

Unit 5: Right Triangle Trigonometry

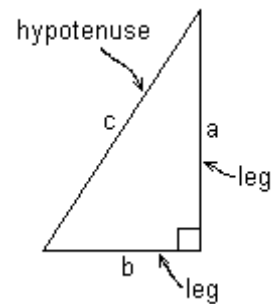
Day 1 Notes

Pythagorean Theorem

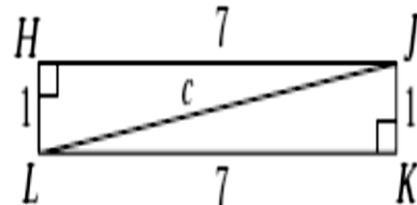
In a right triangle, the sum of the squares of the legs is equal to the square of the hypotenuse.

$$\text{leg}^2 + \text{leg}^2 = \text{hypotenuse}^2$$

$$a^2 + b^2 = c^2$$



Example 1: Find the length of the diagonal of rectangle $HJKL$. Write your answer in simplest radical form.



Multiplication Property of Square Roots

For every real number $a \geq 0$ and $b \geq 0$,

$$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$$

Example:

$$\sqrt{54} = \sqrt{9 \cdot 6} = \sqrt{3 \cdot 3 \cdot 3 \cdot 2} = 3\sqrt{3 \cdot 2} = 3\sqrt{6}$$

Example 2: Simplify each radical expression.

a. $\sqrt{12}$

b. $-\sqrt{27}$

c. $\sqrt{192}$

d. $-5\sqrt{300}$

e. $2\sqrt{45}$

f. $-3\sqrt{60}$

Division Property of Square Roots

For every real number $a \geq 0$ and $b > 0$,

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

Example:

$$\sqrt{\frac{16}{25}} = \frac{\sqrt{16}}{\sqrt{25}} = \frac{4}{5}$$

Example 3: Simplify each radical expression.

a. $\sqrt{\frac{11}{49}}$

b. $\sqrt{\frac{144}{9}}$

c. $\sqrt{\frac{90}{5}}$

Simplified radical expressions do not have a radical in the denominator. When a radical is in the denominator you must **rationalize** the denominator.

Example 4: Simplify by rationalizing the denominator.

a. $\frac{2}{\sqrt{3}}$

b. $\sqrt{\frac{7}{10}}$

c. $\frac{\sqrt{5}}{\sqrt{18}}$

Homework: Page 717 Skills Handbook #1 – 18

Unit 5: Right Triangle Trigonometry
Day 1 Homework

Name: _____

Date: _____ Hour: _____

Simplify each radical expression.

1. $\sqrt{27}$

2. $\sqrt{24}$

3. $\sqrt{150}$

4. $\sqrt{\frac{1}{9}}$

5. $\sqrt{\frac{72}{9}}$

6. $\frac{\sqrt{228}}{\sqrt{16}}$

7. $\sqrt{\frac{2}{5}}$

8. $\sqrt{\frac{27}{75}}$

9. $\frac{3}{\sqrt{8}}$

10. $\frac{6\sqrt{18}}{\sqrt{48}}$

Algebra Find the value of x . Leave your answer in simplest radical form.

