



Computer Science and Games:

Just For Girls!

Computer Graphics



What Are Raster Graphics?



What Are Vector Graphics?



http://conichiwua.files.wordpress.com/2006/10/bottle_completa.png

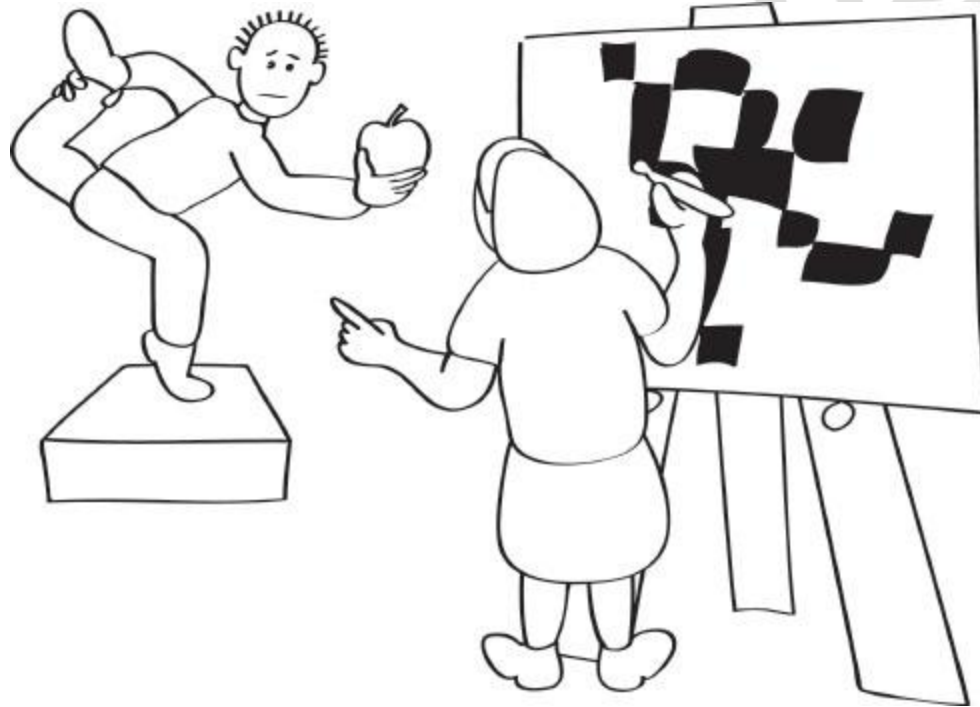
The Difference

Two versions of the same image.

One is a raster image, the other vector.

Image Representation

CS Unplugged Activity: Colour by Numbers



Free Drawing Tools

GIMP

Inkscape



Why Do We Need This?

Concept art

Story boards

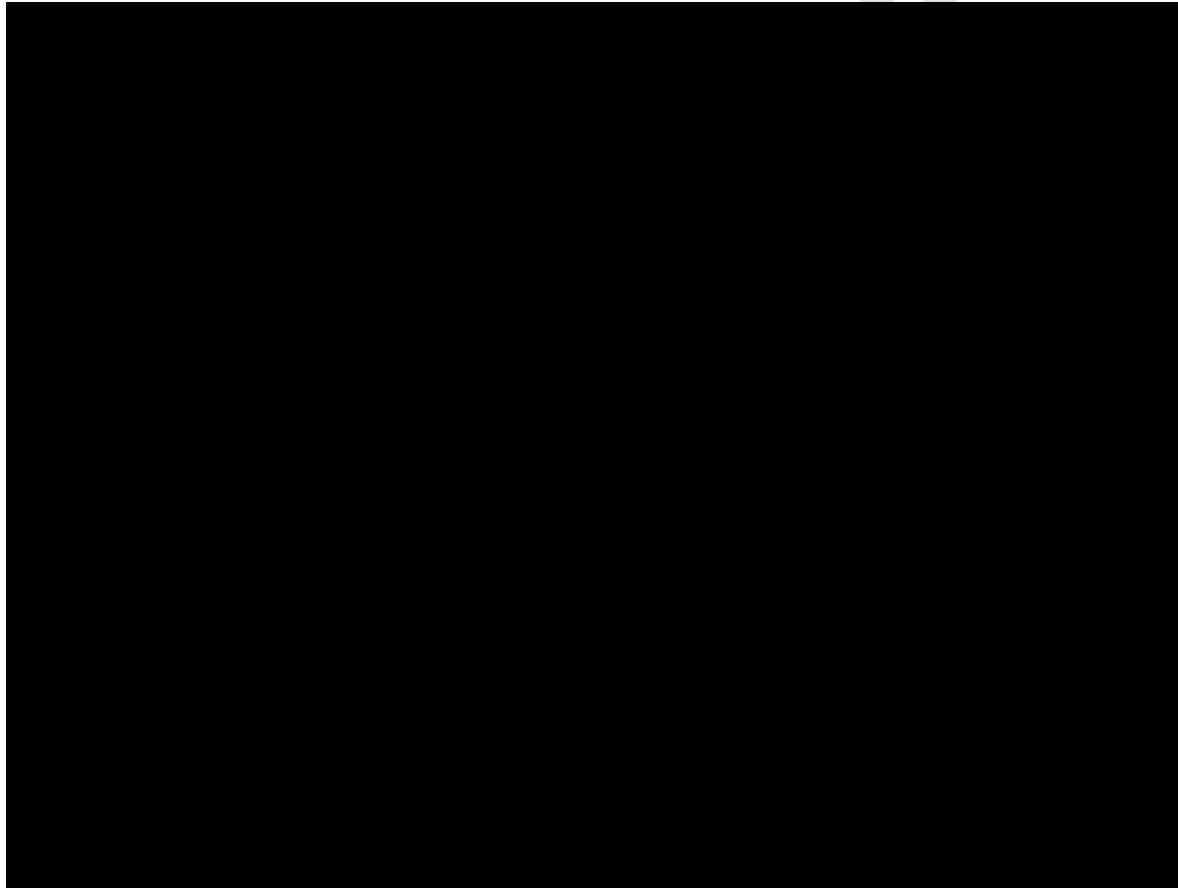
Character design

World design

Promotional Artwork

User Manuals

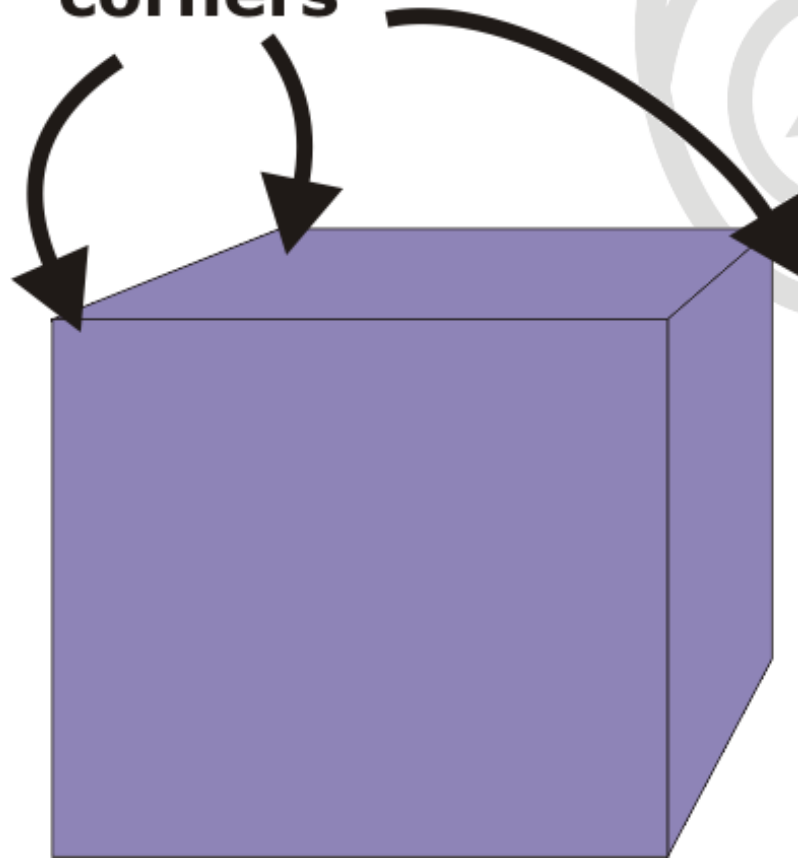
Intro to 3D Graphics



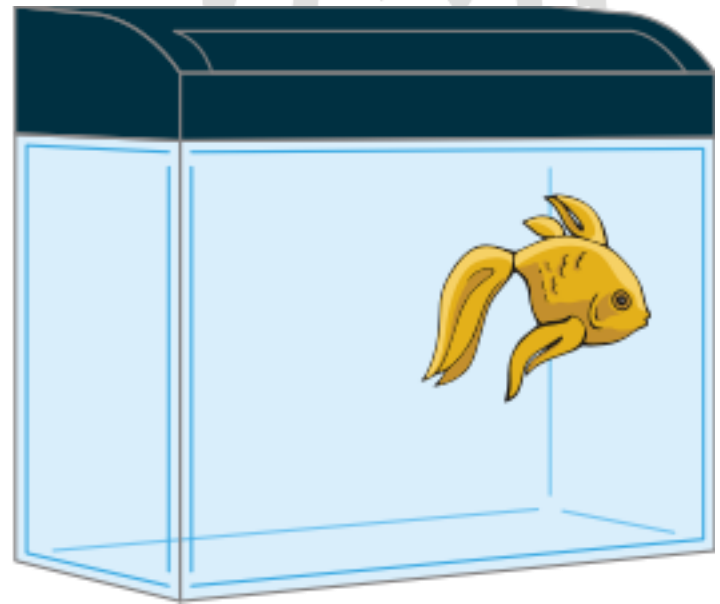
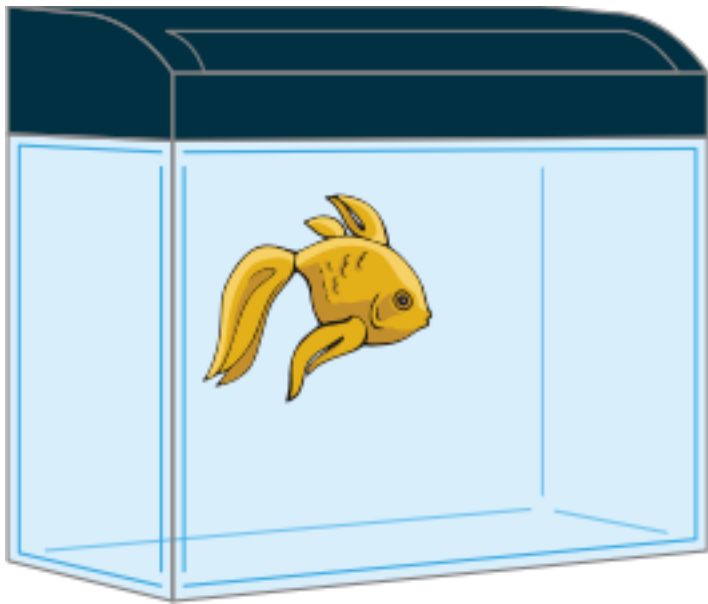
<http://video.google.com/videoplay?docid=-5705559709668742546&q=intro+to+3d+graphics&ei=LxMhSMspMY6y-wGStNDAAQ>

Mathematical 3D Objects

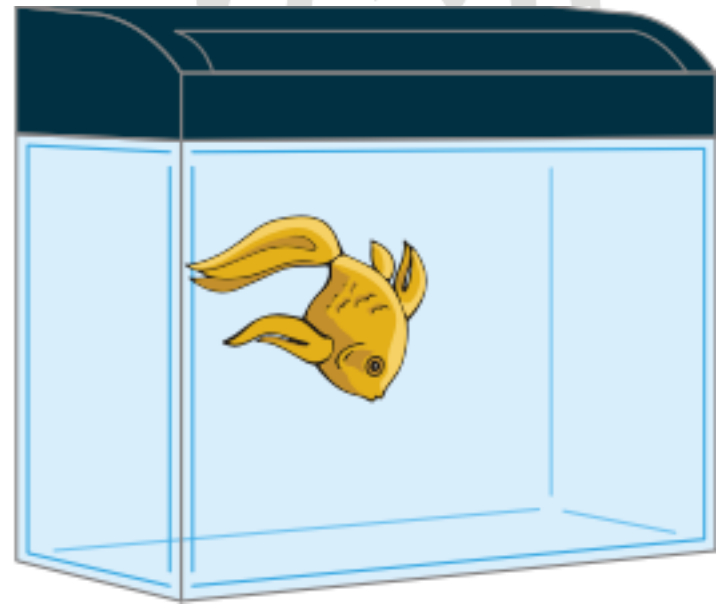
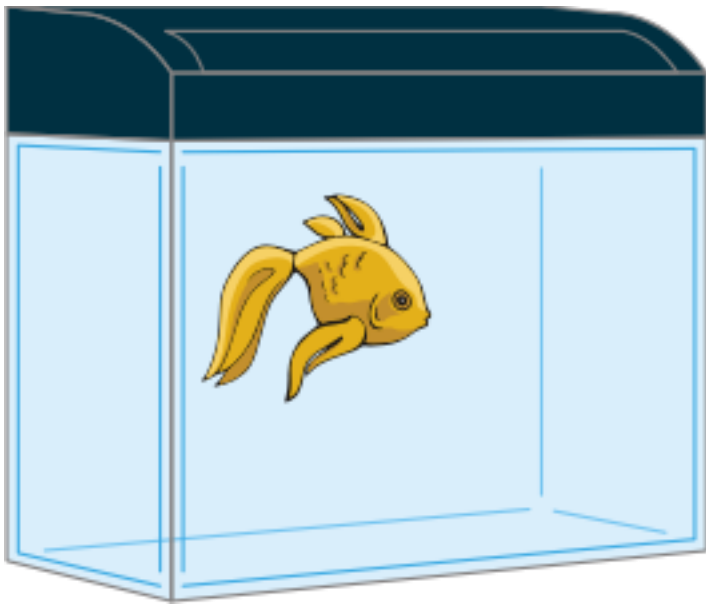
**Describe
corners**



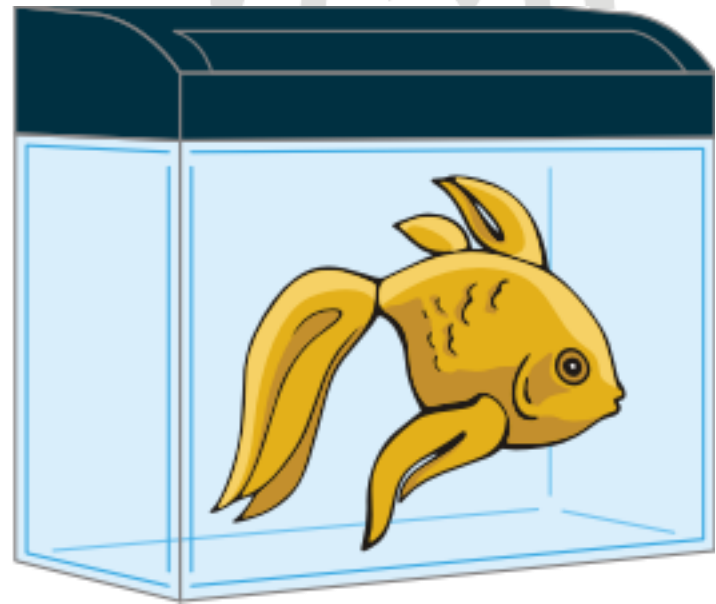
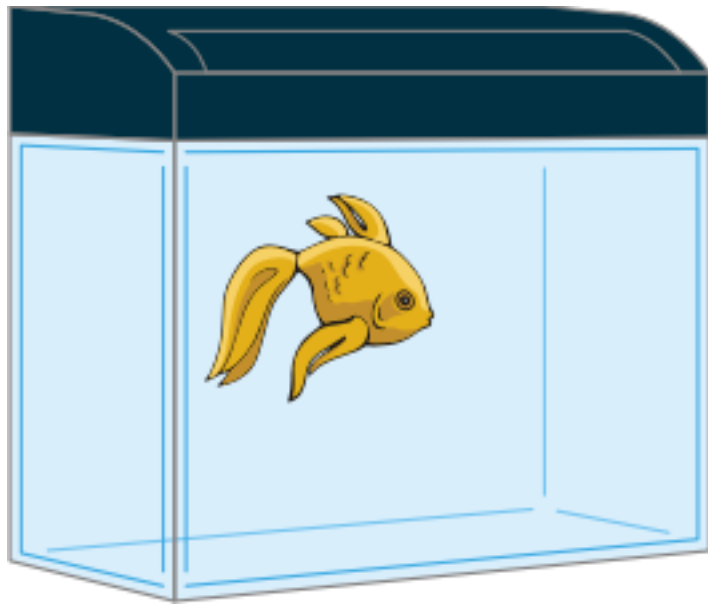
Translation



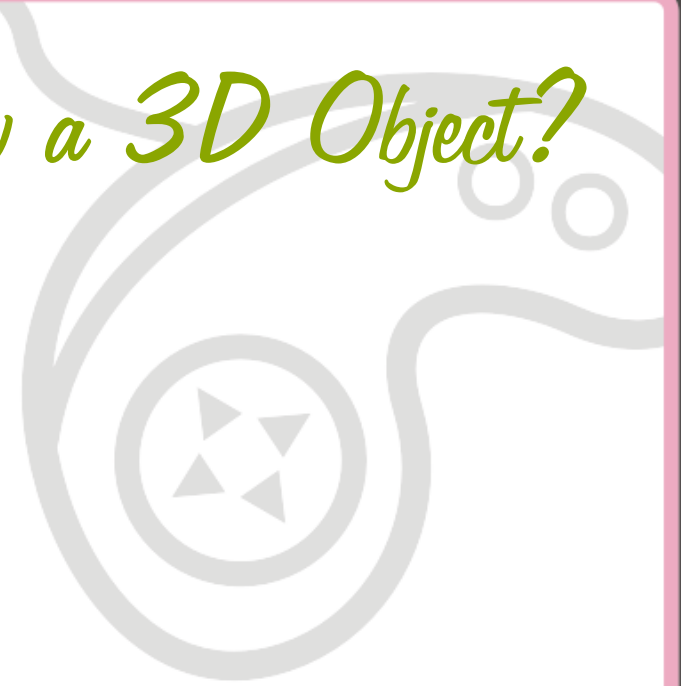
Rotation



Scaling

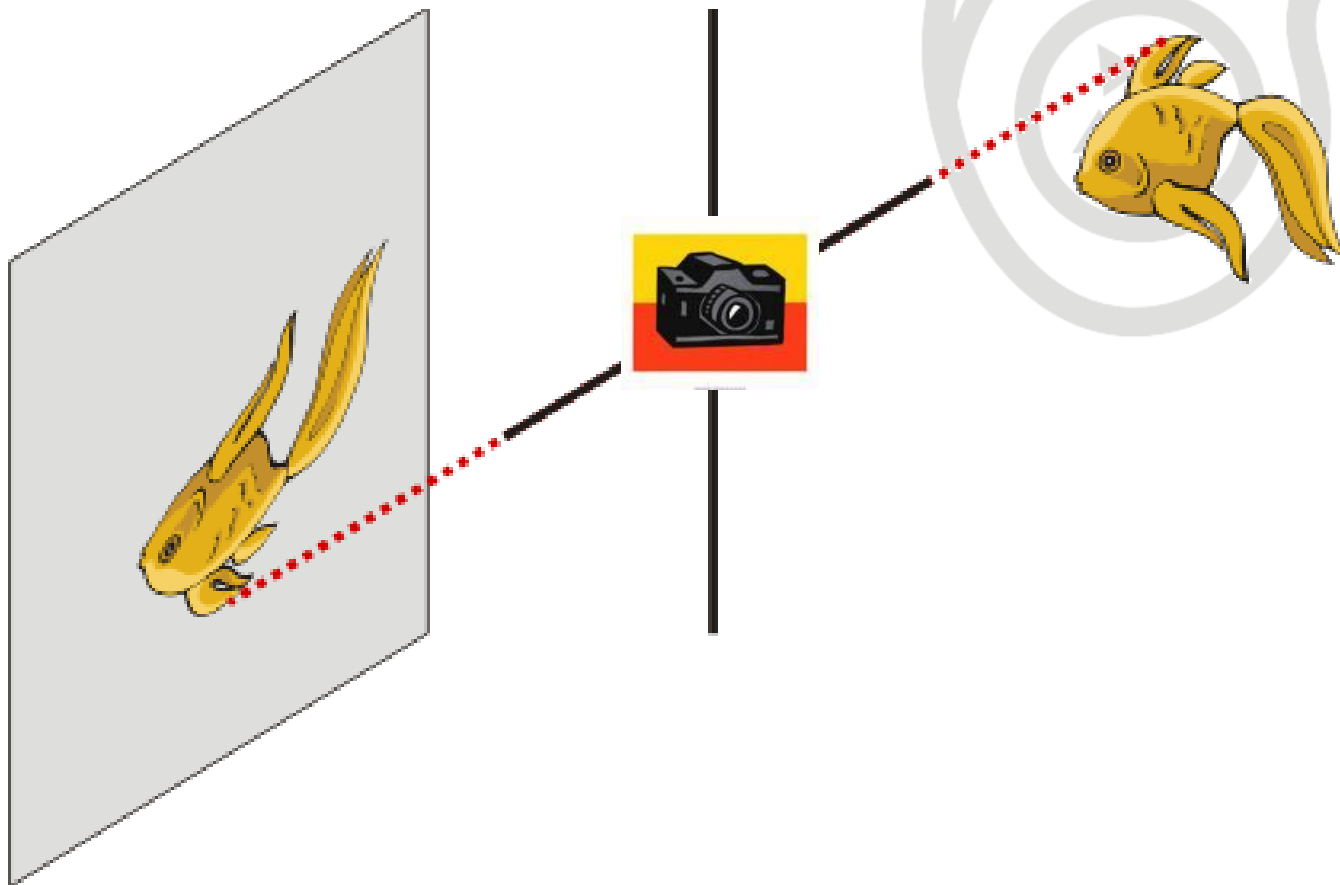


How Can a 2D Screen Show a 3D Object?

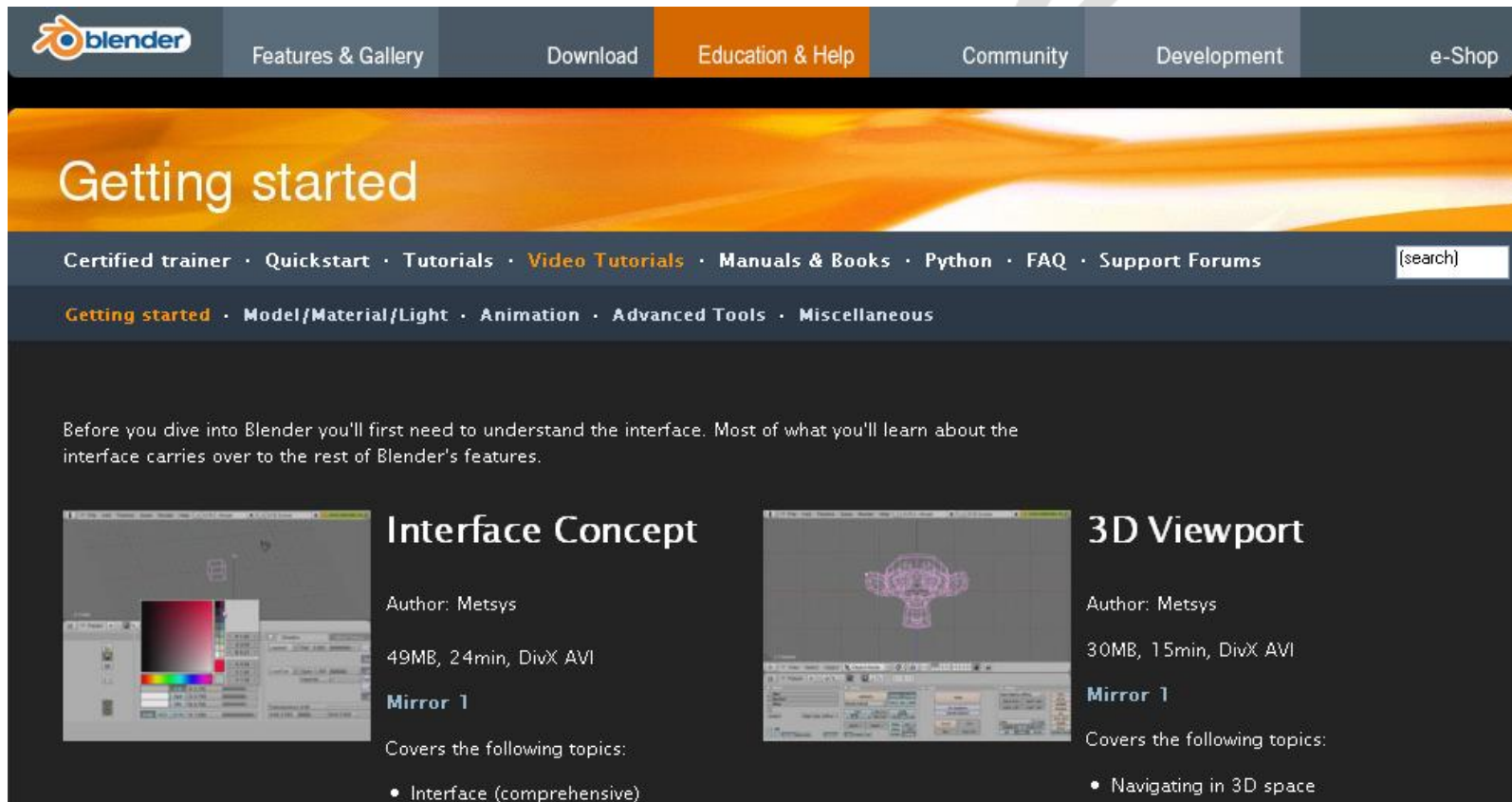


Projection demo!

What's Going On?



Learning Blender



The screenshot shows the Blender website's navigation bar with the following items: **blender**, Features & Gallery, Download, **Education & Help** (highlighted), Community, Development, and e-Shop. Below the navigation bar is a large orange banner with the text "Getting started". Underneath the banner is a dark blue navigation bar containing: Certified trainer · Quickstart · Tutorials · **Video Tutorials** · Manuals & Books · Python · FAQ · Support Forums, with a search box on the right. Below this is another dark blue bar with: **Getting started** · Model/Material/Light · Animation · Advanced Tools · Miscellaneous. The main content area has a paragraph: "Before you dive into Blender you'll first need to understand the interface. Most of what you'll learn about the interface carries over to the rest of Blender's features." Below this are two video tutorial cards. The first card, "Interface Concept", includes a thumbnail of the Blender interface, the author "Metsys", a size of "49MB, 24min, DivX AVI", a "Mirror 1" link, and a list of topics: "Interface (comprehensive)". The second card, "3D Viewport", includes a thumbnail of a 3D model, the author "Metsys", a size of "30MB, 15min, DivX AVI", a "Mirror 1" link, and a list of topics: "Navigating in 3D space".

Getting started

Certified trainer · Quickstart · Tutorials · **Video Tutorials** · Manuals & Books · Python · FAQ · Support Forums

Getting started · Model/Material/Light · Animation · Advanced Tools · Miscellaneous

Before you dive into Blender you'll first need to understand the interface. Most of what you'll learn about the interface carries over to the rest of Blender's features.

Interface Concept
Author: Metsys
49MB, 24min, DivX AVI
[Mirror 1](#)
Covers the following topics:
• Interface (comprehensive)

3D Viewport
Author: Metsys
30MB, 15min, DivX AVI
[Mirror 1](#)
Covers the following topics:
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<http://www.blender.org/education-help/video-tutorials/getting-started/>

Let's See Blender in Action!

“Big Buck Bunny”

Movie created entirely by Blender developers and users

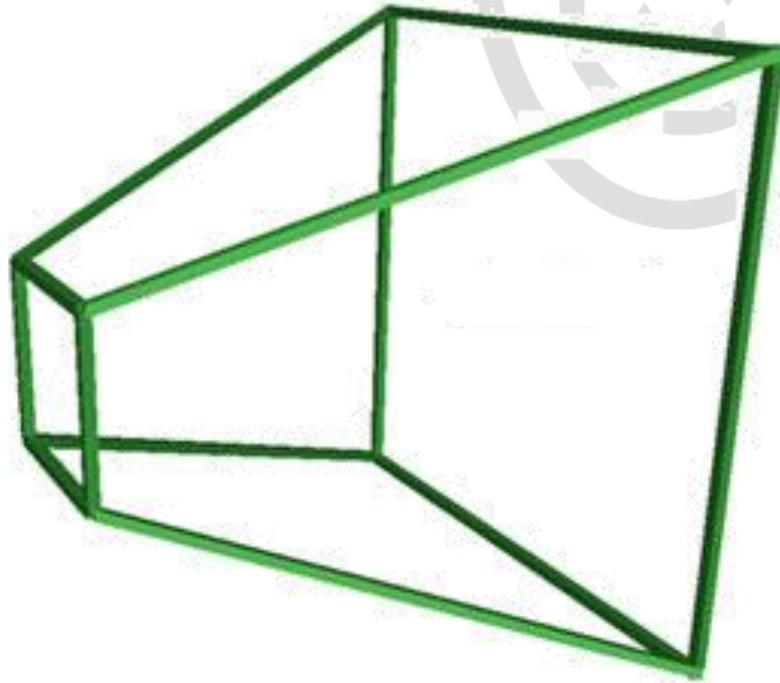
Only free, open source tools used

<http://www.bigbuckbunny.org/>



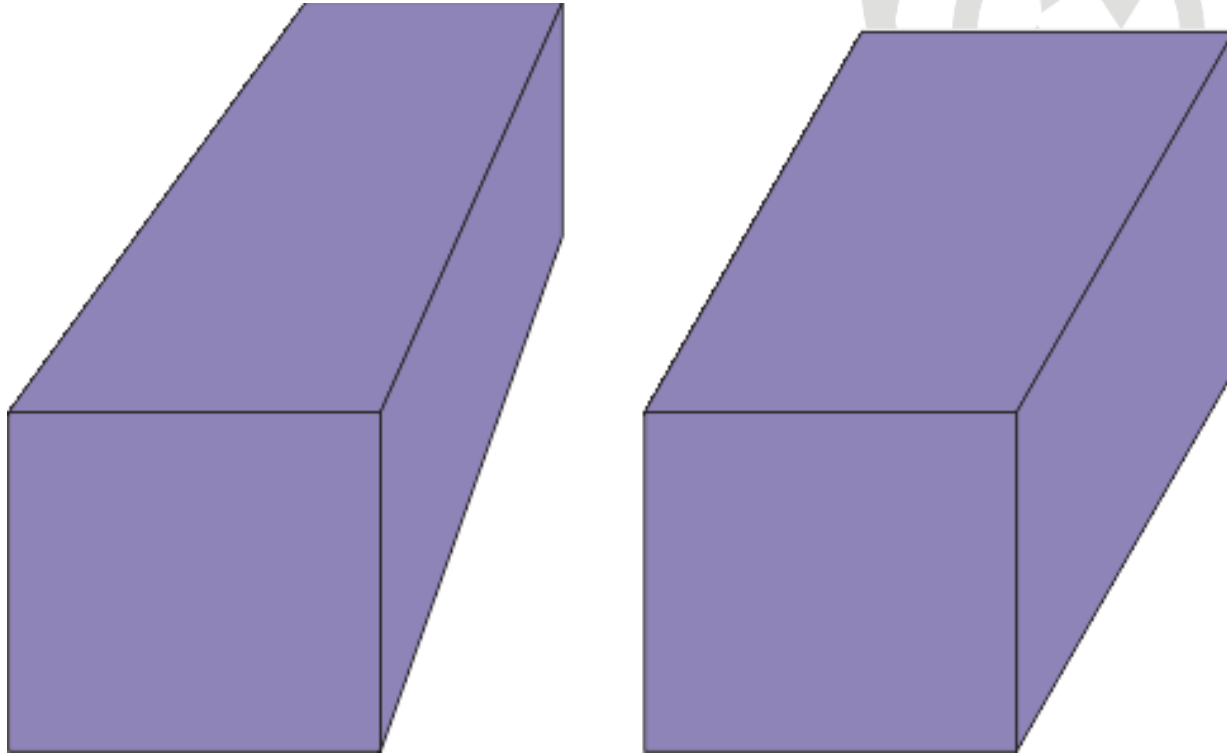
3D Games Have to Deal With:

How much can the camera see?



3D Games Have to Deal With:

Should objects further away look smaller?



3D Games Have to Deal With:

Should objects further away look smaller?

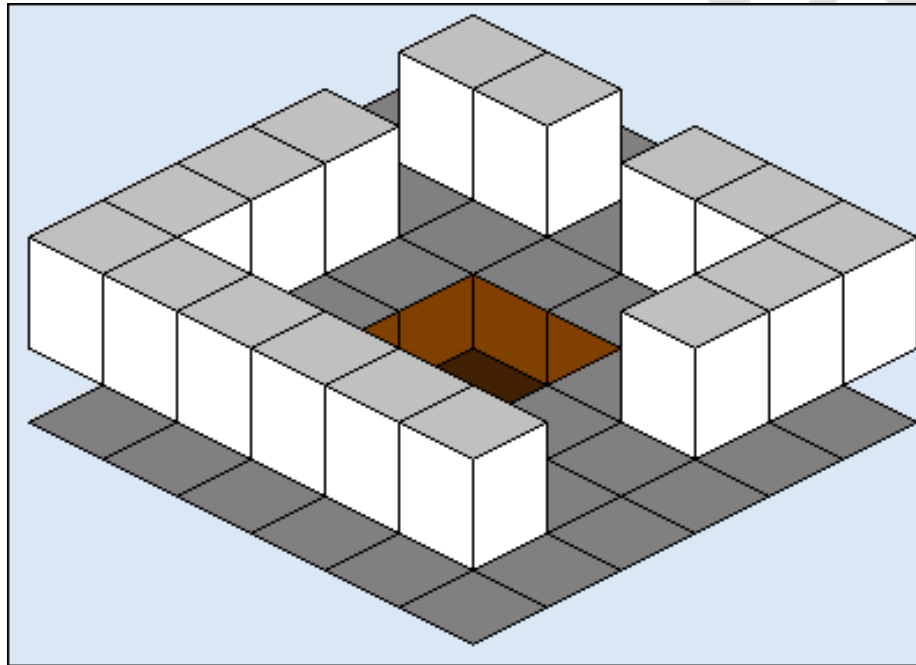
YES
→



3D Games Have to Deal With:

Should objects further away look smaller?

NO



3D Games Have to Deal With:

Cool lighting effects



<http://youtube.com/watch?v=N6r6tbf4UGU>

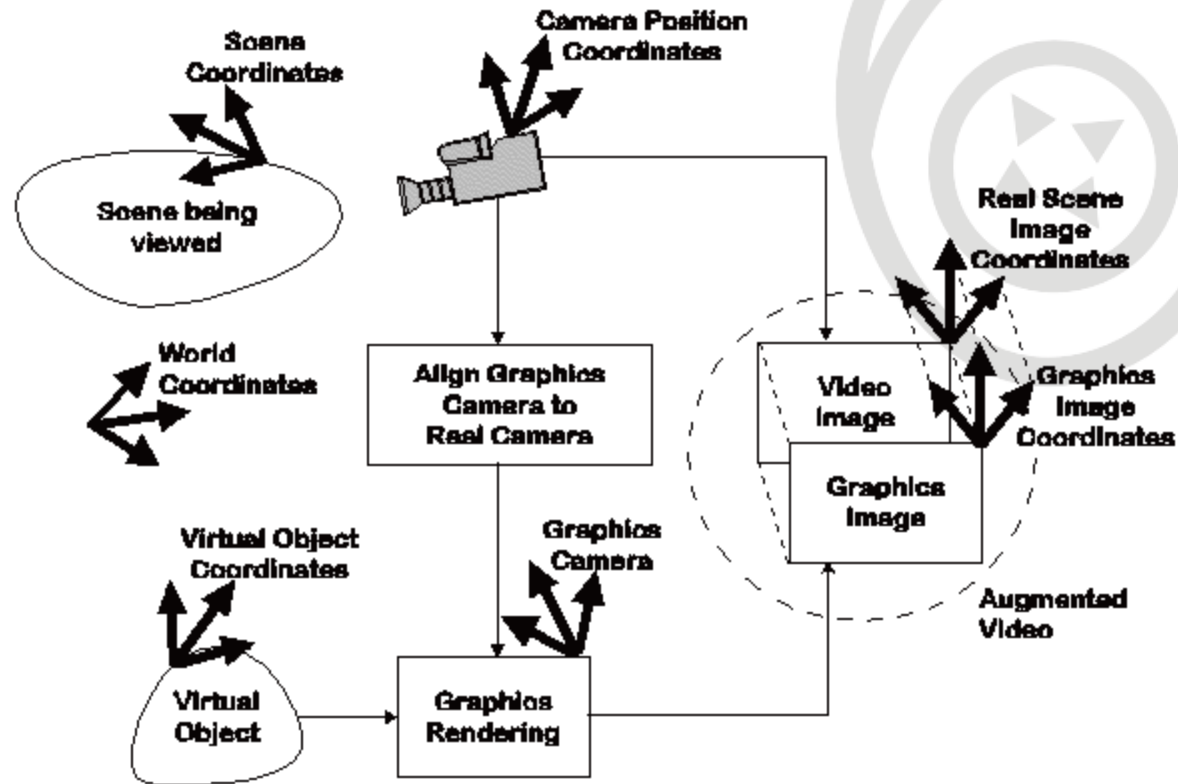
3D Games Have to Deal With:

The Uncanny Valley



http://www.cgarena.com/freestuff/tutorials/max/songhyekyo/final_large.jpg

How Augmented Reality Works



Augmented Reality Magic

Marco Tempest's Stickman

<http://www.marcotempest.com/screen/PublicMediaPlayerV3/language/en/mediaAssetId/1298466065220>

The Future of Games?



<http://youtube.com/watch?v=IWNi0ly0TU8>

Credits

Notes by your instructor Gail Carmichael:

gail.banaszkiewicz@gmail.com

<http://gailcarmichael.com/>

Notes partially based on:

Fundamentals of Game Design, Ernest Adams and Andrew Rollings

The Game Maker's Apprentice, Jacob Habgood and Mark Overmars

The Design of Everyday Things, Donald Norman

Gender Inclusive Game Design: Expanding The Market, Sheri Graner Ray