LESSON MAKER PRO

Radical Operation Lab

Simplify and combine numerical radicals.

HIGH SCHOOL · MA.912.NSO.1.4

MA.912.NSO.1.4 "Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals."

NAME _____ DATE _____

WORK WITH RADICALS

First simplify each radical by pulling out perfect-square factors. Add or subtract only like radicals, multiply radicals by multiplying inside the square roots, and simplify fully after dividing.

WORKED EXAMPLE

Simplify: sqrt(48) / sqrt(3)

1. sqrt(48) / sqrt(3) = sqrt(48/3)
2. sqrt(48/3) = sqrt(16)
3. sqrt(16) = 4

Answer: 4

PRACTICE 6 problems

1 Simplify: sqrt(50) + sqrt(8)

ANSWER _____

2 Simplify: sqrt(98) - sqrt(8)

ANSWER _____

3 Simplify: sqrt(18) · sqrt(8)

ANSWER _____

4 Simplify: sqrt(72) / sqrt(2)

ANSWER _____

5 Simplify: (sqrt(200) + sqrt(8)) / sqrt(2)

ANSWER _____

6 Simplify: sqrt(75) / sqrt(12)

ANSWER _____

APPLY IT Show your work

1 For a gaming tournament, a student places two square screens side by side with no gap. One screen has a side length of sqrt(50) inches, and the other has a side length of sqrt(8) inches. What is the total width?

WORK SPACE

ANSWER _____

2 An animation club applies a scale factor of sqrt(18), then a scale factor of sqrt(8), to a logo. What is the overall scale factor?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Simplify completely. Write your answer with no radical in the denominator: (sqrt(176) + sqrt(343)) / sqrt(7)

WORK SPACE AND ANSWER

ANSWER KEY

Radical Operation Lab

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Simplify: sqrt(50) + sqrt(8)	**7sqrt(2)**
2	Simplify: sqrt(98) - sqrt(8)	**5sqrt(2)**
3	Simplify: sqrt(18) · sqrt(8)	**12**
4	Simplify: sqrt(72) / sqrt(2)	**6**
5	Simplify: (sqrt(200) + sqrt(8)) / sqrt(2)	**12**
6	Simplify: sqrt(75) / sqrt(12)	**5/2**

PART 2 · APPLY IT

1. **7sqrt(2) inches** Simplify the two side lengths as 5sqrt(2) and 2sqrt(2), then add the like radicals.
2. **12** Multiply the radical scale factors: sqrt(18) · sqrt(8) = sqrt(144) = 12.

CHALLENGE

7 + 4sqrt(77)/7

Accept equivalent forms such as (49 + 4sqrt(77))/7 for the challenge. Require simplified radicals and a rational denominator in final answers.