Random Numbers

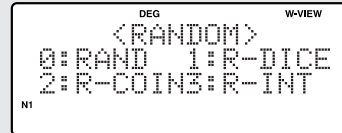## • Objective •

To explore the use of the random number keys and to suggest ways in which this feature of the calculator can be used in classroom situations.

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

The calculator has four random number functions accessed by the 2ndF RANDOM key.

```
        DEG              W-VIEW
      <RANDOM>
 0:RAND  1:R-DICE
 2:R-COIN3:R-INT
N1
```

0 key selects RANDOM, and subsequent pressing of the equals key generates pseudo-random numbers of three significant figures between 0 and 0.999.
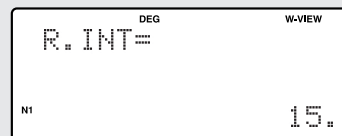
```
    DEG              W-VIEW
RANDOM=

N1           0.465
```
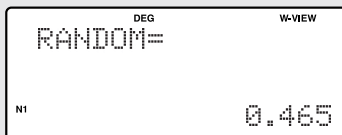
1 key selects R.DICE, and subsequent pressing of the equals key generates integers between 1 and 6.

```
    DEG              W-VIEW
R.DICE=

N1              2.
```
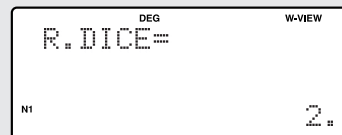
2 key selects R.COIN generating only 0 or 1, equivalent to a head or a tail.

```
    DEG              W-VIEW
R.COIN=

N1              0.
```
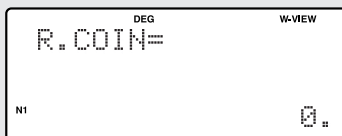
3 key selects R.INT, generating integers between 0 and 99.

```
    DEG              W-VIEW
R.INT=

N1             15.
```

• • • • • • • • • • • • • • • • Using the calculator • • • • • • • • • • • • • • • • •
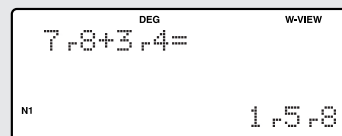
The calculator can display information in WriteView mode, where fractions and formulas are written in a 'type it as you see it' approach.

```
        DEG              W-VIEW
 7   3
 - + - =
 8   4
N1            1 5/8
```
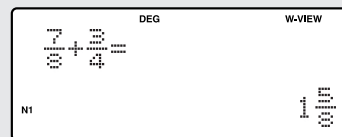
Alternatively, the calculator can display information in 'all on one line' mode.

```
        DEG              W-VIEW
7⌐8+3⌐4=

N1           1⌐5⌐8
```

The choice of 'all on one line' display is made using the SETUP key and choosing the 2: EDITOR option followed by the 1: LINE option.

```
        DEG
      <SETUP>
 0:DRG     1:FSE
 2:EDITOR 3:CTRST
N1 4:ENTRY
```

The WriteView facility of the calculator, which is the default mode, has now been switched to 'one line' display.

```
        DEG
     <<EDITOR>>
 0:W-VIEW 1:LINE

N1
```

Although 'one line' display is usually not required, when using the calculator in RANDOM mode this will ensure the random numbers generated are displayed as decimal numbers to 3 sig. fig. rather than fractions, which have to be converted using the CHANGE key.

```
   DEG          W-VIEW
 RANDOM=


N1        0.762
```

CHANGE

```
          DEG          W-VIEW
 RANDOM=

                   381
N1                 ───
                   500
```

Any of the random functions can be incorporated as an operand into an equation. The equation shown will produce random numbers to 3 sig. fig between 0 and 9.99.

```
          DEG
 10×RANDOM=


N1            4.88
```

This equation will produce random integers between 0 and 9801.

```
          DEG
 R.INT×R.INT=


N1          3'150.
```

Note that R.INT x R.INT is not the same as R.INT^2

Futher ideas

The R.DICE feature could be used to explore the number of times each of the numbers 1 to 6 appears on the dice. After a large number of throws, this value for each number 1 to 6 should approach the same amount: 1/6 of the total number of results.

Similarly R.COIN could be used to see if, after a large number of throws, 0 (heads) and 1 (tails) occur in equal numbers.