

Pre-algebra
Skill-BUILDER # 1 – 5
Exponentiation on Integers

Use the fact that exponentiation is repeated multiplication and apply the multiplication rules.
Again note that

An odd number of negative factors gives a negative product.
An even number of negative factors gives a positive product.

Examples

1) $(-2)^3 = (-2)(-2)(-2) = -8$

2) $(-3)^4 = (-3)(-3)(-3)(-3) = 81$

3) $(-1)^8 = (-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1) = 1$

4) $(-1)^{11} = (-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1) = -1$

5) $(-2)^4 = (-2)(-2)(-2)(-2) = 16$

6) $-2^4 = -2 \cdot 2 \cdot 2 \cdot 2 = -16$

Note: In Example 5 the integer -2 is raised to the exponent 4 and is thus multiplied to itself four times giving a positive result while in Example 6 the exponent 4 applies only to the integer 2 and thus 2 is multiplied four times and we take the opposite of the product giving a negative result.

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Perform the exponentiation.

1) $(-2)^2$

2) -2^2

3) -3^2

4) $(-3)^2$

5) $(-4)^2$

6) -4^2

7) -1^2

8) $(-1)^2$

9) $(-6)^2$

10) -6^2

11) $(-3)^3$

12) -4^3

13) $(-5)^3$

14) $(-1)^3$

15) $(-2)^5$

16) -3^4

17) $(-3)^5$

18) -2^6

19) $(-1)^{16}$

20) $(-1)^{31}$

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Answer Key:

1) 4

2) -4

3) -9

4) 9

5) 16

6) -16

7) -1

8) 1

9) 36

10) -36

11) -27

12) -64

13) -125

14) -1

15) -32

16) -81

17) -243

18) -64

19) 1

20) -1