

Ratio and Rates Word Problems - Guided Lesson Explanation**Explanation #1**

Here we are working with equivalent ratios. 4 goes into 16, 4 times so that tells us we are going to need to use a multiple of 4.

a) 4:12. Write the ratio as a fraction and multiply the numerator and denominator by the same number to find an equivalent ratio.

$$\frac{4}{12} \times \frac{4}{4} = \frac{16}{48}$$

Since 16 is already there, we have to write 48.

4	12
8	24
12	36
16	48
20	60

b) Same concept here. The multiple of 2 is missing in this 5:15 chart. Write the ratio as a fraction and multiply the numerator and denominator by the same number to find an equivalent ratio.

$$\frac{5}{15} \times \frac{2}{2} = \frac{10}{30}$$

5	15
10	30
15	45
20	60
25	75



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Explanation #2

We can see that the numbers can easily be reduced. Lets reduce them all to see which pair is equal.

Step 3) a and d can easily be divided, so they are equal.

a. 4 to 20 1:5

b. 6 to 36 1:6

c. 13 to 72 No common factors

d. 5 to 25 1:5

Explanation #3

Step 1) If the cross products are equal, the two ratios are equal.

Step 2) Write in fraction form: - 3:12 and 6:36

Now do cross multiplication, multiply the numerator of one fraction and the denominator of the other.

$$\begin{array}{ccc} 3 & \xrightarrow{\quad} & 6 \\ \hline & & \hline 12 & \xrightarrow{\quad} & 36 \end{array}$$

$$3 \times 36 = 12 \times 6$$

$$108 = 72$$

The cross products are not equal, so the ratios are not equivalent.

The answer will be: No

