

1. Make a copy of the work sheet, "**Doing the Splits**" for each student.
2. Gather a piece of paper and scissors for each student in the class.
3. Give students the following problem:

"Let's suppose that I was really rich, and I wanted to give you a lot of money. You have a choice, though, in how you get the money. Either I give you 10 million dollars today, or I give you a dollar today, and two dollars tomorrow, and I keep doubling it for a month. Which would you choose—the 10 million dollars, or the dollar, doubling it each day for a month?"
4. Give students time to share their ideas. Tell them that they'd be wise to take option that gives the dollar today and doubles it for a month. Say that at the end of the month, they'd have over a billion dollars.
5. Explain to students that when things keep doubling, over and over—like the money—they can reach enormous amounts.
6. Explain to students that cells can also double to reach very large amounts. Remind students that cells are the very tiny building blocks that make up our bodies. All living things are made of cells. Some organisms can be made up of just one cell, but our bodies are made up of billions of them. Normally, cells grow and divide to produce more cells as they're needed to keep the body healthy.
7. Distribute the work sheet, "**Doing the Splits**", and make the following points:
 - > The body is made up of very tiny building blocks called 'cells.'
 - > These cells divide into two, and then those two divide into four, and then those four divide into eight, and so on—just like the money doubling every day.
 - > Cancer cells divide faster than other cells, and they live longer; and while they live, they can cause all sorts of damage to the body.
 - > After 10 series of splits, there are over a thousand cancer cells. After 20 series of splits, there are over a million cancer cells. After 30 series of splits, there are over a billion cancer cells.
 - > Scientists and medicine are always changing, and we are always looking for answers. Right now, we don't know why some cells divide and divide and cause all kinds of cancer. However, we do know the causes of some cancers, and there are things we can do to help reduce our risk of those types of cancer such as not smoking and avoiding too much sun exposure.
8. Distribute the sheets of 8.5" x 11" paper and scissors to each student, and give them the following instructions:
 - > "I'd like you to cut your sheet of paper in half—either lengthwise or widthwise, it doesn't matter. You don't have to be exact, but try to get two equal pieces.
 - > Okay, now I'd like you to cut each of those pieces of paper in half—again, either lengthwise or widthwise. You should have four pieces of paper now. Cut each of those in half. How many pieces do you have now? Right, eight."
 - > Ask several students to stop cutting now.
 - > Ask the rest of the class to continue cutting each of their pieces in half.
 - > Continue in this manner until the students have a great deal of difficulty cutting the paper.

- > Ask each group of students (the students who stopped cutting and the students who continued), "How many pieces of paper do you have?" Write the numbers on the board. Now ask, "How many times did it take for me to ask you to cut your paper in half to get that number?"
9. Write those numbers on the board. Remark that it didn't take that many times of cutting to get a lot of sheets of paper.
 10. Ask the class what the difference is between the number of pieces of paper for those who kept cutting and the number of pieces of paper for those who stopped early. Make the point that going to the doctor for regular check-ups can help people to find and treat cancer early – before the cancer cells really start multiplying. You can emphasize that it is much easier to treat cancer cells when there are only a few (like the 8 pieces of paper) than it is when there are many cells (like the many pieces of paper).

NUMBER OF SPLITS	NUMBER OF CELLS
0	1
1	2
2	4
3	8
4	16
5	32
6	64
7	128
8	256
9	512
10	1,024
11	2,048
12	4,096
13	8,192
14	16,384
15	32,768
16	65,536
17	131,072
18	262,144
19	524,288
20	1,048,576
21	2,097,152
22	4,194,304
23	8,388,608
24	16,777,216
25	33,554,432
26	67,108,864
27	134,217,728
28	268,435,456
29	536,870,912
30	1,073,741,824

After 10 series of splits, you have over a **thousand** cells.

After 20 series of splits, you have over a **million** cells.

After 30 series of splits, you have over a **billion** cells.