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http://www.discoverspace.org

Black Holes

Purpose

The purpose of these activities is to learn basic information about black holes.

Students will be able to

1. Define black hole and related terms.
2. Communicate effectively about the nature of black holes, in terms of formation and characteristics.
3. Identify some types of black holes.

Important Vocabulary

black hole	gravity	mass	velocity	radius
speed of light	event horizon	accretion	accretion disk	neutron star
blueshift	redshift	singularity	cosmology	supernova
gravity				

What Does a Black Hole Look Like, Anyway?

Students draw/paint/sketch/model a black hole, based on current knowledge/ideas about black holes; students use their preconceived ideas to inform their artistic representations. At the end of this lesson, students create a new artistic representation of a black hole, using newly learned knowledge.

Black Holes in the News

Students read articles about black holes and briefly summarize them in writing (e.g. as a journal entry). The articles can be read online at the CNN website, or hard copies can be printed and photocopied for use in classrooms where there is limited computer access. The web links for the articles are http://edition.cnn.com/2004/TECH/space/11/20/swift.launch.ap/index.html and http://edition.cnn.com/2004/TECH/space/11/23/black.holeformation/index.html.

Black Hole Background

Students conduct research on black holes. All findings will contribute to a project that will include a written report with time line, and a poster highlighting some major/significant points about black holes. See the Amazing Space website (http://amazing-space.stsci.edu/resources/explorations/blackholes/teacher/overview.shtml) for a detailed lesson plan with some good background and activities.

Helpful Resources

The following resources might be helpful in conjunction with the activities presented above.

1. http://spaceplace.jpl.nasa.gov/en/kids/svlbi_do1.shtml (A game from NASA called "Falling into a Black Hole" with printable board.)
2. http://www.eclipse.net/~cmmiller/BH/blkmain.html (Basic lesson with information in brief about black holes, in an organized format; written for a "non-technical audience.")
3. http://www.pbs.org/wnet/hawking/strange/html/stuff.html (Another site with links to basic information about black holes, and other "strange stuff.")
4. http://imagine.gsfc.nasa.gov/docs/teachers/blackholes/imagine/ (An information and activity booklet from NASA, designed for grades 9-12.)
5. http://school.discovery.com/lessonplans/programs/blackholes/index.html (A discoverschool.com lesson plan about black holes, for grades 6-8.)
6. http://www.adlerplanetarium.org/education/teachers/plans/gravity/5-8_gq5-3.shtml (A lesson that calls for students to simulate the motions of stars, to identify black holes within star systems; designed for grades 5-8.)
7. http://www.enchantedlearning.com/subjects/astronomy/ (Some definitions and a graphic from the Enchanted Learning website.)