









- The body made of lots of cells
- Cells so small, you can only see under a microscope.
- Normal cells are the kind we need they keep the body working well



- Cancer cells do not look like normal cells
- And they don't work like normal cells
- Cancer cells grow very fast
- They crowd out normal cells































- When cancer cells grow, they get in the way of normal cells
- A group of cells that keeps growing and crowding out normal cells is called a tumor.





















Explaining Cancer to Children • Sometimes the part of the body where the cancer cells are growing does not work right, so the doctor may operate to remove as much of the cancer as possible

7

- Sometimes people with cancer are given radiation therapy to help get rid of cancer cells.
- Radiation Therapy is treatment of cancer with radioactive rays.
- This is done with a very special machine that is made just for cancer.
- It is not the same as ordinary x-rays.

















- The use of x-rays (or laser beam?) to destroy cancer
- Strong x-rays given to the part of body where cancer is to destroy cancer cells so they can't grow.













The High School Presentation

- Career Day
- Math Day
- Anatomy
- Biology
- Science Day



• Outreach

Medical Physics as a Career

American Association of Physicists in Medicine (AAPM)



Presented for Math Day CDH







What is a Medical Physicist?

A <u>medical physicist</u> is a professional who specializes in the application of the concepts and methods of physics to the diagnosis and treatment of human disease.























Therapy Responsibilities

• Equipment commissioning















Isocentric Patient Radiation Therapy





































Frameless Radiosurgery

- Bite block with optically guided localization
- < 1 mm) accuracy</p>







































$$A = A_0 e^{-t}$$
$$\int_0^{\infty} = 1.44$$



















































$$f(x) = \frac{1}{\sqrt{2\pi}} \left(\frac{2\alpha}{\pi}\right)^{1/4} \int_{-\infty}^{\infty} e^{-\alpha(k-k_0)^2} e^{ikx} dk.$$

The Fourier transform of a musical chord is a mathematical representation of the amplitudes of the individual notes that make it up. The original signal depends on time, and therefore is called the time domain representation of the signal, whereas the Fourier transform depends on frequency and is called the frequency domain representation of the signal.





Radiographic Images





First x-ray image































Outreach!!!

Local community

Schools

Science Fair

Career Day

Science Camps



Acknowledgements

- "What is Cancer Anyway" by Karen L Carney, RN, LCSW
- Herb Mower
- Vertual Company
- Mahadevappa Mahesh

Star Wars accelerator!!