

Lesson 5.1- SWBAT simplify numerical radicals.

Kick off- Find the value of each of the following:

$\sqrt{1}$ 1 $\sqrt{4}$ 2 $\sqrt{9}$ 3 $\sqrt{16}$ 4 $\sqrt{25}$ 5	$\sqrt{36}$ 6 $\sqrt{49}$ 7 $\sqrt{64}$ 8 $\sqrt{81}$ 9 $\sqrt{100}$ 10	$\sqrt{121}$ 11 $\sqrt{144}$ 12 $\sqrt{169}$ 13 $\sqrt{196}$ 14 $\sqrt{225}$ 15
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Perfect Squares

To Simplify a Radical

- 1) Find the factors of the inside number and one of the factors must be a perfect square.
- 2) Split the inside numbers into two different radicals.
- 3) The perfect square first and then the other factor. **Largest Perfect Square!**
- 4) Take the square root of the perfect square and if there is a number on the outside multiply it to the number.

Examples:

1) $\sqrt{8}$

1.8
2.4

^

$\sqrt{4} \cdot \sqrt{2}$

$2\sqrt{2}$

2) $\sqrt{24}$

1.24
2.12
3.8

^

$\sqrt{4} \cdot \sqrt{6}$

$2\sqrt{6}$

$4 \cdot 6$

Perfect Squares: 4, 9, 16, 25, 36, 49, 64, 81, 100

Largest perfect square!

3) $6\sqrt{12}$

^

$\sqrt{4} \cdot \sqrt{3}$

1.12
2.6
3.4

$6 \cdot 2\sqrt{3}$

$12\sqrt{3}$

4) $-5\sqrt{36}$

^

1.36
2.27
3.18
6.9

$\sqrt{9} \cdot \sqrt{6}$

$-5 \cdot 3\sqrt{6}$

$-15\sqrt{6}$

5) $2\sqrt{27}$

^

$\sqrt{9} \cdot \sqrt{3}$

1.27
2.3
3.9

$2 \cdot 3\sqrt{3}$

$6\sqrt{3}$

6) $3\sqrt{18}$

^

$\sqrt{9} \cdot \sqrt{2}$

1.18
2.9

$3 \cdot 3\sqrt{2}$

$9\sqrt{2}$

7) $5\sqrt{32}$

^

$\sqrt{16} \cdot \sqrt{2}$

32
5.4
2.16

$5 \cdot 4\sqrt{2}$

$20\sqrt{2}$

8) $\sqrt{50}$

^

$\sqrt{25} \cdot \sqrt{2}$

$5\sqrt{2}$

9) $\sqrt{40}$

^

$\sqrt{4} \cdot \sqrt{10}$

$2\sqrt{10}$

10) $2\sqrt{45}$

^

$\sqrt{9} \cdot \sqrt{5}$

2.3
6.5

$2 \cdot 3\sqrt{5}$

$6\sqrt{5}$

11) $2\sqrt{80}$

^

$\sqrt{16} \cdot \sqrt{5}$

2.4
8.5

$2 \cdot 4\sqrt{5}$

$8\sqrt{5}$

12) $3\sqrt{28}$

$$3\sqrt{4}\sqrt{7}$$

$$2$$

$$2 \cdot 3\sqrt{7}$$

$$6\sqrt{7}$$

13) $\sqrt{54}$

$$\sqrt{9}\sqrt{6}$$

$$3\sqrt{6}$$

14) $\sqrt{44}$

$$\sqrt{4}\sqrt{11}$$

$$2\sqrt{11}$$

15) $\sqrt{72}$

$$\sqrt{36}\sqrt{2}$$

$$6\sqrt{2}$$

16) $9\sqrt{75}$

$$9\sqrt{25}\sqrt{3}$$

$$5$$

$$45\sqrt{3}$$

17) $\sqrt{216}$

$$\sqrt{36}\sqrt{6}$$

$$6\sqrt{6}$$

*Make sure you use the largest perfect square!