

11.2 Properties of Radicals TEKS A.3.B

MATERIALS • calculator

QUESTION How can you simplify products and quotients of square roots?

EXPLORE Simplify products and quotients of square roots

STEP 1 Find products of square roots

Copy and complete the table without using a calculator. Compare the values in the second and third columns.

Values of a and b	Value of $\sqrt{a} \cdot \sqrt{b}$	Value of \sqrt{ab}
$a = 4, b = 9$?	?
$a = 9, b = 16$?	?
$a = 25, b = 4$?	?
$a = 16, b = 36$?	?

STEP 2 Find products of square roots

Use a calculator to copy and complete the table. Compare the values in the second and third columns.

Values of a and b	Value of $\sqrt{a} \cdot \sqrt{b}$	Value of \sqrt{ab}
$a = 2, b = 3$?	?
$a = 10, b = 5$?	?
$a = 7, b = 11$?	?
$a = 13, b = 6$?	?

STEP 3 Find quotients of square roots

Copy and complete the table without using a calculator. Compare the values in the second and third columns.

Values of a and b	Value of $\frac{\sqrt{a}}{\sqrt{b}}$	Value of $\sqrt{\frac{a}{b}}$
$a = 4, b = 16$?	?
$a = 9, b = 25$?	?
$a = 36, b = 4$?	?
$a = 4, b = 49$?	?

STEP 4 Find quotients of square roots

Use a calculator to copy and complete the table. Compare the values in the second and third columns.

Values of a and b	Value of $\frac{\sqrt{a}}{\sqrt{b}}$	Value of $\sqrt{\frac{a}{b}}$
$a = 1, b = 2$?	?
$a = 3, b = 8$?	?
$a = 12, b = 7$?	?
$a = 6, b = 11$?	?

DRAW CONCLUSIONS Use your observations to complete these exercises

In Exercises 1 and 2, copy and complete the statement.

- The product of two square roots is equal to $\underline{\quad? \quad}$.
- The quotient of two square roots is equal to $\underline{\quad? \quad}$.
- REASONING** Do you think that $\sqrt{a} + \sqrt{b} = \sqrt{a + b}$ for any $a \geq 0$ and any $b \geq 0$? Justify your answer.