Ch 10.1 Simplifying Square Roots

Radical symbol $\sqrt{}$

Radicand - # under the radical sign

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Ex1) Get a calculator out!

Find the square root and round to the nearest tenth.

a) $\sqrt{6}$

b.) $\sqrt{148}$

c.) $\sqrt{34}$

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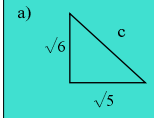
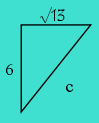
What and When do we use the

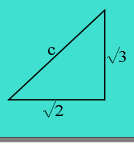
PYTHAGOREAN THEOREM ?

$leg^2 + leg^2 = hypotenuse^2$

Ex2) Find the hypotenuse in radical form.

a) 

b) 

Try:#1. 

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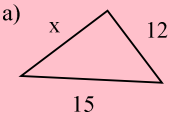
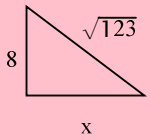
Ex3) Find the missing side of the triangle. Round to the nearest tenth.

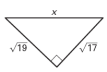
a) 

b) 

try#

Find the missing side length of the right triangle. Round your answer to the nearest tenth.

7. 

8. 

9. 

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Perfect Squares

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

4, 9, 16, 25, 36, 49, 64, 81, 100

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Simplifying radicals

Radicals are simplified when: 1) there are no perfect square factors under the radical
2) there are no radicals in the denominator of a fraction

To simplify a radical look at the factors of the radicand.
If a factor is perfect, it can be simplified.
Rewrite the square root as the product of those two factors.
Then take the square root of the perfect factor.

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Ex4) **Simplify radicals** - breakdown the radicals into perfect numbers.

a) $\sqrt{18}$

b) $\sqrt{200}$

c) $\sqrt{48}$

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Multiply the radicals. Then simplify if possible.

10. $\sqrt{3} \cdot \sqrt{12}$
11. $\sqrt{10} \cdot \sqrt{33}$
12. $\sqrt{2} \cdot \sqrt{75}$
13. $\sqrt{12} \cdot \sqrt{2}$
14. $\sqrt{50} \cdot \sqrt{10}$

Evaluate the expression.

16. $(7\sqrt{5})^2$
17. $(6\sqrt{4})^2$
18. $(8\sqrt{2})^2$

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Ex5) Multiply radicals. Then simplify.

a) $\sqrt{5} \cdot \sqrt{5}$

b) $2\sqrt{5} \cdot \sqrt{8}$

c) $\sqrt{10} \cdot \sqrt{22}$

d) $3\sqrt{6} \cdot 2\sqrt{50}$

e) $(5\sqrt{3})^2$

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Simplifying Radical Expressions That Have a Radical in the Denominator

$\frac{17}{\sqrt{3}}$

**Multiply by a form of "1" that will form a perfect square in the denominator

1. $\frac{12}{\sqrt{2}}$
2. $\frac{10}{\sqrt{5}}$
3. $\frac{2}{\sqrt{4}}$

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