Chapter 14 / **Example 3**

Expected value

Calculating the expected value with a GDC

A random variable X represents the number of sixes obtained when a dice was rolled three times (which is also the number of sixes when three dice are rolled once).
Here is the probability distribution.

x	1	2	3	4
$P(X = x)$	$\frac{125}{216}$	$\frac{25}{72}$	$\frac{5}{72}$	$\frac{1}{216}$

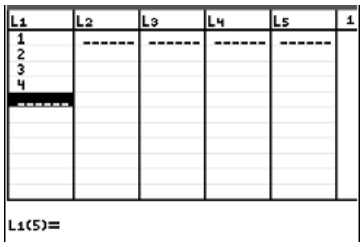
Find the expected value of X.

Press [stat] 1:Edit and press [enter]

Type the numbers 1, 2, 3, 4 in the first column.

Press [enter] or [▼] after each number to move to the next cell.

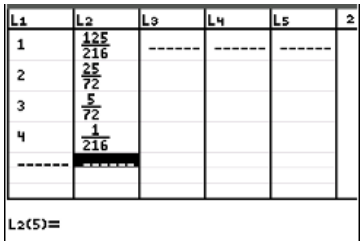
Note: *If the list contains other numbers, you can clear it by pressing* [stat] 4:ClrList *and press* [enter]. *The home screen displays* ClrList. *Press* [2nd] [1] [L1] *and press* [enter]. *Press* [stat] 1:Edit *and press* [enter] *to return to the table.*



Press [▶] to move to the next column.

Enter the probabilities of each number in the second column.

To enter the fractions press [ALPHA] [f1] 1:n/d to select the fraction template.

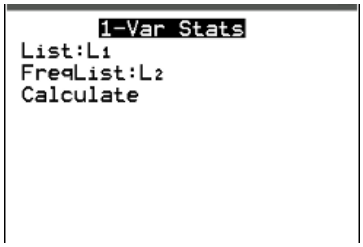


To calculate $E(X)$ from the table

Press [stat] and [▶] to access the CALC menu.

Select 1:1-Var Stats and press [enter].

Enter L_2 as the FreqList by pressing [2nd] [1] [L2].
Navigate to Calculate and press [enter].



The expected value of x is the mean, shown as $\bar{x}$.

$E(X) = 1.5$.