



4. Fill out the table below according to the following rules:

- (a) Begin with one pair (one male and one female) of newborn (immature) rabbits.
- (b) It takes one month for rabbits to become sexually mature, at which time they are allowed to mate.
- (c) It takes one month for a pregnant rabbit to produce a new pair of rabbits, which we assume to be a male-female pair.
- (d) Each pair of rabbits is kept separate from all the other pairs.

Month	1	2	3	4	5	6	7	8	9	10
Number of mature rabbit pairs										
Number of immature pairs										
Total number of pairs										

Have you noticed a pattern? What is it? Explain. Also, what is the ratio between your last two numbers of rabbit pairs?

5. Start with a 1 cm by 1 cm square. Call it  $R_1$  (for Rectangle 1). Form a new rectangle,  $R_2$ , by putting a square beside  $R_1$  so that  $R_1$  and  $R_2$  share a side. ( $R_2$  is the rectangle made up of both squares together.) Now make a third rectangle,  $R_3$ , by adding another square along the longer side of  $R_2$ . (Note that the square you add this time is larger than the one you added last time.) Repeat this process to get rectangles  $R_4, R_5$ , and so on until you run out of room on the page. (Don't start too big!)

What are the dimensions of your rectangles? What is the ratio of the side lengths of your largest rectangle?