

## The Manhattan Project

1938- German scientists discover nuclear fission. Uranium atoms can be forced to split if bombarded by neutrons. When they are split, the uranium atoms release radiation and heat.

April, 1939- French scientists discover that a "nuclear chain reaction" is possible. When one uranium atom splits, it gives off neutrons that can split other uranium atoms.

1940- Albert Einstein was a physicist and refugee from Nazi Germany. He wrote a letter that convinced President Roosevelt to start research on atomic weapons. Einstein was afraid that Germany might get the "atomic bomb" first and would be able to defeat the United States.

July 16, 1945- The Manhattan Project, under the leadership of physicist Robert Oppenheimer, tests the first atomic bomb at Los Alamos, New Mexico. It is a success. The atomic research cost \$2 billion.

August 6, 1945, 8:16 am - A United States B-29 bomber nicknamed Enola Gay drops an atomic bomb on the Japanese city of Hiroshima. The city is destroyed. One hundred and eighty thousand people are killed, wounded or missing.

August 9, 1945- A second atomic bomb is dropped on the Japanese city of Nagasaki.

### Nuclear Fission Creates an Atomic Bomb

Discovering Cause and Effect:

In each statement, one event is "the cause" of the other. The other event is called "the effect".

Read the statements and label each either "cause" or "effect".

1- Uranium atoms can be split if bombarded by neutrons.

"Uranium atoms split" \_\_\_\_\_

"Bombardment by neutrons" \_\_\_\_\_

2- When uranium atoms split they release radiation and heat.

"Uranium atoms split" \_\_\_\_\_

"Heat and radiation are released" \_\_\_\_\_

3- Albert Einstein wrote a letter that convinced President Roosevelt to start research on atomic weapons.

"Albert Einstein wrote a letter" \_\_\_\_\_

"Research on the atomic bomb" \_\_\_\_\_

4- The Japanese city of Hiroshima is destroyed by an atomic bomb dropped by a United States B-29 bomber.

"The Japanese city of Hiroshima is destroyed" \_\_\_\_\_

"An atomic bomb dropped by a United States B-29 bomber" \_\_\_\_\_