**11-6 - Simplifying Radicals**

**EQ:** How do we simplify radicals that include fractions?

- **RADICAND** - the expression under the radical sign
- **Simplify the radicand for each expression**

**a)** \( \sqrt{12x} \)

**b)** \( \sqrt{5x + 1 - 4x} \)

- \( \sqrt{12} \)
- \( \sqrt{5x+1} \)

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**Review: Simplify each radical expression**

1. \( -\sqrt{20} \)
2. \( \frac{x-5}{\sqrt{75}} \)
3. \( 12\sqrt{24m^7n^4} \)

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**Simplifying radicals with fractions**

- *Check for perfect squares*
- *Simplify fraction if possible (coefficients and variables)*
- *Take the square root of the numerator and denominator separately.*

**a)** \( \frac{32}{2} = \sqrt{16} = \sqrt{4} \)

**b)** \( \frac{11}{\sqrt{36}} = \frac{11}{6} \)

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**Simplify each radical expression**

1. \( \frac{7}{\sqrt{100}} \)
2. \( \frac{32}{\sqrt{49}} \)
3. \( \sqrt{24} \)
4. \( \sqrt{12} \)

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**Simplify each radical expression**

5. \( \sqrt{\frac{8x^{15}}{36x^6}} = \sqrt{x^{12}} = \frac{x^6}{3} \)
6. \( \sqrt{\frac{x^2}{4}} = \frac{\sqrt{x}}{2} \)
7. \( \sqrt{\frac{mn}{4c^6}} = \frac{\sqrt{mn}}{2c^3} \)
APPLICATION
A baseball diamond is a square with sides of 90 feet. How far is a throw from third base to first base? Give the answer as a radical expression in simplest form. Then estimate the length to the nearest tenth of a foot.

\[ a^2 + b^2 = c^2 \]
\[ 90^2 + 90^2 = c^2 \]
\[ 16200 = c^2 \]
\[ c = \sqrt{16200} \]
\[ 10\sqrt{162} \]
\[ 10 \cdot 12.72 \]
\[ 127.2 \text{ ft} \]

Assignment
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#1 - 4, 11 - 23, 57 - 60

6. \[ \frac{3x}{\sqrt{121}} \]

3. \[ \frac{25x^5}{\sqrt{49x^2}} \]

5. \[ \frac{6n}{\sqrt{45}} \]

9. \[ \frac{27n}{\sqrt{100n^7}} \]

3. \[ 12\sqrt{24m^2n^4} \]