$1^2 = 1$ $2^2 = 4$ $3^2 = 9$ $4^2 = 16$ $5^2 = 25$

$6^2 = 36$ $7^2 = 49$ $8^2 = 64$ $9^2 = 81$ $10^2 = 100$

$11^2 = 121$ $12^2 = 144$ $13^2 = 169$ $14^2 = 196$ $15^2 = 225$

$16^2 = 256$ $17^2 = 289$ $18^2 = 324$ $19^2 = 361$ $20^2 = 400$

$21^2 = 441$ $22^2 = 484$ $23^2 = 529$ $24^2 = 576$ $25^2 = 625$

$26^2 = 676$ $27^2 = 729$ $28^2 = 784$ $29^2 = 841$ $30^2 = 900$

the PERFECT Squares

FACTOR TREES: → ① 15 (5 · 3) ② 20 (5 · 4; 4 = 2 · 2) ③ 27 (9 · 3; 9 = 3 · 3)

Simplifying Radicals Notes

Name_____ Date_____

Parts of a Radical

$\sqrt[root]{radicand}$

EX: $\sqrt{16}$ ← $\sqrt[3]{27}$ ← Radicand, Root → $\sqrt[4]{64}$

If there's no number at the root, then it's a 2.

Simplify Radicals

- Prime Factor
- Circle groups of the root and bring them out
- If you bring out more than one, multiply
- Multiply the remaining "singles" both inside and outside the radical symbol.

① Make a Factor Tree ③ Pairs go OUTSIDE, Leftovers go INSIDE
② Circle all Pairs ④ Simplify inside/outside (Multiply)

Examples:

1. $\sqrt{64} = 8$

2. $\sqrt{45}$ (9 · 5; 9 = 3 · 3) $3\sqrt{5}$

3. $\sqrt{72}$ (8 · 9; 8 = 4 · 2; 4 = 2 · 2; 9 = 3 · 3) $2 \cdot 3\sqrt{2}$ $6\sqrt{2}$

4. $\sqrt{9} = 3$

5. $5\sqrt{8}$ (8 = 4 · 2; 4 = 2 · 2) $5 \cdot 2\sqrt{2}$ $10\sqrt{2}$

6. $7\sqrt{20}$ (20 = 4 · 5; 4 = 2 · 2) $7 \cdot 2\sqrt{5}$ $14\sqrt{5}$

7. $7\sqrt{25}$ $7 \cdot 5$ 35

8. $3\sqrt{150}$ (150 = 15 · 10; 15 = 3 · 5; 10 = 5 · 2) $3 \cdot 5\sqrt{3 \cdot 2}$ $15\sqrt{6}$

9. $\sqrt{17}$

10. $-8\sqrt{12}$ (12 = 4 · 3; 4 = 2 · 2) $-8 \cdot 2\sqrt{3}$ $-16\sqrt{3}$