Near Integers

• Objective •

Understand and use the concept of place value in decimals.
Understand and use decimals and fractions while comprehending the interrelationship between them.
Use some common properties of numbers, including multiples.
Give solutions in the context of the problem, selecting the appropriate degree of accuracy and interpreting the display on a calculator.

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

Use the calculator to find fractions that are near integers in decimal form.

While working on this activity, students will be developing their understanding of decimals, particularly their relationship with fractions.

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

Calculator functions used: Multiplication, division
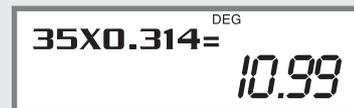
Press the following buttons and then start operation.

ON/C   MODE   0

The 35th multiple of 0.314 is 10.99.
35 × 0.314 = 10.99

35 × 0.314 =

```
35X0.314=        DEG
            10.99
```
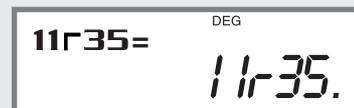
10.99 is a 'near integer'; it is nearly 11.

Using fractional calculation, input $\frac{11}{35}$.

ON/C 11 ab⁄c 35 =

```
11r35=           DEG
           11r35.
```

Convert $\frac{11}{35}$ to decimal notation.

ab⁄c

```
11r35=           DEG
       0.314285714
```

Using division, divide 11 by 35.

The fraction $\frac{11}{35}$ has a decimal value close to 0.314.

11 ÷ 35 =

```
11÷35=           DEG
       0.314285714
```

Near Integers

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

This activity is probably best introduced orally. Students could use the sequence function of the calculator to generate the multiples of some integers, and could then begin to investigate the multiples of some decimals.

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

The teacher could ask the students to generate the multiples of 0.314, challenging them to find a multiple that is nearly an integer. Students can then begin to investigate the situation further.

Further Ideas

• Use this idea to investigate different approximations for π. For example, 22/7 = 3.142857, whereas $\pi \approx 3.141593$. However, 179/57 = 3.140351.

• Investigate approximations for $\sqrt{2}$, or $\sqrt{3}$, etc.