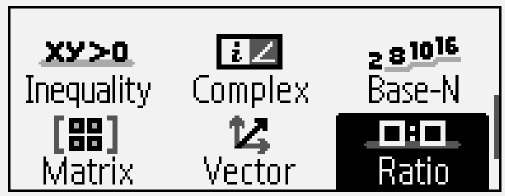
Unit 2: Lesson 9 - Side Length Quotients in Similar Triangles

Activity 9.3: Using Side Quotients to Find Side Lengths of Similar Triangles

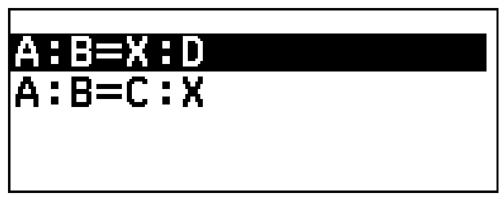
Skill: Solve a proportion using the Ratio app.

Activity Summary:
Corresponding sides of similar triangles are proportional. Given three similar triangles in this activity, corresponding sides need to be found so that there is only one missing side per proportion. The order of the triangle letters will aid in finding which sides are proportional. Students need to know how to solve proportions algebraically.

1. A missing value in a proportion can be found using the **Ratio app**. Press (Home) **– Home** and then use the arrows to highlight the **Ratio app.**

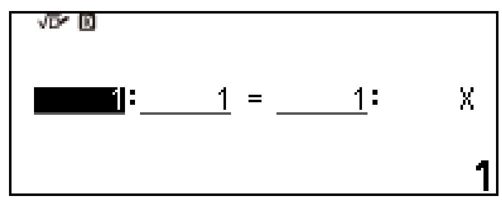


2. Press either (OK) or (EXE) to open the **Ratio app**. There are **2** options available depending upon where the missing value of **X** is in your proportion.

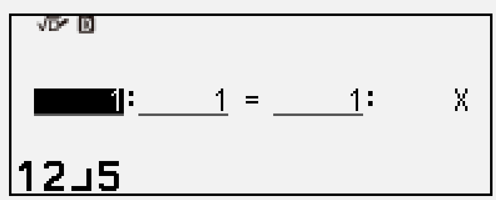


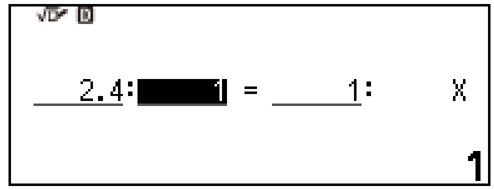
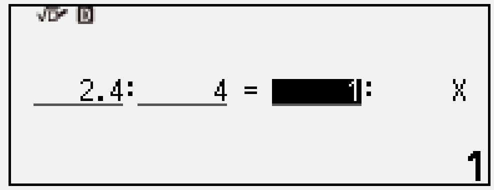
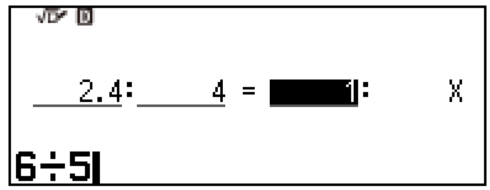
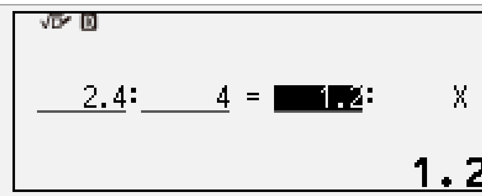
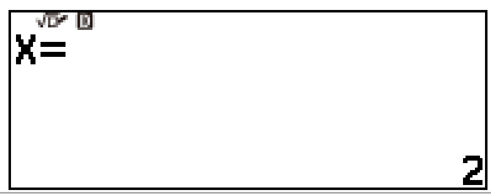
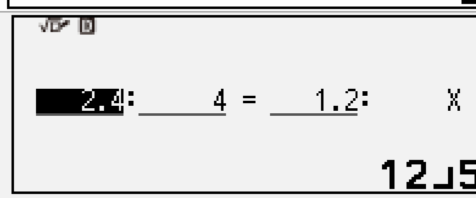
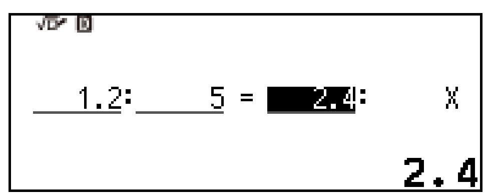
3. To find the value of ***c*** in △**ABC**, a proportion of corresponding sides can be written with △**GHI**; $\frac{\frac{12}{5}}{4} = \frac{\frac{6}{5}}{c}$. To enter the values for this proportion, press the **down arrow**, (▽).

4. Press either (OK) or (EXE). Remember that the ratio ***a* to *b*** can be written as a fraction, $\frac{a}{b}$, or written with the colon, ***a* : *b***. This is the form of ratio used on this calculator.



5. Now enter the **3 known values** from our **proportion**. One way to enter a fraction, such as $\frac{12}{5}$, is to type the **numerator** (① ②), press the **fraction button** (▤), and then enter the **denominator** (⑤). The fraction will be shown in **Line Input format**, as shown to the right.



6. Press either (OK) or (EXE) to enter the first value. The **fraction** will be converted to its **equivalent decimal** form in the template, and the next value to be entered is highlighted.	
7. The next value for our first proportion is 4. Press (4) and then either (OK) or (EXE).	
8. The other way to enter a fraction is to use the **division key**, (÷). To enter the last value, $\frac{6}{5}$, type (6), (÷), and (5).	
9. Press either (OK) or (EXE) to enter the value into the template. Again, this will be displayed as a **decimal**.	
10. Now that we have entered the **3 known values** of our **proportion**, press (OK) or (EXE) to find the **missing value** of **X**. The length of ***c*** is **2**.	
11. Press either (OK) or (EXE), to return to the ratio entry template.	
12. To find side ***d***, one proportion that can be solved is $\frac{\frac{6}{5}}{5} = \frac{\frac{12}{5}}{d}$. Enter these three known values as shown in **Steps 5** through **9** above.	
13. Press (OK) or (EXE) to find the **missing value** of **X**. The length of ***d*** is **10**. The **ratio app** can be repeated to find sides ***e*** and ***h***. In isosceles triangles, legs are congruent. So, ***e* = *d* = 10** and ***h* =** $\frac{12}{5}$