



## Chandra Fun Facts

What Space Shuttle was  
Chandra launched aboard?



## Chandra Fun Facts



Chandra was  
launched aboard  
Space Shuttle Co-  
lumbia on July 23,  
1999 from the  
Kennedy Space  
Center in Florida.

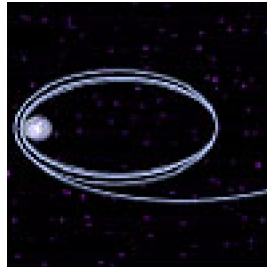


## Chandra Fun Facts

How high does Chandra orbit?



## Chandra Fun Facts



Chandra flies  
more than 1/3 of  
the way to the  
moon!

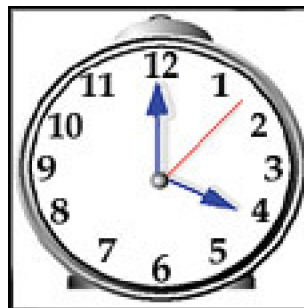


## Chandra Fun Facts

How quickly can Chandra move  
from one target to the next?



## Chandra Fun Facts



Chandra can  
move more  
slowly than the  
minute hand on  
a clock.



## Chandra Fun Facts

How does Chandra compare in size to other satellites?



## Chandra Fun Facts



At 45 feet long, Chandra is the largest satellite the shuttle has ever launched.



## Chandra Fun Facts

How smooth are Chandra's mirrors?



## Chandra Fun Facts



If Colorado were polished to the same relative smoothness as Chandra's mirrors, Pikes Peak would be less than one inch tall!

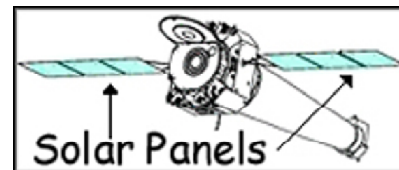


## Chandra Fun Facts

How much power does it take to operate Chandra?



## Chandra Fun Facts



The electrical power required to operate the satellite is about 2000 watts, roughly the same power as a hair dryer. Chandra's power is generated by the satellite's solar panels.



## Chandra Fun Facts

What was the first NASA space shuttle mission commanded by a woman?



## Chandra Fun Facts



STS-93, the space shuttle mission that deployed Chandra was commanded by Colonel Eileen Collins.

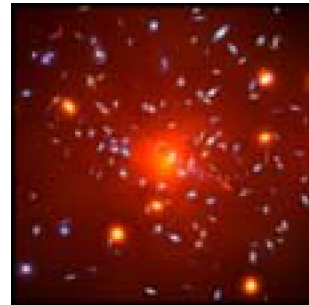


## Chandra Fun Facts

What are the largest cosmic objects that Chandra will observe?



## Chandra Fun Facts



Chandra will image the X-rays from clouds of hot gas in galaxy clusters that are so vast that light takes five million years to go from one side to the other!

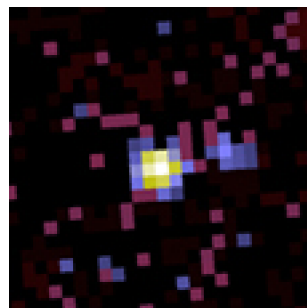


## Chandra Fun Facts

How far back in time will Chandra look?



## Chandra Fun Facts



The light from some of the quasars Chandra will observe has been traveling through space for over 14 billion years.

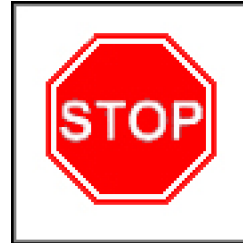


## Chandra Fun Facts

How keen is Chandra's vision?



## Chandra Fun Facts



Chandra's resolving power is equivalent to the ability to read the letters of a STOP sign at a distance of 12 miles!

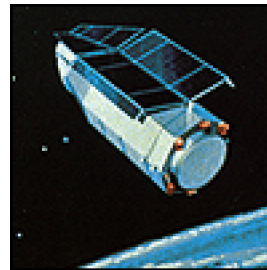


## Chandra Fun Facts

What was the first imaging X-ray telescope?



## Chandra Fun Facts



NASA's Einstein Observatory, launched in 1978, was the first X-ray telescope with mirrors that could image cosmic sources.

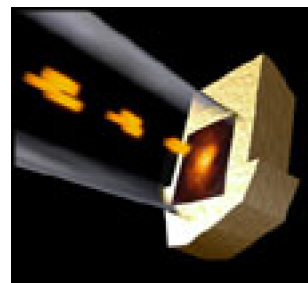


## Chandra Fun Facts

How does the CXO record cosmic X-rays so that images can be made and studied?



## Chandra Fun Facts



The Observatory uses the high resolution camera, and the CCD imaging spectrometer to record X-rays from cosmic sources.



## Chandra Fun Facts

What rare metal was used to coat the Chandra mirrors?



## Chandra Fun Facts



The Chandra mirrors were coated a millionth of an inch thick with iridium, a rare metal more reflective than gold.



## Chandra Fun Facts

How clean are the Chandra mirrors?



## Chandra Fun Facts



The Chandra mirrors are 99.999% clean. The equivalent of at most one speck of dust on an area the size of your computer screen.

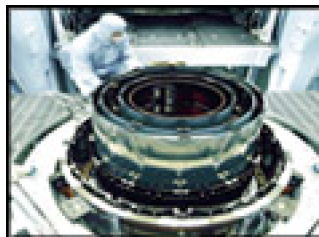


## Chandra Fun Facts

How accurate is the alignment of the Chandra mirrors?



## Chandra Fun Facts



The alignment of the mirrors is accurate to 50 millionths of an inch or about one fiftieth the width of a human hair!

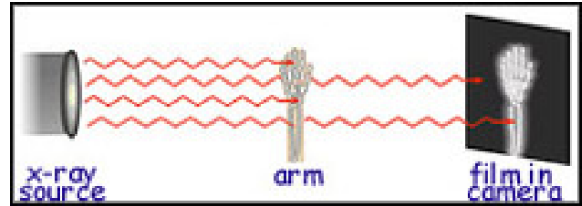


## Chandra Fun Facts

Why do medical X-rays pass through flesh but not bone?



## Chandra Fun Facts



Bones are too dense for medical X-rays to pass through.



## Chandra Fun Facts

Who discovered X-radiation?



## Chandra Fun Facts



X-radiation was discovered by German scientist Wilhelm Roentgen in 1895.

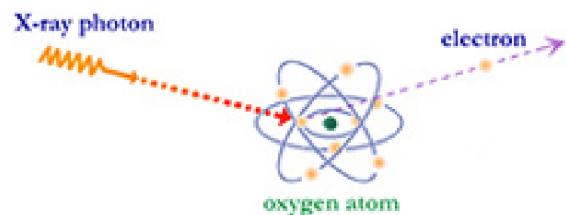


## Chandra Fun Facts

How are x-rays absorbed in Earth's atmosphere?



## Chandra Fun Facts



Cosmic x-rays are absorbed in the atmosphere by Nitrogen & Oxygen molecules (the photoelectric effect).



## Chandra Fun Facts

How is a black hole formed?



## Chandra Fun Facts



Black holes are formed by the collapse of a star much more massive than the sun.

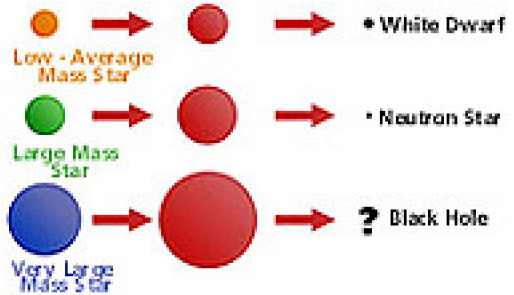


## Chandra Fun Facts

Will the sun collapse to form a black hole?



## Chandra Fun Facts



No. The sun will collapse to form a white dwarf.

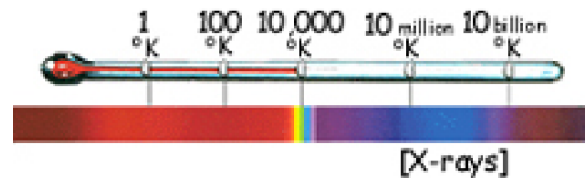


## Chandra Fun Facts

How hot must matter be to radiate in x-rays?



## Chandra Fun Facts



Very high temperatures (millions of degrees Celsius) produce X-rays.

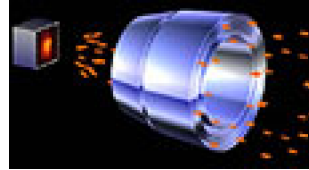


## Chandra Fun Facts

Are mirrors on X-ray telescopes the same shape as the mirrors on optical telescopes?



## Chandra Fun Facts



No. X-ray telescope mirrors are shaped like barrels, because X-rays reflect off mirrors at grazing angles.

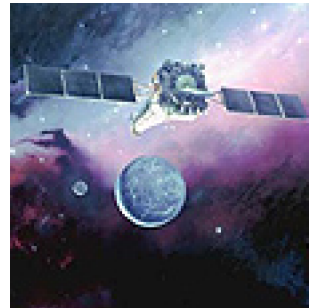


## Chandra Fun Facts

Why are X-ray observatories placed high above the Earth's surface?



## Chandra Fun Facts



X-ray observatories must be above the Earth's atmosphere because cosmic X-rays are absorbed in the atmosphere.



## Chandra Fun Facts

Can you think of a fun fact? Try making your own here!



## Chandra Fun Facts