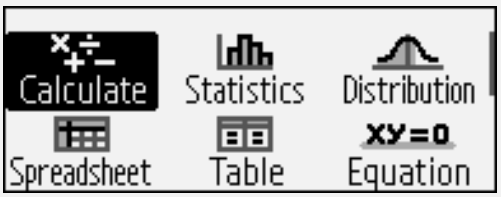
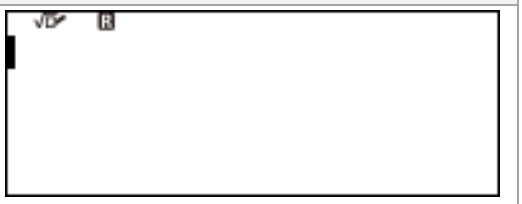
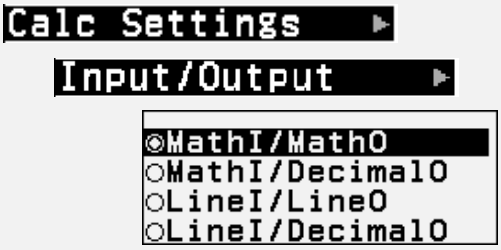
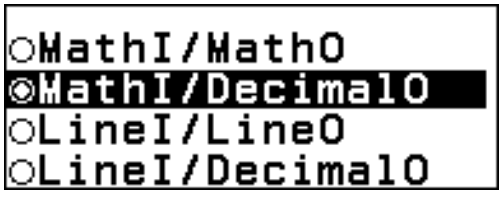
Unit 8: Lesson 16 – Decimal Representations of Rationals

Activity 16.3: Rational Numbers as Decimals

Skill: Use the Calculate app to convert rational numbers from fractions to decimals.

Activity Summary:
This activity focuses on rational numbers and their various representations, particularly converting from fractions to decimals. Students will learn that rational numbers can always be expressed as a either a terminating decimal (this lesson) or a repeating decimal (next lesson). The activity also addresses a common misconception by including examples of square and cube roots that are, in fact, rational numbers which are terminating decimals. The Calculate app on the calculator can be used to convert a rational number in fractional form to an equivalent decimal. The lesson as written indicates not to give students calculators, however they can still be utilized as an intervention or as a tool to check their work.

1. Turn on the calculator with the ⏻ **- On** button. Press ⌂ **– Home** and then use the arrows to highlight the **Calculate app**.	
2. Press either OK or EXE to open the **Calculate app**.	
3. To have answers default as **decimal output**, the calculator must be in **MathI/DecimalO mode**. To change the setting, press ☰ **– Settings** then press either ▷, OK, or EXE twice. (The top option, **MathI/MathO** is the default setting.)	
4. Press the down arrow to highlight the second option, **MathI/DecimalO** and press either OK or EXE to select.	

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5. Press the AC **button** to return to the **Calculate app**.	
6. Use the **fraction key**, ▤, to insert the **fraction template**. Enter the **numerator**, press the **down arrow**, ▼, and then enter the **denominator**. Press either OK or EXE. $\frac{7}{5}$ is **equal** to **1.4** as a **decimal**.	
7. Alternatively, the **division key**, ÷, can be used instead of the **fraction template**. However, the use of the **fraction key** is recommended, especially once more **complicated expressions** involving **order of operations** or **compound fractions** are needed.	
8. The second fraction is $\frac{999}{1000}$. Enter this fraction as described in **Step 6**, then press either OK or EXE.	
9. The next fraction is an **improper fraction**, $\frac{111}{2}$. It has a **numerator** that is **larger than** its **denominator**. Follow the steps in **Step 6** if needed and press either OK or EXE. As a decimal, it is equal to **55.5**.	
10. The next number is a **cube root**. To enter a **cube root**, first enter the index, **3**, then press SHIFT √, for (∛) followed by the value of the **radicand**. $\sqrt[3]{1/8}$ is **equal** to **0.5**.	
11. The last fraction is $\frac{3}{8}$ and is **equivalent** to the **decimal 0.375**.	

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