Objectives:

Using the **DECIMALS** aplet, the student will explore patterns & symmetry by ordering pairs of digits from the decimal expansion of fractions with periodic decimals.

Functionality:

When the student selects **START** , the
DECIMALS NOTE will be displayed.

VIEWS displays a menu which allow exploration of the families
of periodic decimals for sevenths, thirteenths, and twenty-firsts.

After selecting a fraction family, a choose box will appear to
prompt the student to look at specific decimal expansions. At
the right, the student can look the decimal expansion of 1/7, 2/7
or 3/7.

After this selection, the calculator will display basic information
about the decimal pattern for the fraction and a list of ordered
pairs that will be plotted.

**Note: The list comes from taking the digits in order so that the second
coord. of one ordered pair is the first coord. of the next.**

A connected plot of the set of ordered pairs is then graphed on
the screen. Have the student compare and contrast the graphs
of the different sevenths as well as the thirteenths and twenty-
firsts. They can then explore the properties of symmetry for the
given shapes.

Additional Exploration:

Students can investigate other fractions that create periodic decimals and their
families. In the list L1, enter the ordered pairs. After choosing an appropriate
window for the sketch, plot the set of ordered pairs in **Parametric** mode where
X1(T) = L1(T) and Y1(T)=0.

Eg. Explore the patterns and/or symmetry of $\dfrac{1}{35}$.

Note: It is important when choosing an appropriate window that the T range is
from 1 to the total number of ordered pairs in your list with a set of 1.

Programs associated with this aplet:
        .DE.C7, .DE.C21, .DE.C13, .DE.S, .DE.SV