[redacted] Square the numbers in the following table:

Perfect Squares

Take the square root of each of your perfect squares

Square Roots

1^2	2^2	3^2	4^2	5^2	6^2	7^2	8^2	9^2	10^2	11	12
1×1	2×2	3×3	4×4	5×5	6×6	7×7	8×8	9×9	10×10	11×11	12×12
1	4	9	16	25	36	49	64	81	100	121	144
$\sqrt{1}$	$\sqrt{4}$	$\sqrt{9}$	$\sqrt{16}$	$\sqrt{25}$	$\sqrt{36}$	$\sqrt{49}$	$\sqrt{64}$	$\sqrt{81}$	$\sqrt{100}$	$\sqrt{121}$	$\sqrt{144}$
1	2	3	4	5	6	7	8	9	10	11	12

Perfect Squares are the product of a number multiplied by itself ($4 \cdot 4 = 16$; 16 is the perfect square)

Think about the process we just performed: **Number → Squared It → Took Square Root → Same Number**

A root and an exponent are **inverses** of each other (they undo each other). Therefore, square roots and squaring a number are **inverses** or they undo each other, just like adding and subtracting undo each other.

When are Radical Expressions in Simplest Form?

A Radical expression is in **simplest form** if:

- No perfect square factors other than 1 are in the radicand (ex. $\sqrt{20} = \sqrt{4 \cdot 5}$)

$\sqrt{20}$ → $\sqrt{4} \cdot \sqrt{5}$ → $2 \cdot \sqrt{5}$ = $2\sqrt{5}$

20: 1 20, 2 10, (4 5)

Simplifying Radicals

Guided Example: Simplify $\sqrt{108}$

$\sqrt{36} \cdot \sqrt{3}$ → $6 \cdot \sqrt{3}$ OR $6\sqrt{3}$

108: 1 108, 2 54, 3 27, (36 3)

Practice:

a. $\sqrt{16} = 4$

b. $\sqrt{48}$

$\sqrt{16} \cdot \sqrt{3}$ → $4 \cdot \sqrt{3}$ OR $4\sqrt{3}$

48: 1 48, 4 12, (16 3)

c. $\sqrt{28}$

$\sqrt{4} \cdot \sqrt{7}$ → $2 \cdot \sqrt{7}$ OR $2\sqrt{7}$

28: 1 28, (4 7)

d. $\sqrt{14}$

$\sqrt{2} \cdot \sqrt{7}$ → $\sqrt{14}$

[redacted] $3\sqrt{96}$

$3 \cdot (\sqrt{16} \cdot \sqrt{6})$ → $3 \cdot 4 \cdot \sqrt{6}$ → $12\sqrt{6}$

96: 1 96, 2 48, 3 32, 4 24, (16 6)

f. $4\sqrt{20}$

$4 \cdot 2\sqrt{5}$ → $8 \cdot \sqrt{5}$ OR $8\sqrt{5}$

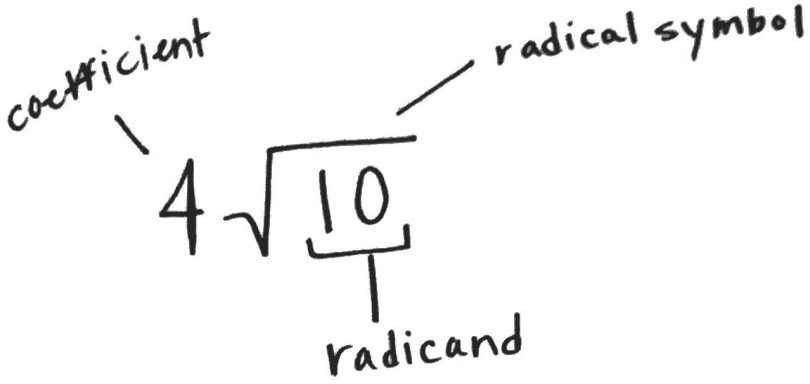
g. $6\sqrt{120}$

$6 \cdot \sqrt{4} \cdot \sqrt{30}$ → $6 \cdot 2 \cdot \sqrt{30}$ → $12\sqrt{30}$

120: 1 120, 2 60, 3 40, 4 30

h. $2\sqrt{36}$

$2 \cdot 6 = 12$



$4 \cdot \sqrt{10}$

$4 \times \sqrt{10}$