Video Notes: Review Simplifying and Rationalizing Radicals

Aim#09: How can we use our knowledge of perfect squares to simplify and rationalize radical expressions?
Learning Target(s): I am able to simplify and rationalize radicals.

As you are watching the video and taking notes, please make sure to write down any questions you have

Guiding Questions	Notes/Diagrams/Illustrations
What is a perfect square?	A number whose positive square root is a whole number.
* use GC if you forget	1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 225
What will help me simplify a radical?	1. $\sqrt{48} \rightarrow \sqrt{16}\sqrt{3}$ → $4\sqrt{3}$ (4 12; 16 3)
Step 1: list PS that divide in	
Step 2: choose largest reduce	2. $\sqrt{72} \rightarrow \sqrt{36}\sqrt{2}$ → $6\sqrt{2}$ (4 18; 9 8; 36 2)
How does a coefficient effect the process?	3. $3\sqrt{20} \rightarrow 3\sqrt{4}\sqrt{5}$ → $3(2)\sqrt{5}$ → $6\sqrt{5}$ (4 5)
Step 1: list PS that divide	
Step 2: Choose largest reduce	
Step 3: mult. # out front	

How can we rationalize radicals?

We remove the radical from the denominator by multiplying the numerator and denominator by the radical.

① mult top and botm by √

② simplify

③ reduce

4. $\frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{\sqrt{25}} = \boxed{\frac{3\sqrt{5}}{5}}$

5. $\frac{6}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{6\sqrt{2}}{\sqrt{4}} = \frac{6\sqrt{2}}{2} = \boxed{3\sqrt{2}}$

6. Simplify the radical $\sqrt{45}$

9 5

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

$\boxed{3\sqrt{5}}$

7. Simplify the radical $2\sqrt{147}$

49 3

$2\sqrt{49}\sqrt{3}$

$2(7)\sqrt{3}$

$\boxed{14\sqrt{3}}$

8. Rationalize $\frac{18}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{18\sqrt{3}}{\sqrt{9}} = \frac{18\sqrt{3}}{3} = \boxed{6\sqrt{3}}$

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