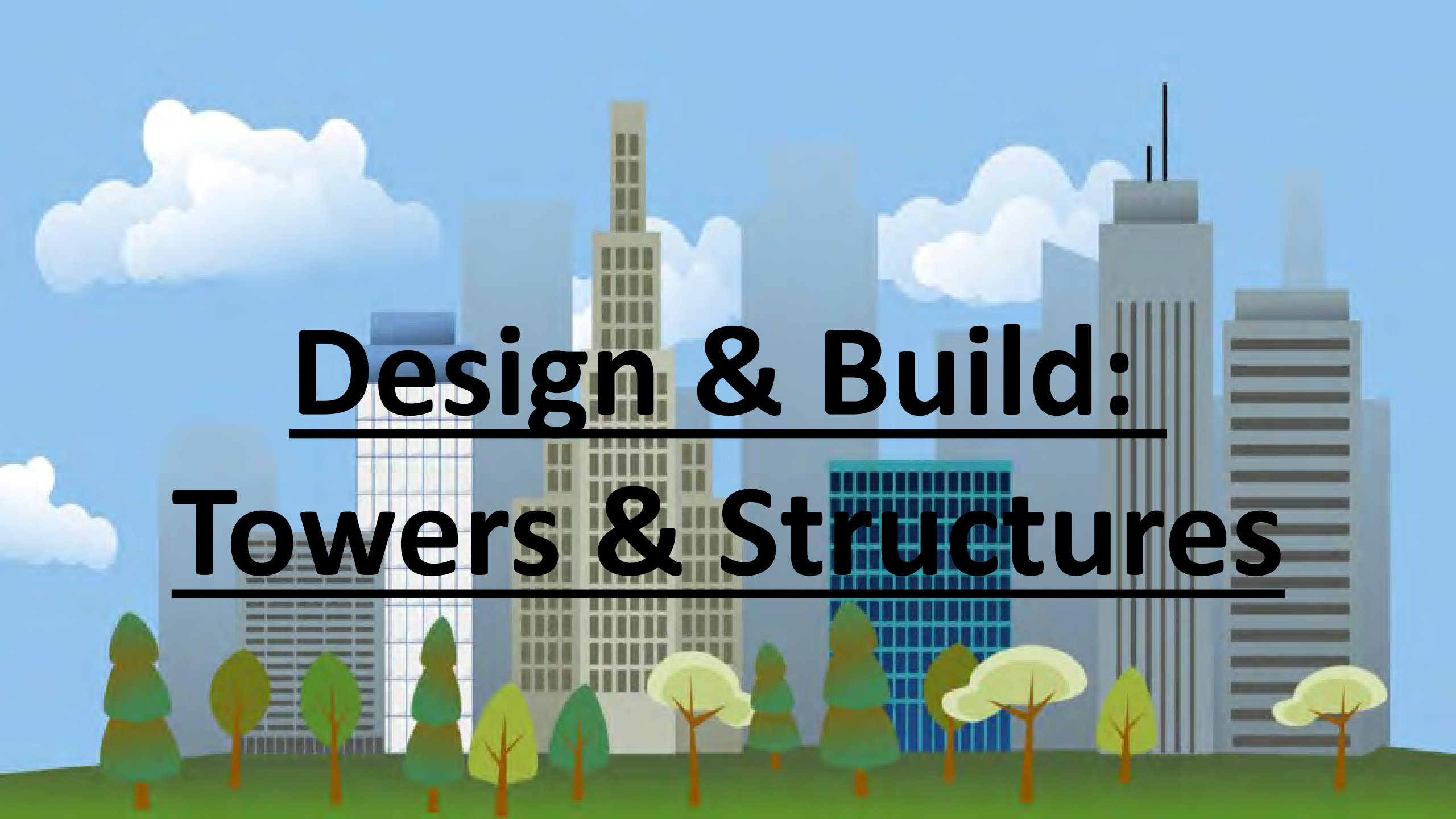
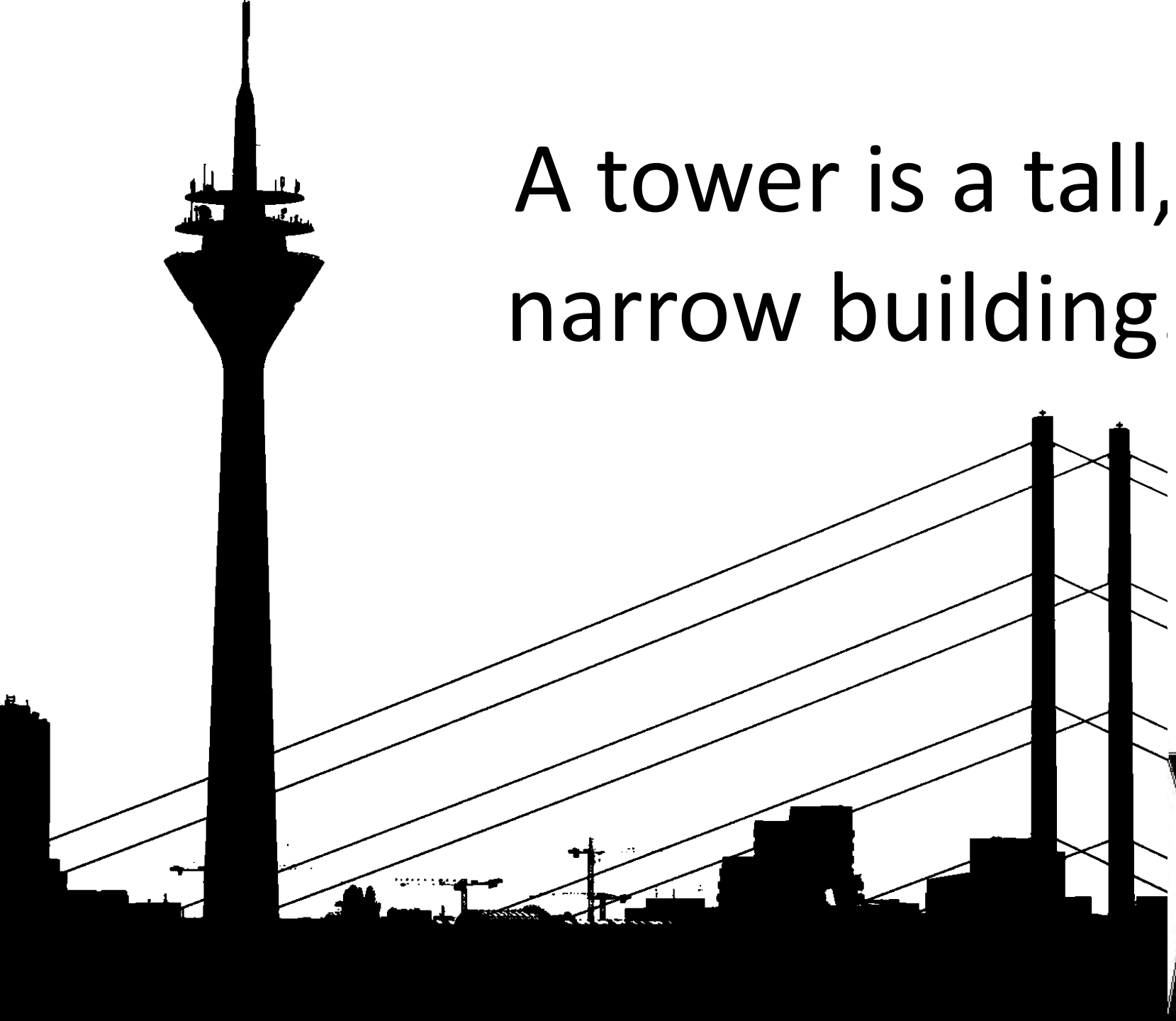
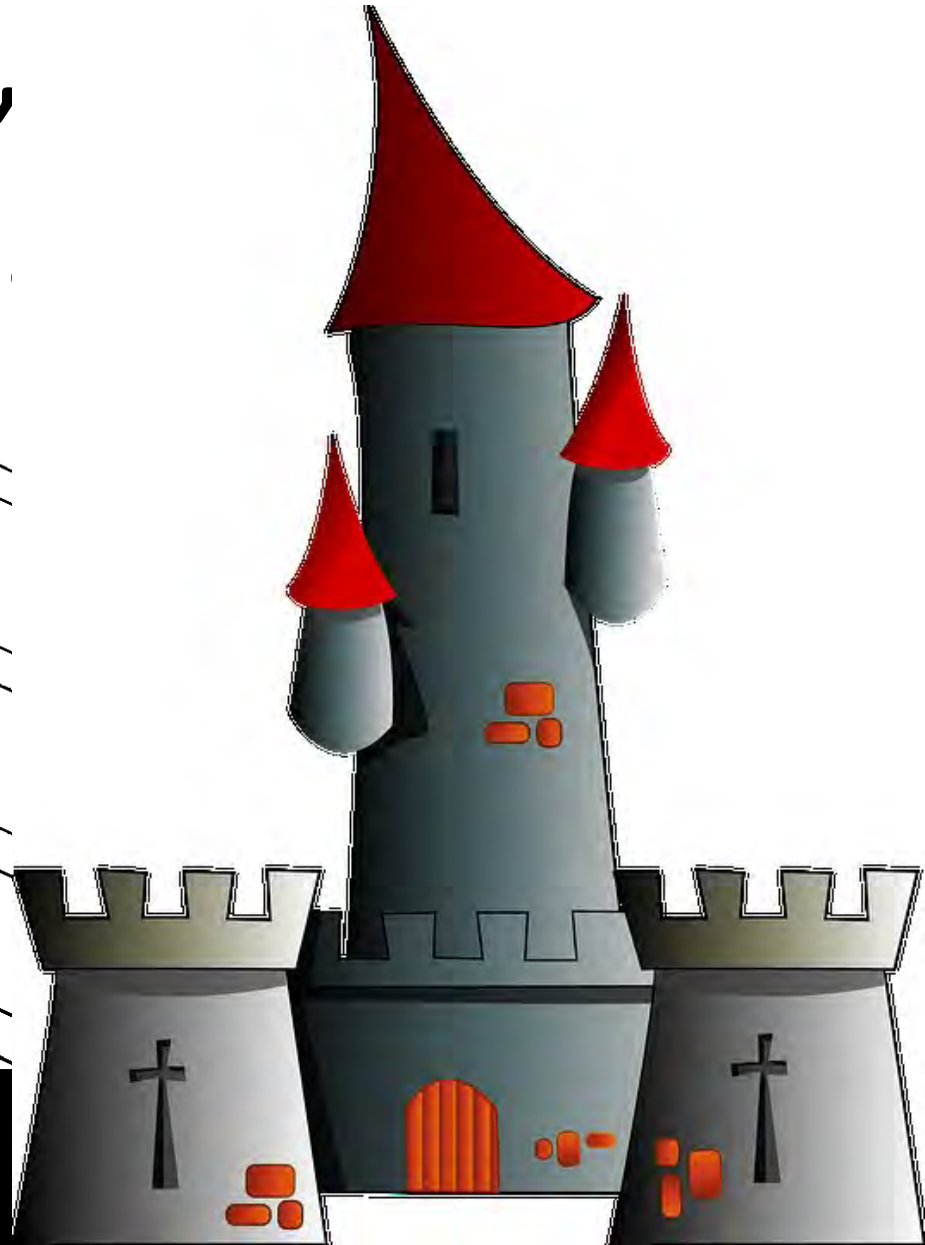

Design & Build:
Towers & Structures

What is a tower?

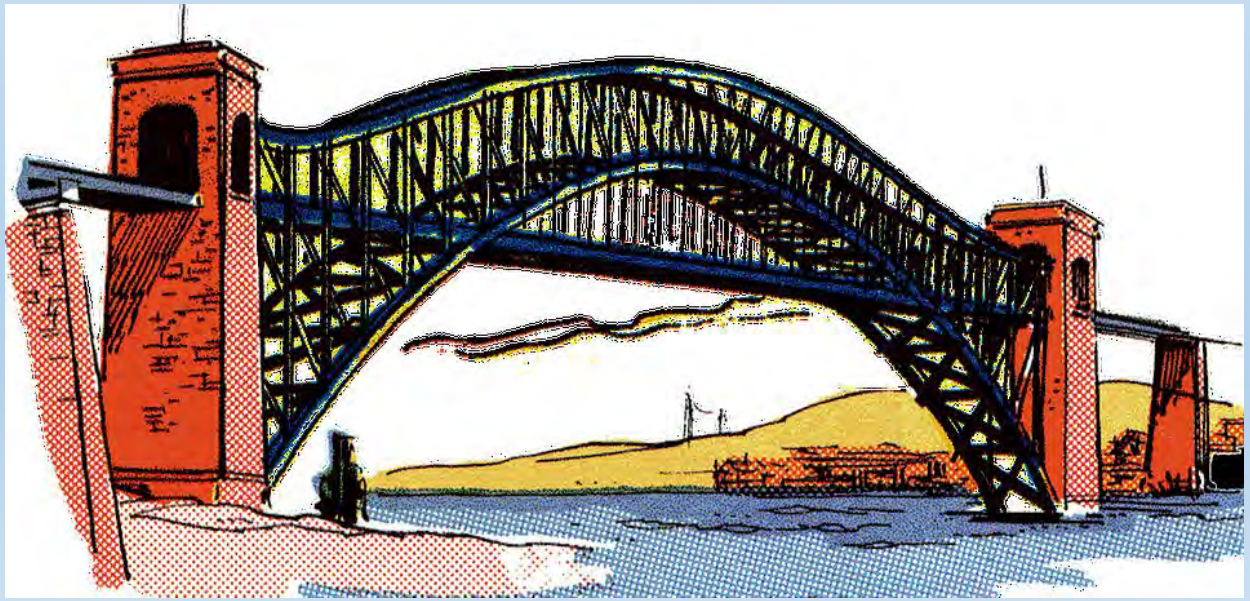
A tower is a tall, narrow building.





What is a structure?

Something built or constructed, like a tower, building or a bridge.



What is important when building a structure?

Stability, strength and purpose.

Stability

Stable means it won’t fall, even if it moves because of wind, or the ground shifting, or when it carries a load or weight.

Strength

Strength means strong.

A strong structure
won’t break.

Purpose

A structures “purpose” means “what was it built for?”

For example a bridge is built to carry vehicles and people over water.

A building might have many purposes.

For example a school has a gym, classrooms, bathrooms, offices that are all used for different purposes).

Let’s look at some famous structures and see if we can figure out what gives them stability and strength, and what their purpose is…

The Eiffel Tower

Built as the entrance to the Paris Exposition — or World's Fair — of 1889.

It took 2 years, two months and five days to build.

The Leaning Tower of Pisa

Located in Italy it was built to be a free standing bell tower to hold the bell for the cathedral (church).

This tower is a marvelous engineering wonder that has been fighting gravity for almost a millennia (1000 Years).

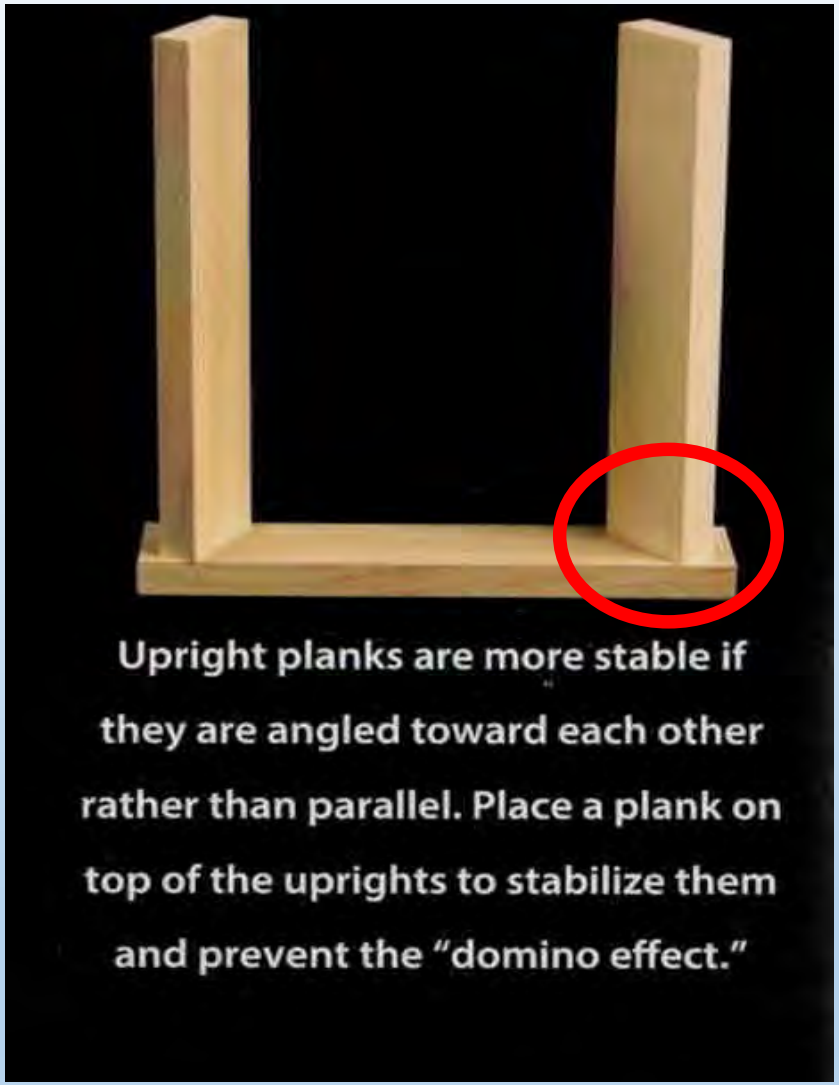
The Golden Gate Bridge

A suspension bridge spanning the Golden Gate (1.6km) connecting San Francisco Bay and the Pacific Ocean.

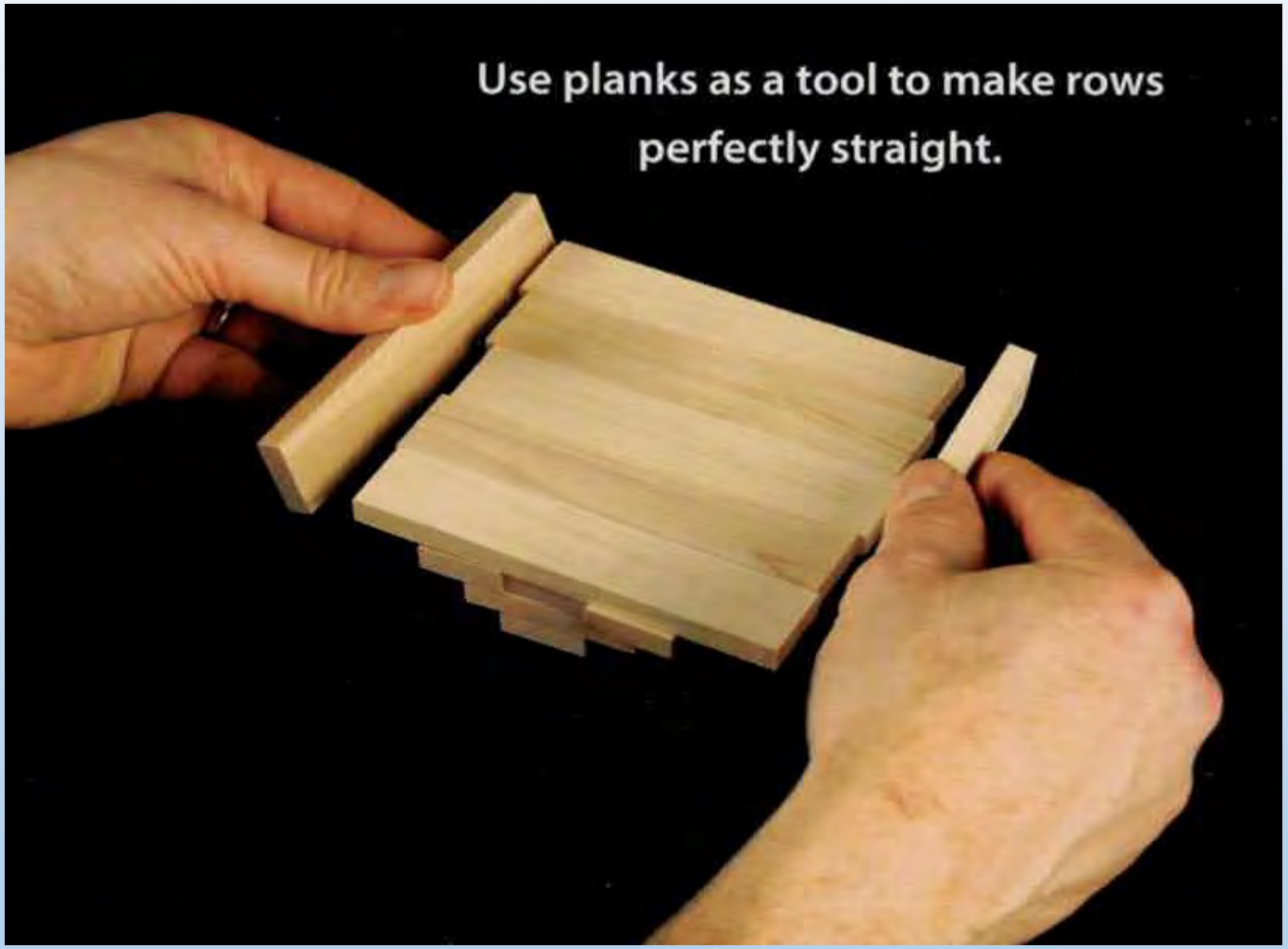
This bridge took four years to build, and it was even strong enough to survive an earthquake on Oct. 17, 1989, (the Loma Prieta earthquake).

KEVA Planks


KEVA Planks can be stacked in
four ways:
- Flat
- Leaning
- On Edge
- Upright
UP RIGHT
FLAT
LEANING
ON EDGE



Upright planks are more stable if they are angled toward each other rather than parallel. Place a plank on top of the uprights to stabilize them and prevent the "domino effect."



What goes up?

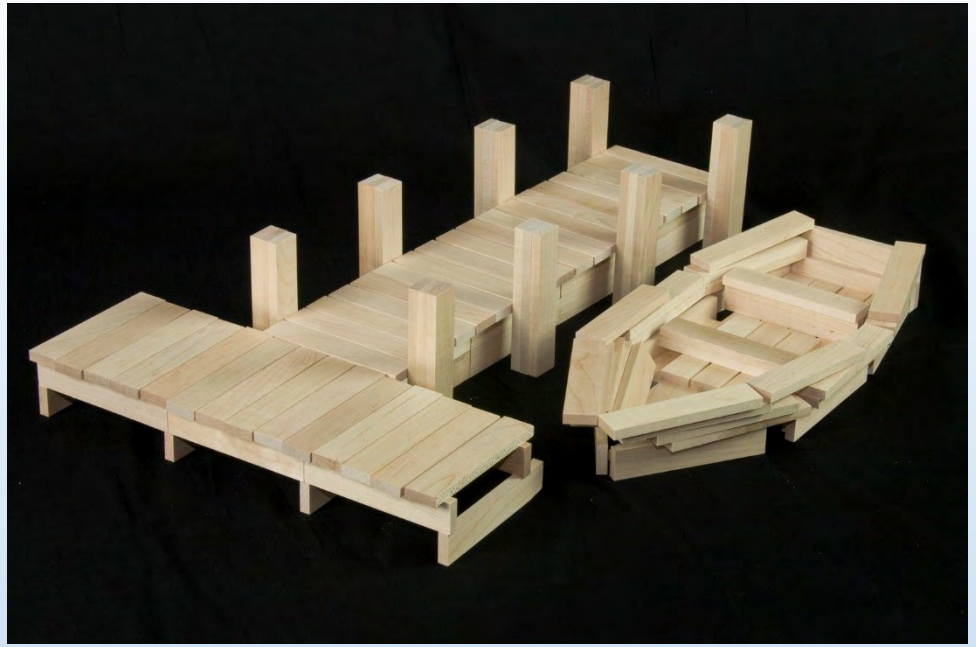
Must come down!

Exploratory Play

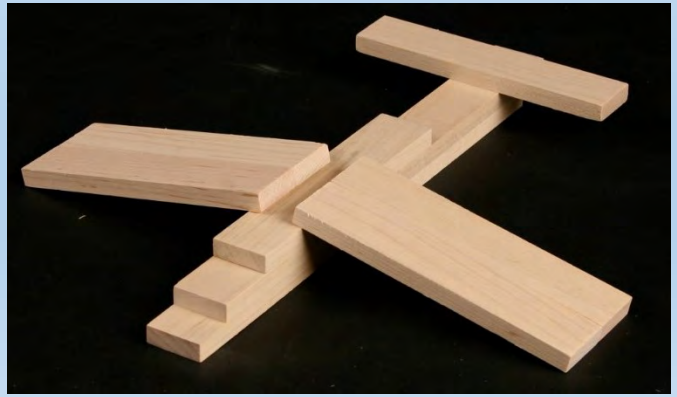
You will each have 50 planks to borrow and work with for the next 10 minutes.

See what you can build!

Be careful not to bump the desks.



Guided Play



Your first challenge is to make a TALL structure using only 10 planks.

You have 1 minute to create.

Using 20 planks, make something to sit on.

You have 2 minutes to create.

Using 5 planks or less, make the first letter of your name.

You have 1 minute to create.

Using 30 planks, build something you might see on a playground.

You have 3 minutes to create.

Using 40 planks, build a little bridge.

You have 3 minutes to create.

Building Challenge

Your next challenge is to build a structure that you would like to have in your backyard. You can choose to either build a:

- Treehouse
- Fort
- Or Playhouse

- Treehouse
- Fort
- Playhouse

Use as many planks as you can. Can you use all 50?

Remember to apply what we learned about stable and strong structures.

You have 10 minutes to create.

Teamwork Discussion

This next challenge will be done with a group. Only by working together will you be able to complete the challenge. The success of your group depends on everyone in the group taking part and supporting each other.

Blocks become group property - they must be shared.

Listen to each other's ideas and give positive remarks.

Help each other only when someone asks for help. If someone in your group is struggling or having difficulty, you could ask them if they would like some help.

Div 1 - Build a Campsite

As a group of 4, you are going to create a campsite!

What kinds of things would you see at a campsite?

Build a Campsite

Your campsite MUST include the following 4 structures:

- tent
- picnic table
- fire pit
- tree

Div 2 – Build a Cityscape

As a group of 4, you are going to create a cityscape!

What kinds of things would you see in a big city?

Build a Cityscape

Your cityscape MUST include the following 4 structures:

.

- restaurant with stairs
- office building
- apartment building
- parking garage

KEVA Planks - World Record Tower

https://www.youtube.com/watch?v=v2j5zEj9gDw

Tower Challenge

Each member will have 50 planks to add to the tower. Divide up the planks so that each member has 10 stacks of 5.

These are the rules you must follow:

- You must take turns
- You may not tell someone what to do with their plank
- Be careful not to bump the tower
- Move slowly
- Use ALL planks
- Your tower must be able to balance a ball at the very top
- You might want to start by talking about what and how to build first. Discuss ideas about what might make it strong and stable!
- If your tower falls down, divide the planks and start again

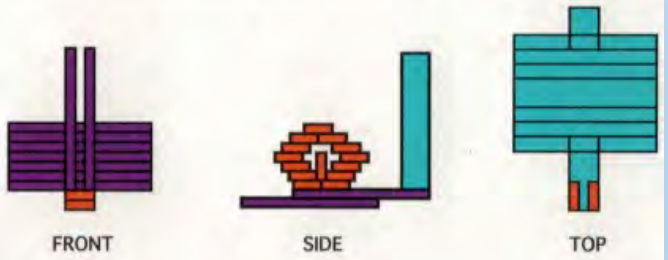
Brain Builders

KEVA BRAIN BUILDERS™

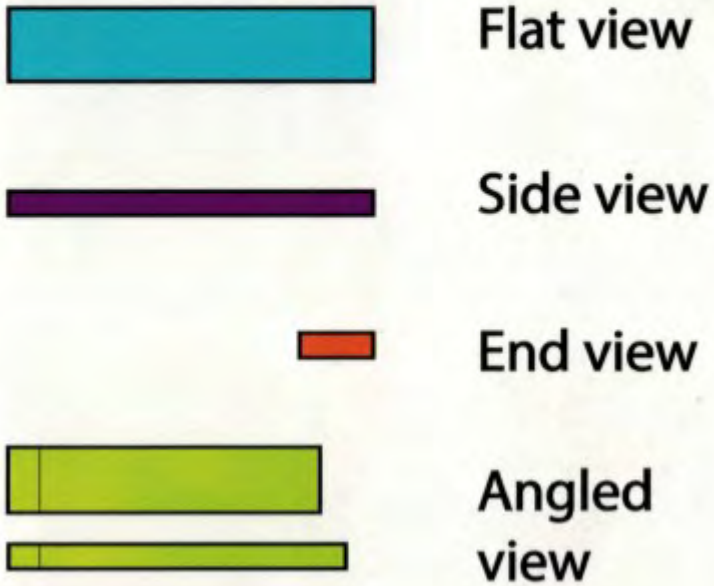
INTRODUCTION

Thinking in Three Dimensions

The ability to understand representational drawings is a critical skill for children and adults. Whether following illustrated instructions to assemble a new toy or new shelving for the family room, we all need to be able to translate two-dimensional information into actual useful objects. Just as words are needed to tell a story and notes are needed to play a song, technical drawings are needed to show us how to build a particular thing.



REFERENCE CARD



KEVA BRAIN BUILDERS™

INSTRUCTIONS

Color Coded Drawings

KEVA planks have three distinct surfaces. Each one is color coded on the technical drawings so you can rely on color as well as shape when determining how to position each plank. The broad flat view of a plank is **blue**. The narrow side view of a plank is **purple**. The small end view of a plank is **orange**. Planks that are angled are **green**.

Don't Peek!

The back side of each card features a photograph of the solution. Resist the urge to look at this side of the card which makes the construction of the puzzle obvious.

Start Easy

The cards are numbered and grouped into three levels. The higher the number, the harder the challenge. If you get stuck, it may help to hold the card beside your structure to compare the drawings to the planks you have stacked. Move around your structure so you can see it from all directions.

Clean Up

- Create 10 stacks of 5 planks to be sure you have 50.
- Put the planks into a Ziploc bag.