Activity Overview

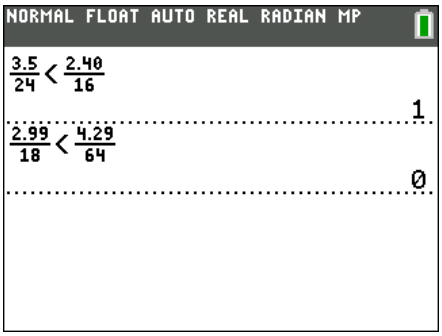
In this activity, students will compare ratios with different denominators, and then with common denominators. They will also find unit rates.

Topic: Ratios and Rates

- Compute fluently and make reasonable estimates
- Develop, analyze, and explain methods for solving problems involving proportions, such as scaling and finding equivalent ratios

Teacher Preparation and Notes

- Students should already be familiar with multiplying fractions.
- **To download the student worksheet, go to education.ti.com/exchange/cup**



This activity utilizes MathPrint™ functionality and includes screen captures taken from the TI-84 Plus C Silver Edition. It is also appropriate for use with the TI-83 Plus, TI-84 Plus, and TI-84 Plus Silver Edition but slight variances may be found within the directions.

Compatible Devices:

- TI-84 Plus Family
- TI-84 Plus C Silver Edition

Associated Materials:

- Calculating)Unit_Prices_Student.pdf
- Calculating_Unit_Prices _Student.doc

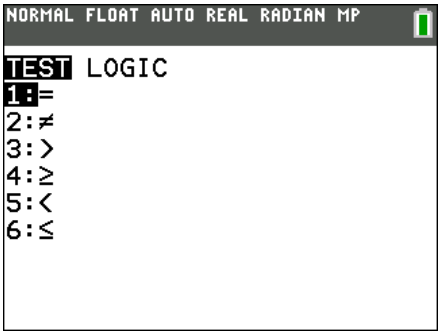
Tech Tips:

- Access free tutorials at http://education.ti.com/calculators/pd/US/Online-Learning/Tutorials
- Any required calculator files can be distributed to students via handheld-to-handheld transfer.

Part 1 – Comparing Ratios

In the first set of questions, students will use <, >, and = to compare ratios. The comparison symbols are found in the [TEST] menu. Students are to use the arrow keys to move to the needed symbol and press [ENTER].

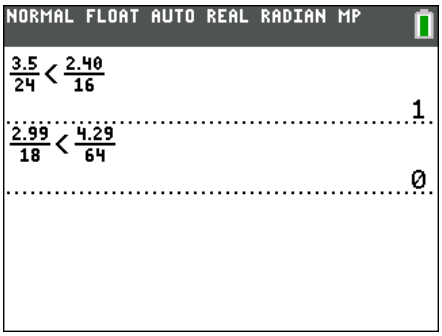
Explain to students that **1** represents True and **0** represents False.



Questions 1–3

Students can discuss in pairs or small groups which ratio they think is greater (or if they think they are equal). They should give reasoning for their thoughts.

Enter each ratio as a fraction and insert one of the comparisons between. In this example, press [ALPHA] [F1] [ENTER] [3] [.] [5] ► [2] [4] ► then [2nd] [TEST] and choose the <, >, or =, and then [ALPHA] [F1] [ENTER] [2] [.] [4] [0] ► [1] [6]. Press [ENTER].



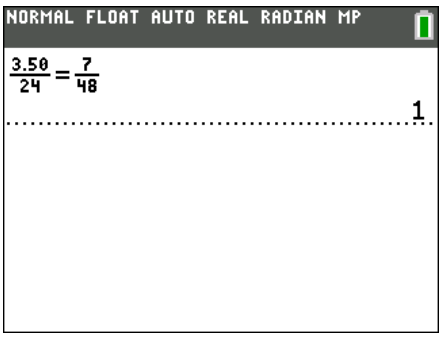
Part 2 – Writing Equivalent Ratios

In some comparison cases, it will be relatively easy to convert both ratios to a common denominator. When an LCM can easily be found, students can change both fractions to have a common denominator.

Questions 4–6

In this set of problems, students should find a common denominator to compare ratios. If they are not confident that they have converted the ratio correctly, students can use the = symbol to compare the original ratio to the ratio with a common denominator.

Press the following to compare two ratios. [ALPHA] [F1] [ENTER] [3] [.] [5] [0] ► [2] [4] ► [2nd] [TEST] and select =. Enter the second ratio, pressing [ALPHA] [F1] [ENTER] [7] ► [4] [8] and press [ENTER].



Question7

Students should realize that when an LCM is easily found, they could convert each ratio to a common denominator. Having a common denominator makes it easier to compare ratios.

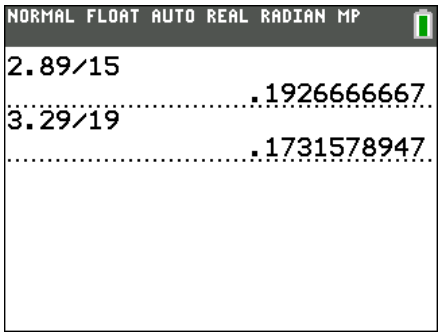
Part 3 – Writing Unit Rates

Question 8–12

In each question, students should simply divide each ratio and find a unit rate.

Press the following for Question 8. 2 . 8 9 ÷ 1 5 ENTER and 3 . 2 9 ÷ 1 9 ENTER.

This shows that one ounce is $0.19 for the first bag of cheese and $0.17 for the second bag of cheese, proving that Bag 2 is the better deal.



Solutions – Student Worksheet

Part 1- Comparing Ratios

1. Boxes of Cereal:

   Box 1: $3.50 for 24 ounces

   Box 2: $2.40 for 16 ounces

   Answer: Box 1

2. Containers of Juice:

   Jug 1: $2.99 for 18 ounces

   Jug 2: $4.29 for 64 ounces

   Answer: Jug 2

3. Tortillas:

   Package 1: $1.99 for 15 tortillas

   Package 2: $2.49 for 20 tortillas

   Answer: Package 2

Part 2 – Writing Equivalent Ratios

4. Boxes of Cereal:

   Box 1: $3.50 for 24 ounces = **Answer:** $\frac{\mathbf{7}}{\mathbf{48}}$

   Box 2: $2.40 for 16 ounces = **Answer:** $\frac{\mathbf{7.20}}{\mathbf{48}}$

   Answer: Box 1

5. Ears of corn:

   Option 1: $1.50 for 3 ears = **Answer:** $\frac{\mathbf{12}}{\mathbf{24}}$

   Option 2: $2.00 for 8 ears = **Answer:** $\frac{\mathbf{6}}{\mathbf{24}}$

   Answer: Option 2

6. Chips:

   Bag 1: \$2.90 for 18 ounces = **Answer:** $\frac{\mathbf{5.80}}{\mathbf{36}}$

   Bag 2: \$4.00 for 36 ounces = **Answer:** $\frac{\mathbf{4}}{\mathbf{36}}$

   Answer: Bag 2

7. When would you likely use equivalent ratios to find common denominators?

   Answer: When a common denominator can easily be found, using the LCM to compare ratios is a good idea.

Part 3 – Writing Unit Rates

8. Cheese:

   Bag 1: \$2.89 for 15 ounces = **Answer: \$0.19**

   Bag 2: \$3.29 for 19 ounces = **Answer: \$0.17**

   Answer: Bag 2

9. Canned Tomatoes:

   Can 1: \$0.89 for 13 ounces = **Answer: \$0.07**

   Can 2: \$1.99 for 29 ounces = **Answer: \$0.07**

   Answer: equal to 2 decimal places. If students show more decimal places, the second s a very slightly better deal.

10. Movie Passes:

    Sale 1: \$28 for 3 tickets = **Answer: \$9.33**

    Sale 2: \$40 for 5 tickets = **Answer: \$8**

    Answer: Sale2

11. Socks:

    Bag 1: \$8.99 for 5 pair = **Answer: \$1.80**

    Bag 2: \$17.29 for 9 pair = **Answer: \$1.92**

    Answer Bag 1

12. When would you prefer to use unit rates instead of finding like denominators to compare prices?

    Answer: When it is not easy to find a common denominator, it may be easiest to convert to a unit rate.