Ordering Fractions

• • • • • • • • • • • • • • • • • • • Objective •

Understand and use fractions.
Understand the interrelationship between fractions and decimals.

• • • • • • • • • • • • • • • Explanation of the activity • • • • • • • • • • • • • • •

Estimate where a given fraction would be located on a numerical line.
Check the answer using the calculator.
While working on this activity, students will be developing their understanding of the relative sizes of common fractions. The activity suggests an approach to teaching equivalence of common fractions.

• • • • • • • • • • • • • • • • Using the calculator • • • • • • • • • • • • • • • •

Calculator functions used: Addition, division, fractional calculation

Press the following buttons and then start operation.

[ON/C] [MODE] [0]

[SET UP] [2] [0]

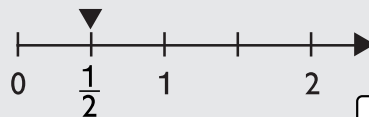You will need a 0 − 2 number line.
Estimate where the following common fractions should be placed on the number line and then record estimates.

$$\frac{1}{2}, \frac{15}{8}, 1\frac{2}{5}, \frac{4}{6}, \frac{3}{4}, \frac{4}{3}, \frac{14}{10}, \frac{2}{3}, 1\frac{5}{6}, \frac{3}{5}$$
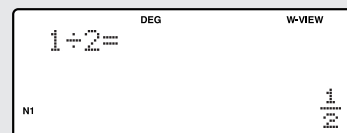
Use a calculator and a ruler to check your estimates.

Example A:

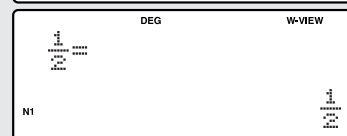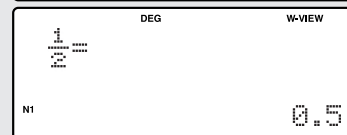Find the value of the fraction $\frac{1}{2}$.
Using division:

[1] [÷] [2] [=]

Using fractional calculation:
1 ⌐ 2 on the calculator display means $\frac{1}{2}$.

[ON/C] [1] [a/b] [2] [=]

Convert $\frac{1}{2}$ to decimal notation.

[CHANGE]

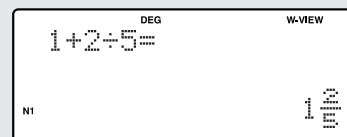### Example B:

Try the fraction $1\frac{2}{5}$.
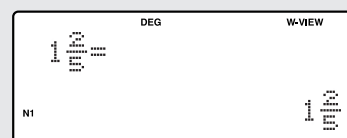Using division:
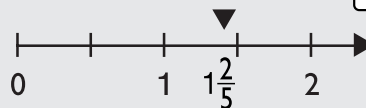
[ON/C] [1] [+] [2] [÷] [5] [=]

Using fractional calculation:
To input the fraction $1\frac{2}{5}$:

1 ⌐ 2 ⌐ 5 on the calculator display means $1\frac{2}{5}$.

Convert $1\frac{2}{5}$ to decimal notation.

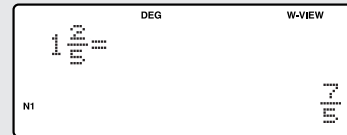[ON/C] [1] [2ndF] [a b/c] [2] [▶] [5] [=]

Convert to a common fraction.

[CHANGE]

> DEG W-VIEW
> $1\frac{2}{5}=$
> N1
> $\frac{7}{5}$

Try checking these decimal fractions against the estimates you put on the number line.

[CHANGE]

> DEG W-VIEW
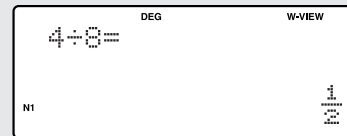> $1\frac{2}{5}=$
> N1
> 1.4
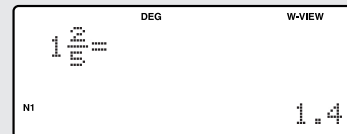
Example C:

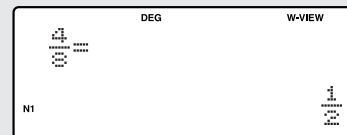Try $\frac{4}{8}$.
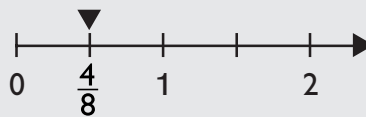
Using division:

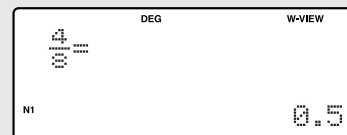[ON/C] 4 [÷] 8 [=]

Convert to a fraction.

Using fractional calculation, input $\frac{4}{8}$.

[ON/C] 4 [a/b] 8 [=]

You can see that $\frac{4}{8} = \frac{1}{2}$.

Convert $\frac{4}{8}$ to decimal notation.

[CHANGE]

Number line: 0, $\frac{4}{8}$, 1, 2

> DEG W-VIEW
> $4÷8=$
> N1
> $\frac{1}{2}$

> DEG W-VIEW
> $\frac{4}{8}=$
> N1
> $\frac{1}{2}$

> DEG W-VIEW
> $\frac{4}{8}=$
> N1
> 0.5

• • • • • • • • • • • Using the activity in the classroom • • • • • • • • • • • •

This activity may be introduced orally. The number line could be copied onto an overhead projector transparency or written on the board. Divide students into small groups and give each group a fraction card. Have the groups discuss where to place their given fraction on the line. Groups then take turns marking their fractions on the number line. Solutions can be discussed, together with methods of checking the solutions. This should lead into converting common fractions to decimal notation, and students can be shown how to do this on the calculator. It is important that students are aware of the general method of converting common fractions into decimal notation (dividing the numerator by the denominator), as well as the use of the fraction key on the calculator.

• • • • • • • • • • • • • Points for students to discuss • • • • • • • • • • • • • •

It will be discovered that some of the fractions are equivalent to each other and this leads into the second part of the activity. When the fraction 4/6 is entered into the calculator, pressing '=' simplifies the fraction to 2/3. Students should explore the results of entering different fractions, thus generating sets of equivalent fractions. It is important that students are encouraged to understand the concept of equivalence.

Further Ideas

Small groups of students are given a pack of cards with a different fraction on each card. The group has to sort the cards into sets, so that all the cards in each set are equivalent to each other.