



Powers are a short form for *repeated multiplication*.

e.g. $4^6 = (4)(4)(4)(4)(4)(4) = 4096$, $\left(-\frac{2}{3}\right)^3 = \left(-\frac{2}{3}\right)\left(-\frac{2}{3}\right)\left(-\frac{2}{3}\right) = -\frac{8}{27}$

e.g. The mass of the sun is about 200000000000000000000000000000 kg (2 nonillion kg). It is much easier to write this as 2×10^{30} kg.

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1. Write each expression as a power. (4/4)

(a) $6(6)(6)(6)(6)(6)(6) = 6^7$ ✓

(b) $(-6)(-6)(-6)(-6)(-6)(-6)(-6) = (-6)^7$ ✓

(c) $-6(6)(6)(6)(6)(6)(6) = -6^7$ ✓

(d) $\left(\frac{3}{4}\right)\left(\frac{3}{4}\right)\left(\frac{3}{4}\right)\left(\frac{3}{4}\right)\left(\frac{3}{4}\right) = \left(\frac{3}{4}\right)^5$ ✓

2. Write each power in *expanded form*, then *evaluate*. (8/8)

(a) $3^4 = 3(3)(3)(3)$ ✓
 $= 81$ ✓

(b) $(-3)^4 = (-3)(-3)(-3)(-3)$ ✓
 $= 81$ ✓

(c) $-3^4 = -3(3)(3)(3)$ ✓
 $= -81$ ✓

(d) $\left(\frac{1}{4}\right)^3 = \left(\frac{1}{4}\right)\left(\frac{1}{4}\right)\left(\frac{1}{4}\right)$ ✓
 $= \frac{1}{64}$ ✓

3. *Evaluate* each expression for the given values of the variables. (7/7)

(a) $(x-y)^3$, $x=9$, $y=7$
 $= (9-7)^3$ ✓
 $= 2^3$ ✓
 $= 8$ ✓

(b) $x^3 - y^3$, $x=9$, $y=7$
 $= 9^3 - 7^3$ ✓
 $= 729 - 343$ ✓
 $= 386$ ✓