Chapter 1 / **Example 47**

Calculating values using factorials

There are eight boys and five girls who attend the Senior Mathematics Club. Find how many ways the teacher can choose a team of six students to represent the school in a competition if:

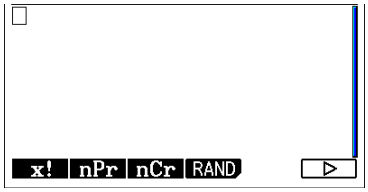
a There are no gender restrictions.

b The team is to be made up of three girls and three boys.

c At least two of each gender are included in the team.

Press [MENU] 1 to display the Run-Matrix screen for arithmetical calculations.

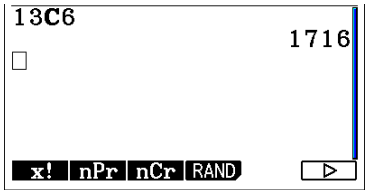
Press [OPTN] [F6] ▷ [F3] PROB
You will see a menu of probability functions.



Type 13, press [F3] nCr and type 6

Press [EXE].

${}^{13}C_6 = 1716$



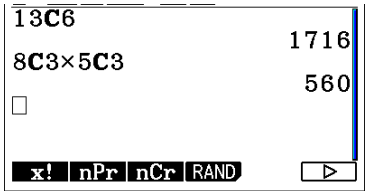
The menu of probability functions will remain on the screen.

Type 8, press [F3] nCr and type 3

Press ×, type 5, press [F3] nCr and type 3

Press [EXE].

${}^{8}C_3 \times {}^{5}C_3 = 560$



Type 13, press [F3] nCr and type 6

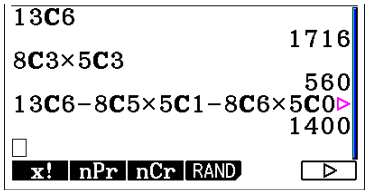
Press −, type 8, press [F3] nCr and type 5. Press ×, type 5, press [F3] nCr and type 1.

Press −, type 8, press [F3] nCr and type 6. Press ×, type 5, press [F3] nCr and type 0.

Press −, type 8, press [F3] nCr and type 1. Press ×, type 5, press [F3] nCr and type 5.

Press [EXE].

${}^{13}C_6 - {}^{8}C_5 \times {}^{5}C_1 - {}^{8}C_6 \times {}^{5}C_0 - {}^{8}C_1 \times {}^{5}C_5 = 1400$



Chapter 1 / **Example 47**

Calculating values using factorials

Type 8, press F3 nCr and type 2. Press ×, type 5, press F3 nCr and type 4.

Press +, type 8, press F3 nCr and type 3. Press ×, type 5, press F3 nCr and type 3.

Press +, type 8, press F3 nCr and type 4. Press ×, type 5, press F3 nCr and type 2.

Press EXE.

$${}^8C_2 \times {}^5C_4 + {}^8C_3 \times {}^5C_3 + {}^8C_4 \times {}^5C_2 = 1400$$