B	$5\sqrt{4}$	C	$\sqrt{3}$
D	$3\sqrt{3}$	E	$4\sqrt{3}$	F	$5\sqrt{3}$

12 Find the answer when this term is raised to its exponent

$$(7^3)^4$$

A	7^{11}	B	7^{120}
C	7^{12}	D	$7^{1,200}$

13 Find the answer when this number is raised to its exponent

$$50^{\left(\frac{-1}{2}\right)}$$

A	$\frac{1}{\sqrt{2}}$	B	$\frac{1}{5\sqrt{2}}$	C	$\frac{1}{2\sqrt{2}}$
D	$\frac{1}{5}$	E	$\frac{1}{4\sqrt{2}}$	F	$\frac{1}{5\sqrt{4}}$

14 Find the answer when this term is raised to its exponent

$$(2^{-2})^5$$

A	$2^{-1,000}$	B	2^3
C	2^{-8}	D	2^{-10}
E	2^{-11}		

15 Find the answer when this number is raised to its exponent

$$96^{\left(\frac{-1}{2}\right)}$$

A	$\frac{1}{4\sqrt{2}}$	B	$\frac{1}{4\sqrt{6}}$	C	$\frac{1}{5\sqrt{6}}$
D	$\frac{1}{\sqrt{6}}$	E	$\frac{1}{3\sqrt{6}}$	F	$\frac{1}{4}$

16 Find the answer when this fraction is raised to its exponent

$$\left(\frac{49}{9}\right)^{\left(\frac{-1}{2}\right)}$$

A	$\frac{2}{3}$	B	4	C	$\frac{1}{7\sqrt{3}}$
D	2	E	$\frac{3}{7}$	F	$3\sqrt{4}$



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17 Find the answer when these terms are multiplied

$$7^{-1} \cdot 7^{-1} \cdot 7^{-1} \cdot 7^{-1}$$

A 7^3	B $\frac{1}{7^{40}}$	C $\frac{1}{7^3}$
D $\frac{1}{7^4}$	E 1	

18 Find the answer when this fraction is raised to its exponent

$$\left(\frac{8}{27}\right)^{\left(\frac{-1}{3}\right)}$$

A $3\sqrt[3]{4}$	B $\frac{3}{2}$	C 4
D $3\sqrt[3]{2}$	E 2	F $\frac{3}{4}$

19 Find the answer when these terms are multiplied

$$\frac{1}{3^5} \cdot \frac{1}{3^5} \cdot \frac{1}{3^5} \cdot \frac{1}{3^5} \cdot \frac{1}{3^5}$$

A 3^{-2}	B 3^{-25}
C 3^{-250}	D 3^0
E 3^{-26}	

20 Find the answer when this term is raised to its exponent

$$(6^5)^4$$

A 6^{17}	B $6^{2,000}$
C 6^0	D 6^{16}
E 6^{20}	

21 Find the answer when this term is raised to its exponent

$$(35^{-6})^3$$

A 35^{-3}	B 35^{-15}
C 35^{-18}	D 35^{-14}
E 35^{-19}	

22 Find the answer when these terms are multiplied

$$6^{-2} \cdot 6^{-2} \cdot 6^{-2} \cdot 6^{-2}$$

A $\frac{1}{6^8}$	B $\frac{1}{6^9}$
C $\frac{1}{6^{80}}$	D $\frac{1}{6^7}$

23 Find the answer when these terms are multiplied

$$\frac{1}{55^5} \cdot \frac{1}{55^5} \cdot \frac{1}{55^5}$$

A 55^{-2}	B 55^{-12}
C 55^{-15}	D 55^{-17}
E 55^{-150}	

24 Solve for 'x'

$$2^x + 2^{x+1} = 24$$

A $x=7$	B $x=12$	C $x=4$
D $x=3$	E $x=5$	F $x=9$



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25 Solve for the missing exponent (x) in reduced form

$$2^n = (2^4)^x$$

A

$$x = \frac{5}{15n}$$

B

$$x = \frac{12n}{5}$$

C

$$x = 5n$$

D

$$x = 7n$$

E

$$x = \frac{15n}{4}$$

F

$$x = \frac{n}{4}$$

26 Solve for the missing exponent (x) in reduced form

$$6^n = (6^x)^2$$

A

$$x = \frac{n}{2}$$

B

$$x = n$$

C

$$x = \frac{1}{2n}$$

D

$$x = \frac{4}{n}$$

E

$$x = 7n$$

F

$$x = \frac{2n}{2}$$

27 Solve for the missing exponent (x) in reduced form

$$(6^2)^n = 6^x$$

A

$$x = \frac{6}{n}$$

B

$$x = \frac{2}{6n}$$

C

$$x = \frac{6n}{1}$$

D

$$x = 2n$$

E

$$x = \frac{3n}{2}$$

F

$$x = n$$

28 Solve for the missing exponent (x) in reduced form

$$(4^n)^2 = 4^x$$

A

$$x = \frac{4n}{1}$$

B

$$x = \frac{2n}{3}$$

C

$$x = \frac{3n}{6}$$

D

$$x = 2n$$

E

$$x = \frac{4}{n}$$

F

$$x = n$$



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29 Solve for the missing exponent (x) in reduced form

$$3^n = 9^x$$

A $x = \frac{6n}{1}$

B $x = 8n$

C $x = \frac{3}{2n}$

D $x = \frac{n}{3}$

E $x = \frac{6}{n}$

F $x = \frac{n}{2}$

30 Solve for the missing exponent (x) in reduced form

$$8^n = 2^x$$

A $x = 5n$

B $x = \frac{3}{6n}$

C $x = \frac{3n}{6}$

D $x = \frac{6n}{1}$

E $x = 3n$

F $x = \frac{2n}{1}$

31 Solve for 'x'

$$2^x + 2^{x+1} = 192$$

A $x=10$

B $x=2$

C $x=7$

D $x=12$

E $x=6$

F $x=5$

32 Solve for 'x'

$$5^8 + 5^8 + 5^8 + 5^8 + 5^8 = 5^x$$

A $x=13$

B $x=4$

C $x=11$

D $x=5$

E $x=9$

F $x=10$

33 Solve for 'x'

$$4^4 + 4^4 + 4^4 + 4^4 = 4^x$$

A $x=4$

B $x=11$

C $x=2$

D $x=8$

E $x=7$

F $x=5$

34 Solve for the missing exponent (x) in reduced form

$$(2^n)^6 = (2^x)^{15}$$

A $x = \frac{2}{2n}$

B $x = \frac{6}{5n}$

C $x = \frac{5n}{15}$

D $x = \frac{2n}{2}$

E $x = \frac{2n}{5}$

F $x = \frac{15n}{2}$



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35 Solve for the missing exponent (x) in reduced form

$$(2^n)^{15} = (2^5)^x$$

A

$$x = \frac{4n}{12}$$

B

$$x = \frac{2}{5n}$$

C

$$x = 15n$$

D

$$x = 5n$$

E

$$x = \frac{2n}{5}$$

F

$$x = 3n$$

36 Solve for the missing exponent (x) in reduced form

$$(3^4)^n = (3^x)^8$$

A

$$x = \frac{6}{4n}$$

B

$$x = \frac{n}{2}$$

C

$$x = \frac{8n}{3}$$

D

$$x = \frac{3n}{3}$$

E

$$x = \frac{4}{8n}$$

F

$$x = 3n$$

37 Solve for the missing exponent (x) in reduced form

$$(2^5)^n = (2^3)^x$$

A

$$x = \frac{5n}{3}$$

B

$$x = 7n$$

C

$$x = \frac{10n}{3}$$

D

$$x = \frac{6n}{5}$$

E

$$x = \frac{2n}{3}$$

F

$$x = 5n$$

38 Solve for the missing exponent (x) in reduced form

$$27^n = (3^4)^x$$

A

$$x = 12n$$

B

$$x = \frac{6n}{4}$$

C

$$x = \frac{8}{3n}$$

D

$$x = \frac{8n}{3}$$

E

$$x = \frac{3n}{4}$$

F

$$x = \frac{3n}{6}$$



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39 Solve for the missing exponent (x) in reduced form

$$(4^3)^n = 16^x$$

A

$$x = 2n$$

B

$$x = 3n$$

C

$$x = \frac{3n}{2}$$

D

$$x = \frac{4}{2n}$$

E

$$x = \frac{6n}{2}$$

F

$$x = 6n$$

40 Solve for the missing exponent (x) in reduced form

$$(3^n)^4 = 9^x$$

A

$$x = 2n$$

B

$$x = 7n$$

C

$$x = 6n$$

D

$$x = 4n$$

E

$$x = \frac{4}{8n}$$

F

$$x = \frac{3}{2n}$$

41 Solve for the missing exponent (x) in reduced form

$$27^n = 9^x$$

A

$$x = 3n$$

B

$$x = \frac{4n}{3}$$

C

$$x = \frac{3n}{2}$$

D

$$x = \frac{6n}{2}$$

E

$$x = \frac{3}{2n}$$

F

$$x = 6n$$

42 Solve for the missing exponent (?)

$$10^4 = (10^?)^?$$

A

$$? = 2$$

B

$$? = 8$$

C

$$? = 5$$

D

$$? = 1$$

E

$$? = 7$$

F

$$? = 4$$

43 Solve for the missing exponent (?)

$$10^8 = (10^?)^?$$

A

$$? = 10$$

B

$$? = 2$$

C

$$? = 1$$

D

$$? = 13$$

E

$$? = 4$$

F

$$? = 11$$



Exponents - Negative, Fractional, and Power Law

44 Solve for the missing exponent (x) in reduced form

$$27^n = (3^x)^6$$

A

$$x = \frac{6n}{4}$$

B

$$x = \frac{3}{4n}$$

C

$$x = \frac{n}{2}$$

D

$$x = \frac{3n}{4}$$

E

$$x = 8n$$

F

$$x = 6n$$

45 Solve for the missing exponent (?)

$$(10^3)^2 = 10^?$$

A

$$? = 10$$

B

$$? = 12$$

C

$$? = 2$$

D

$$? = 5$$

E

$$? = 6$$

F

$$? = 11$$

46 Solve for the missing exponent (?)

$$(10^4)^3 = 10^?$$

A

$$? = 12$$

B

$$? = 17$$

C

$$? = 7$$

D

$$? = 3$$

E

$$? = 5$$

F

$$? = 10$$

47 Solve for the missing exponent (?)

$$10^8 = 10000^?$$

A

$$? = 2$$

B

$$? = 5$$

C

$$? = 1$$

D

$$? = 11$$

E

$$? = 3$$

F

$$? = 10$$

48 Solve for the missing exponent (?)

$$10000^3 = 10^?$$

A

$$? = 15$$

B

$$? = 7$$

C

$$? = 16$$

D

$$? = 12$$

E

$$? = 11$$

F

$$? = 3$$

49 Solve for the missing exponent (?)

$$(10^2)^9 = (10^3)^?$$

A

$$? = 2$$

B

$$? = 11$$

C

$$? = 6$$

D

$$? = 1$$

E

$$? = 13$$

F

$$? = 3$$

50 Solve for the missing exponent (?)

$$(10^2)^9 = (10^?)^6$$

A

$$? = 5$$

B

$$? = 9$$

C

$$? = 4$$

D

$$? = 2$$

E

$$? = 3$$

F

$$? = 11$$

**Exponents - Negative, Fractional, and Power Law****51** Solve for the missing exponent (?)

$$(10^3)^8 = (10^4)^?$$

A	$? = 4$	B	$? = 1$
C	$? = 11$	D	$? = 6$
E	$? = 13$	F	$? = 12$

52 Solve for the missing exponent (?)

$$10000^6 = (10^3)^?$$

A	$? = 17$	B	$? = 4$
C	$? = 1$	D	$? = 2$
E	$? = 5$	F	$? = 8$

53 Solve for the missing exponent (?)

$$(10^2)^6 = 1000^?$$

A	$? = 4$	B	$? = 2$
C	$? = 3$	D	$? = 6$
E	$? = 1$	F	$? = 12$

54 Solve for the missing exponent (?)

$$(10^2)^{12} = 10000^?$$

A	$? = 10$	B	$? = 3$
C	$? = 6$	D	$? = 15$
E	$? = 12$	F	$? = 11$

55 Solve for the missing exponent (?)

$$100^8 = 10000^?$$

A	$? = 13$	B	$? = 8$
C	$? = 1$	D	$? = 2$
E	$? = 11$	F	$? = 4$

56 Solve for the missing exponent (?)

$$100^{12} = (10^?)^6$$

A	$? = 3$	B	$? = 4$
C	$? = 8$	D	$? = 2$
E	$? = 6$	F	$? = 5$

57 Solve for the missing exponent (?)

$$(10^3)^4 = (10^?)^6$$

A	$? = 5$	B	$? = 7$
C	$? = 3$	D	$? = 10$
E	$? = 2$	F	$? = 11$

58 Solve for x

$$49^x = 7^2$$

A	$x = 10$	B	$x = 4$
C	$x = 1$	D	$x = 7$
E	$x = 8$	F	$x = 9$



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**59** Solve for x

$$3^x = 9^3$$

A $x = 4$	B $x = 10$
C $x = 2$	D $x = 6$
E $x = 8$	F $x = 15$

60 Solve for x

$$49^{\sqrt{x}} = 7^{18}$$

A $x = 81$	B $x = 4$
C $x = 100$	D $x = 129$
E $x = 25$	F $x = 113$

61 Solve for x

$$16^{(x^2)} = 2^{36}$$

A $x = 5$	B $x = 2$
C $x = 6$	D $x = 11$
E $x = 3$	F $x = 12$

62 Solve for x

$$5^{\sqrt{x}} = 25^7$$

A $x = 25$	B $x = 234$
C $x = 36$	D $x = 121$
E $x = 100$	F $x = 196$

63 Solve for x

$$2^{(x^2)} = 16^{100}$$

A $x = 18$	B $x = 6$
C $x = 30$	D $x = 26$
E $x = 8$	F $x = 20$

64 Simplify using the laws of exponents.

$$\frac{x^{-\frac{3}{2}}y^{-2}}{x^3y^{\frac{1}{2}}}$$

A $x^{\frac{9}{2}}y^{-\frac{5}{2}}$	B $x^{-\frac{7}{2}}y^{-\frac{5}{2}}$
C $x^{\frac{3}{2}}y^{-\frac{3}{2}}$	D $x^{-\frac{9}{2}}y^{-\frac{5}{2}}$

65 Simplify using the laws of exponents.

$$\sqrt{x^{-2}y^{-1}z}$$

A $xy^{-\frac{1}{2}}z^{\frac{1}{2}}$	B $y^{-\frac{1}{2}}z^{\frac{1}{2}}$
C $x^{-\frac{3}{2}}y^{-\frac{1}{2}}z^{\frac{3}{2}}$	D $x^{-1}y^{-\frac{1}{2}}z^{\frac{1}{2}}$

66 Simplify using the laws of exponents.

$$\left(\frac{xy^{-2}z^{-1}}{x^{-2}yz^2}\right)^{-1}$$

A xyz^{-1}	B $x^{-3}y^3z^3$
C $x^3y^3z^3$	D $x^{-2}y^3z^3$



Exponents - Negative, Fractional, and Power Law



67 Which is larger?

5^{30} or 2^{70}

A

$$2^{70}$$

B

$$5^{30}$$

68 Which is larger?

3^{120} or 2^{180}

A

$$2^{180}$$

B

$$3^{120}$$

69 Which is larger?

3^{198} or 2^{330}

A

$$2^{330}$$

B

$$3^{198}$$

70 Find the answer when this number is raised to its exponent

$$3^{-2}$$

A

$$\frac{1}{81}$$

B

$$81$$

C

$$3$$

D

$$6$$

E

$$\frac{1}{9}$$

F

$$9$$

71 Find the answer when this number is raised to its exponent

$$(-7)^{-2}$$

A

$$\frac{-1}{14}$$

B

$$\frac{-1}{46}$$

C

$$9$$

D

$$\frac{1}{49}$$

E

$$2401$$

F

$$49$$

72 Simplify using the laws of exponents.

$$\sqrt{x^{-2}y^{-2}} \cdot x^{\frac{1}{2}}y^{-\frac{3}{2}}$$

A

$$x^{-\frac{3}{2}}y^{-\frac{5}{2}}$$

B

$$x^{-\frac{3}{2}}y^{\frac{1}{2}}$$

C

$$x^{\frac{1}{2}}y^{-\frac{5}{2}}$$

D

$$x^{-\frac{1}{2}}y^{-\frac{5}{2}}$$

73 Simplify using the laws of exponents.

$$\frac{x^{-2}y^{-3}}{x^{-1}y^{\frac{3}{2}}} \cdot \frac{x^{-1}y^2}{x^{\frac{1}{2}}y^{-\frac{3}{2}}}$$

A

$$x^{\frac{5}{2}}y^{-1}$$

B

$$x^{-\frac{3}{2}}y^{-4}$$

C

$$x^{-\frac{3}{2}}y^{-1}$$

D

$$x^{-\frac{5}{2}}y^{-1}$$

**Exponents - Negative, Fractional, and Power Law****74** Simplify using the laws of exponents.

$$\frac{x^{\frac{1}{2}}y^{-2}z^{-1}}{xy^2z^{-2}} \cdot x^{\frac{3}{2}}y^3z^3$$

A

$$x^2y^{-1}z^4$$

B

$$xy^{-1}z^4$$

C

$$x^{-2}y^{-7}z^{-2}$$

D

$$x^{-1}y^{-1}z^4$$

75 Simplify using the laws of exponents.

$$\left(\frac{x^{-2}y^{-2}}{x^{-1}y^{-2}}\right)^{-1} \cdot \sqrt{\frac{xy^2}{x^2y}}$$

A

$$x^{-\frac{1}{2}}y^{\frac{1}{2}}$$

B

$$x^{\frac{1}{2}}y^{\frac{1}{2}}$$

C

$$x^{\frac{3}{2}}y^{\frac{1}{2}}$$

D

$$x^{-2}y$$

76 Simplify and solve for w

$$3^{(2w)} = 81$$

A

$$w = 1$$

B

$$w = 2$$

77 Simplify and solve for x

$$6^{(x-5)} = 216$$

A

$$x = 8$$

B

$$x = -2$$

78 Simplify and solve for m

$$7^{(2m+6)} = 49$$

A

$$m = -3$$

B

$$m = -1$$

C

$$m = 0$$

D

$$m = -2$$

79 Simplify and solve for z

$$5^{(z+3)} = 25^z$$

A

$$z = 2$$

B

$$z = 3$$