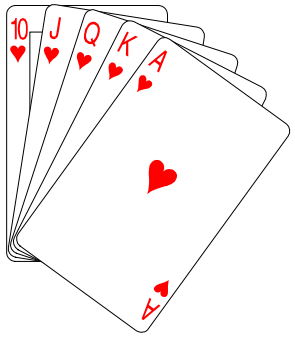
NUMBER GAME
Investigation Guide

Use the card pack to help you test the claims below. Are they true or false?



1. Is it true that you can make all the whole numbers from 1 to 10 with 1, 2 and 4?

2. Is it true that you can make all the whole numbers from 1 to 24 with the numbers 1, 2, 3 and 4?

3. Is it true that you can make all the whole numbers from 1 to 10 using just the cards listed below?

   a) 1, 3, 5 and 7
   b) 2, 3, 4 and 9
   c) 2, 4, 5 and 8
   d) 1, 5, 6 and 12
   e) 3, 9, 10 and 12

4. A famous puzzle requires you to use just 4, four times, and get as many numbers as you can. You are allowed to use any operations that you know, including square root (√), factorial (!) and so on. Choose the four 4s from the pack of cards to help you move them around. Start at 1 and see how far you can get.
   Here is an example. Any one of the alternative expressions will do.

   0 = 4 x (4 – 4) x 4
   = 4 x 4 – 4 x 4
   = (4 + 4) x (4 – 4)
   = 4 + 4 – 4 – 4
   = ?