

$$1. \quad 1^2 = 1 \times 1 = 1$$

$$(-1)^2 = -1 \times -1 = 1$$

$$2^2 = 2 \times 2 = 4$$

$$(-2)^2 = -2 \times -2 = 4$$

$$3^2 = 3 \times 3 = 9$$

$$(-3)^2 = -3 \times -3 = 9$$

$$4^2 = 16$$

$$(-4)^2 = 16$$

$$5^2 = 25$$

$$(-5)^2 = 25$$

$$6^2 = 36$$

$$(-6)^2 = 36$$

$$7^2 = 49$$

$$(-7)^2 = 49$$

$$8^2 = 64$$

$$(-8)^2 = 64$$

$$9^2 = 81$$

$$(-9)^2 = 81$$

$$10^2 = 100$$

$$(-10)^2 = 100$$

2. Is $(-5)^2$ and $\cancel{-5}^2$ the same thing?

$$25$$

$$\begin{aligned} & \cancel{-5}^2 \\ &= -(5 \times 5) \\ &= -(25) \\ &= -25 \end{aligned} \quad - (5^2)$$

$$3. \quad 1^3 = 1 \times 1 \times 1 = 1$$

$$2^3 = \frac{2 \times 2 \times 2}{4} = 8$$

$$3^3 = \frac{3 \times 3 \times 3}{9} = 27$$

$$4^3 = 64$$

$$5^3 = 125$$

$$(-1)^3 = \frac{-1 \times -1 \times -1}{1} = -1$$

$$(-2)^3 = \frac{-2 \times -2 \times -2}{4} = -8$$

$$(-3)^3 = \frac{-3 \times -3 \times -3}{9} = -27$$

$$(-4)^3 = -64$$

$$(-5)^3 = -125$$

$$4. \quad 10^1 = \underline{10}$$

$$10^2 = 10 \times 10 = \underline{\underline{100}}$$

thousand

$$10^3 = 10 \times 10 \times 10 = \underline{\underline{\underline{1000}}}$$

$$10^4 = 10,000$$

$$10^5 = 100,000$$

million

$$10^6 = 1,000,000$$

$$(-10)^1 = -10$$

$$(-10)^2 = 100$$

$$(-10)^3 = -1000$$

$$(-10)^4 = 10,000$$

$$(-10)^5 = -100,000$$

$$(-10)^6 = 1,000,000$$

5. a) $(-2)^1 = -2$

b) $(-2)^2 = 4$

c) $(-2)^3 = -8$

d) $(-2)^4 = 16$

e) $(-2)^5 = -32$

f) $(-2)^6 = 64$

g) $(-2)^7 = -128$

h) $(-2)^8 = 256$

6. a) $-1 + -2 + -3 + -4 + -5 + -6 + -7 = -28$

b) $(-1)(1 + 2 + 3 + 4 + 5 + 6 + 7) = -28$
 $\rightarrow 1 + -2 + -3 + -4 + -5 + -6 + -7$

c) $-(\underbrace{1 + 2 + 3 + 4 + 5 + 6 + 7}_{28}) = -28$

7. Expand each into the sum of four numbers to show that you know how to distribute (F.O.I.L.). Add these four numbers to get your final answer. Watch your signs!

$$(1 + 3)(2 + 4) = 1 \cdot 2 + 1 \cdot 4 + 3 \cdot 2 + 3 \cdot 4$$

4 6

$$= 2 + 4 + 6 + 12 = \boxed{24}$$

24

$$(4 + 2)(3 + 1) = 4 \cdot 3 + 4 \cdot 1 + 3 \cdot 2 + 2 \cdot 1$$

6 4

$$= 12 + 4 + 6 + 2 = \boxed{24}$$

24

$$(1 + 2)(3 + 4) = 1 \cdot 3 + 1 \cdot 4 + 2 \cdot 3 + 2 \cdot 4$$

3 7

$$= 3 + 4 + 6 + 8 = \boxed{21}$$

21

$$(1 - 2)(3 + 4) = 1 \cdot 3 + 1 \cdot 4 + -2 \cdot 3 + -2 \cdot 4$$

3 4 -6 -8

$$= 3 + 4 + -6 + -8 = \boxed{-7}$$

(1 + -2)

$$(1 + 2)(3 - 4) = 1 \cdot 3 + 1 \cdot -4 + 2 \cdot 3 + 2 \cdot -4$$

3 -4 6 -8

$$= 3 + -4 + 6 + -8 = \boxed{-3}$$

3 -1

$$(1 - 2)(3 - 4) = 1 \cdot 3 + 1 \cdot -4 + -2 \cdot 3 + -2 \cdot -4$$

3 -4 -6 8

$$= 3 + -4 + -6 + 8 = \boxed{1}$$

(-1) (-1)

1

8. $1^0 = 1$ $1^1 = 1$
 $2^0 = 1$ $2^1 = 2$
 $3^0 = 1$ $3^1 = 3$
 $10^0 = 1$ $10^1 = 10$
 $1,234,567^0 = 1$ $1,234,567^1 = 1,234,567$
 $0^0 = 1$ $0^1 = 0$

9. $(10^1)(10^2) = 10^3 = 1,000$
 $10 \cdot 100 = 1,000$

add

$(10^2)(10^3) = 10^5 = 100,000$
 $100 \quad 1,000$

$(10^3)(10^6) = 10^{(3+6)} = 10^9 = 1,000,000,000$

$(2^2)(2^3) = 2^{2+3} = 2^5 = 32$
 $2 \cdot 2 \quad 2 \cdot 2 \cdot 2$

10.

$(10^1)^2 = 10^2 = 100$

$(10^2)^2 = 10^{2 \cdot 2} = 10^4 = 10,000$
 $100 \quad 10,000$

$(10^9)^3 = 10^{9 \cdot 3} = 10^{27}$

mult.