

Review

Two wires used to support a radio tower run along the same line but in opposite directions. They form an angle of 96° at the top of the tower. The wires are staked in the ground 25m apart. One of the wires form an angle of 44° with the ground.

- a) How long is each wire?
- b) How high is the tower?

U8 - Radicals

U8L1 – Multiplying Radicals

Students will:

- multiply radicals
- write an entire radical as a mixed radical and vice-versa.

An expression of the form $\sqrt[n]{x}$ is called a radical. If n is even, the expression represents only the principal root.

Consider: $\sqrt{4}\times\sqrt{9}$ and $\sqrt{4\times 9}$

The same is true for all radicals including irrationals such as:

$\sqrt{3}\times\sqrt{5}$ and $\sqrt{3\times 5}$

In general then: $\sqrt{a}\sqrt{b} = \sqrt{ab}$; $a, b \geq 0$

Examples

1. Simplify:

a) $3\sqrt{2}\sqrt{5}$

b) $5\sqrt{3}\sqrt{4}$

c) $4\sqrt{3}\sqrt{12}$

2. Express the following as a product of radicals:

a) $\sqrt{21}$

b) $\sqrt{30}$

c) $\sqrt{20}$

Any number of the form \sqrt{x} where x has a factor that is a perfect square, can be expressed as a mixed radical.

3. Express the following as mixed radicals where possible:

a) $\sqrt{18}$

b) $\sqrt{70}$

c) $\sqrt{48}$

4. Arrange the following in order from least to greatest:

$$7\sqrt{2}, 3\sqrt{7}, 2\sqrt{15}, 4\sqrt{6}$$

Ex. Handout #(1 – 10)alt