

**LESSON OBJECTIVE:** Students should be able to:

- Simplify ratios and apply to decrease quantities.

## Decreasing in a Given Ratio

To Decrease a quantity in the Ratio of "a : b" we multiply the quantity by the fraction "a/b"

Remember that "b" stands for "bigger"

"b" must be a bigger number than "a", or else no decrease will occur.

Eg. We need to multiply by Fractions that are < 1 like 1/4, 2/3, 1/2, 3/4, 4/5, 7/8 etc to do Decreases.

### Example 1:

A decrease in the ratio 3 : 4 implies that:  
New quantity : Old quantity = 3 : 4

Let the new quantity be x.

$$\therefore x : 32 = 3 : 4$$

$$\frac{x}{32} = \frac{3}{4}$$

(Multiply both sides by 32)

$$32 \times \frac{x}{32} = 32 \times \frac{3}{4}$$

$$\left\{ \frac{8}{1} \times \frac{3}{4} = \frac{8 \times 3}{1 \times 1} = \frac{24}{1} = 24 \right\}$$

$$x = 24$$

So, the new quantity is 24.

## Scaled Ratio Amounts – Example 2

Decrease 72 in the Ratio 7 : 18

$$72 \times \frac{7}{18}$$

Multiply by the Ratio 7 : 18 re-written as the Fraction 7 / 18

$$= \frac{504}{18}$$

504 / 18 is the same as 504 ÷ 18

$$= 28 \checkmark$$

The final answer of 28 is smaller than the original number value of 72. So we have decreased our original amount, and this answer of 28 should be correct.

**Think !**



Image from CLKR.com

## Scaled Ratio Amounts – Example 4

In a disastrous year of Global Financial problems, the value of Angelina's Retirement Investment Savings decreases in the Ratio of 5 : 7

If her Savings were worth \$ 50 000 dollars a year ago, what is their current dollar value ?

$$50\,000 \times \frac{5}{7}$$

Multiply by the Ratio 5 : 7 re-written as the Fraction 5 / 7

$$= \frac{250\,000}{7}$$

250 000 / 7 is the same as 250 000 ÷ 7

$$= \$ 35\,714.29 \checkmark$$



Image Source: <http://examiner.com>



