

1. On a 6, 8 Combination Chart will a  $\uparrow\uparrow\rightarrow$  cricket, starting on a 12, ever land on 1027?

No, explanations vary: this cricket jumps +20 each jump and 1027 is not 12 more than a multiple of 1027

On the same chart, describe the arrows for a cricket that starts at 12 and next lands on another 12.

$\uparrow\uparrow\uparrow\leftarrow\leftarrow\leftarrow\leftarrow$  is one way

2. On a 1, 5 combination chart describe arrows for a +22 cricket, a +38 cricket, a -24 cricket? Describe a procedure for finding the arrows for any size cricket.

+22  $\uparrow\uparrow\uparrow\uparrow\rightarrow\rightarrow$  +38  $\uparrow\uparrow\uparrow\uparrow\uparrow\uparrow\rightarrow\rightarrow\rightarrow$  -24  $\downarrow\downarrow\downarrow\downarrow\leftarrow\leftarrow\leftarrow$  or  $\downarrow\downarrow\downarrow\downarrow\rightarrow$

For any number, divide by 5. The quotient is the number of  $\uparrow$  and the remainder is the number of  $\rightarrow$

3. On a 4, 7 combination chart describe the arrows that make a +1 cricket. Is it possible to make a +1 cricket on a 4, 6 combination chart?

$\rightarrow\rightarrow\downarrow$  not possible on 4,6 chart because all the numbers on the chart are even numbers.

4. On an  $n, m$  combination chart find arrows that make a +0 cricket.

$$m \times n - n \times m = 0$$

5. Complete the rest of this section of a combination chart.

	181			
			172	
109				

$(172-109)/3 = 21$ , so diagonal is +21 cricket

a. Show how to solve this problem by solving equations.

Let  $x$  amount of  $\rightarrow$  and  $y$  be amount of  $\downarrow$  then solve these tow equations:

$$109 + 3x + 3y = 172$$

$$109 + x + 4y = 181$$

b. Make an EXCEL version that includes a space that contains zero.

You will be very happy if you figure out how to use EXCEL to make combination charts.