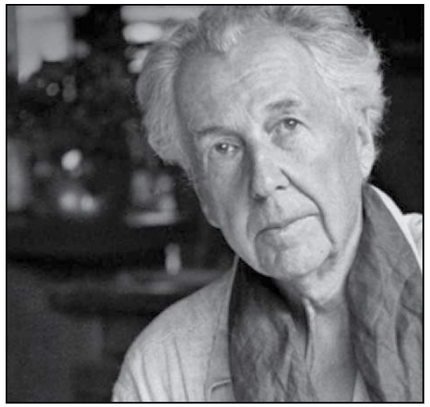
CREATED BY AIA CLEVELAND

FOR KIDS + ADULTS OF ALL AGES

HOME ARCHITECTURE CAMP 2020

TOOL KIT

1. HISTORY
2. DESIGN
3. BUILDING
4. SUSTAINABILITY
5. DRAWING
6. COLORING
7. CREATING



Frank Lloyd **Wright**
[1867-1959] American

He believed in designing structures to be in harmony with humanity and the environment, a philosophy he called “organic architecture” which defined his Prairie School of architec ture. “A building should appear to grow easily from its site and be shaped to harmonize with its surroundings if Nature is manifest there.”

Eileen **Gray**
[1878-1976] Irish

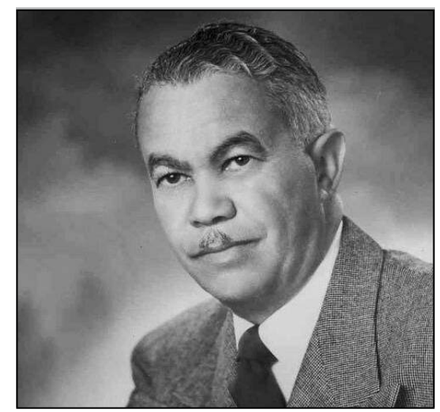
Eileen Gray was an architect, an interior de signer, and a furniture designer. As a trailblazer of the Modern Movement, she was one of the leading lights of Art Deco design. Her philo sophy was that ‘[a] house is not a machine to live in. It is the shell of man, his extension, his release, his spiritual emanation.’

Ludwig **Mies** van der Rohe
[1886-1969] German

Mies sought to establish his own particular architectural style that could represent modern times, stated with extreme clarity and simpli city. His mature buildings made use of modern materials such as industrial steel and plate glass to define space. “Form follows function.”

“Le Corbusier”
Charles-Édouard Jeanneret
[1887-1965] French-Swiss

He was an architect, designer, painter, urban planner, writer, and one of the pioneers of what is now called modern architecture, a leader of the International Style. “Space and light and order. Those are the things that men need just as much as they need bread or a place to sleep.”



Paul Revere **Williams**
[1894-1980] American

Williams was well regarded for his profiency in designing various architectural styles. He mastered the art of drawing upside-down so that his clients would feel comfortable and would not have to sit directly beside a black man. His pioneering career has encouraged others to cross a chasm of historic biases.

Florence **Knoll**
[1917-2019] American

Florence Marguerite Knoll Bassett was an American architect, interior designer, furniture designer, and entrepreneur who has been credited with revolutionizing office design and bringing modernist design to office interiors. Florence was well-respected by her contemp oraries, Mies and Eero Saarinen, collaborating with them both on furniture designs.

7 Norma Merrick **Sklarek**

[1926-2012] American

"The Rosa Parks of Architecture", for her major accomplishments as a black woman in a male-dominanted field, and her strong voice for women who were likely to face dis crimination in certain careers. Norma was the first African American female elevated to the College of Fellows.

8 Frank **Gehry**

[b. 1929] American-Canadian

His exploratory nature and his unique use of materials, line, and technology have inspired architects and changed the way architects and engineers think about structures. "If you know where its going, it's not worth doing." Gehry was the first to apply parametric soft ware to produce architecture.

9 Daniel **Libeskind**

[b. 1946] Polish-American

Daniel Libeskind is renowned for his ability to evoke cultural memory in buildings. Informed by a deep commitment to music, philosophy, literature, and poetry, Mr. Libeskind aims to create architecture that is resonant, unique and sustainable." To provide meaningful architecture is not to parody history but to articulate it."

10 Zaha **Hadid**

[1950-2016] Iraqi-British

Zaha was the first woman to receive the Pritzker Architecture Prize, in 2004. She is known for her radical deconstructivist designs, flowing forms. She explored new aspects of design through technology and materials. Zaha was the first woman to be recognized for her contributions in architecture while alive.

11 Phil **Freelon**

[1953-2019] American

Arguably the most significant African-American architect in recent history, Freelon was known for his museums and other cultural institutions devoted to the black ex perience, among them, the National Mu seum of History and Culture on the mall in Washington.

12 Maya **Lin**

[b. 1959] American

An American designer, architectural designer, and artist who works in sculpture and land art. Although she is best known for historical memorials, she is also known for environ mentally themed works, which often address environmental decline. She draws inspiration from the architecture of nature, and be lieves that nothing she creates can match its beauty.

1 The Pantheon

[126 AD] Emperor Hadrian

The Pantheon is one of the best-preserved monuments of ancient Rome. The structure features a rotunda with a massive domed ceil ing which was the largest of its kind when it was built. The dome construction was carefully studied by master-builders of the Renaissance.

2 Cathédrale Notre-Dame de Paris

[1163-1250] Pierre du Montreuil

Notre Dame is a medieval Catholic cathedral on the Île de la Cité in the 4th arrondisse ment of Paris. Notre Dame is considered to be one of the finest examples of French Gothic. In 2019 a structural fire ravaged the roof and the spire.

3 Taj Mahal

[1632-53] Ustad Ahmad

The Taj Mahal is an ivory-white marble mauso leum on the south bank of the Yamuna river in the Indian city of Agra. India's most famous monument, a shrine to eternal love.

4 Sagrada Família

[1882-2026] Antoni Gaudí

The iconic Gothic-Art Nouveau church will be finished by architect Jordi Fauli and his team. Five generations now have watched the Temple progress in Barcelona, Spain. The church be came so important because of its expansive dimension and lush design that it soon "the cathedral". Gaudi was convinced that Barcelona would be known for this work.

5 Barcelona Pavilion

[1929] Mies van der Rohe

As part of the 1929 International Exposition in Barcelona Spain, the Barcelona Pavilion, was the display of architecture's modern movement to the world. Its elegance and sleek lines establish a place of solitude and reflection.

6 Le Centre Pompidou

[1977] Renzo Piano + Richard Rogers

Le Centre Pompidou is about the present, the future. The building's most famous structural feature is its "inside-out" construction, which emphasizes the idea of the cultural center as a machine and places the mechanical systems on the exterior, to keep the inside unencumbered and open.

7 Sydney Opera House

[1959-73] Jørn Utzon

Its significance is based on its unparalleled design and construction; its exceptional engineering achievements and technological innovation and its position as a world-famous icon of architecture.

8 Salk Institute

[1960] Louis Kahn

Kahn's scheme for the Institute is spatially orchestrated in a similar way to a monastery: a secluded intellectual community. Three zones were to stand apart, all facing the ocean to the west: the Meeting House, the Village, and the laboratories.

9 TWA Terminal

[1962] Eero Saarinen

In order to capture the concept of flight, Saarinen used curves to create spaces that flowed into one another. The exterior's concrete roof imitates a bird in flight with two massive "wings."

10 Lloyd's of London

[1978-86] Richard Rogers

The entire building is wrapped in stainless steel giving the building a high-tech, almost post modern, aesthetic. The streamlined façade juxtaposed to the mechanical and service functions on the exterior evoke the technological advances of its construction, as well as express the building's main focus on functionality.

11 Guggenheim Museum Bilbao

[1997] Frank Gehry

The Guggenheim effect, also known as the Bilbao effect, has turned into the symbol of how art and culture can boost the struggling economy of a region. The museum is seamlessly integrated into the urban context, unfolding its interconnecting shapes of stone, glass and titanium along the Nervión River in the ancient ancient industrial heart of the city

12 The Oculus

[2016] Santiago Calatrava

The Oculus transportation hub rises from the debris of the September 11th terrorist attacks, as an organic form within a field of towers and the memorials representing them. In a nod to the Libeskind concept, the Oculus was built to maximize the effect of the autumnal equinox rays (coinciding with the skylight opening on or around September 11 every year).

E1027
Eileen Gray
[1927] Côte d'Azur, France

E1027 was a pioneering and accomplished work of the modern movement in architecture, putting into practice new ideas. Eileen, an un trained architect, designed the house and fur nished the building with her original furniture designs. She paved the way for women architects.

Villa Savoye
Le Corbusier
[1931] Poissy, France

The Villa Savoye is a revolutionary building because it was designed to be functional and to revolve around people's daily lives. With its systematic efficiency, lack of ornamentation, and clean lines, the Villa Savoye exemplifies Purism and Le Corbusier

VDL Research House
Richard Neutra
[1932] Los Angeles, California

Through use of natural lighting, glass walls opening onto patio gardens and mirrors, Neutra designed a space that was not con fining and which reflected the nearby lake.

Farnsworth House
Mies van der Rohe
[1945-51] Plano, Illinois

Its interior and furnishings were all designed to provide a sense of connection to the land scape outside. Farnsworth House is an icon of modernist architecture. The house was de signed to be a serene island, a place of quiet reflection. The significance of the Farnsworth House was recognized even before it was built.

Glass House
Phillip Johnson
[1949] New Canaan, Connecticut

An example of minimal structure, geo metry, proportion, and the effects of trans parency and reflection. It is as beautiful now as when it was first built. The proportions, the restraint, and the subdued colors of its fabrication elements underscoring its sense of place make it a special structure.

Eames House
Ray + Charles Eames
[1949] Los Angeles, California

The Eames' highly regarded the natural en vironment of their house and it was an essen tial part of their lifestyle. They loved the land scape so much that they eventually changed their previous idea and adapted to the site in an attempt to unite their creation with nature.

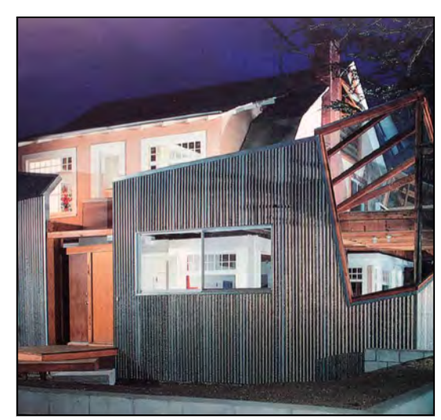
Stahl House
Pierre Koenig
[1960] Hollywood Hills, California
The pavilion-type house has been described as “a happy combination of site, soil, height, and location combined to suggest a solution in which it was possible to take advantage of all elements without the necessity of com promising design.”

Sheats Goldstein Residence
John Lautner
[1963] Los Angeles, California
The building was conceived from the inside out and built into the sandstone ledge of the hillside; a cave-like dwelling that opens to embrace nature and view. A prominent ex ample of American Organic Architecture which derives its from from the landscape.

Vanna Venturi House
Denise Scott Brown +
Robert Venturi
[1964] Chestnut Hill, Pennsylvania
A non-structural applique arch and “hole in the wall” windows, among other elements, were an open challenge to Modernist ortho doxy. The house is one of the first prominent works of Post-Modernism.

Fallingwater
Frank Lloyd Wright
[1937] Mill Run, Pennsylvania
Fallingwater was a masterpiece of Wright’s theories on organic architecture, which sought to integrate humans, architecture, and nature together so that each one would be improved by the relationship.

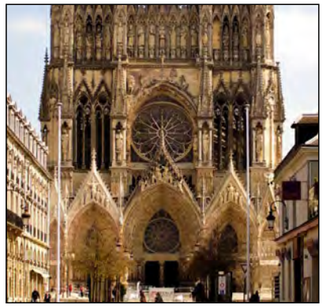
Gwathmey Residence + Studio
Charles Gwathmey
[1967] Long Island, New York
Gwathmey intended for the house to be sculp ture on the site, and he approached this by carving out primitive forms, such as cubes, to create different spaces. The “carving” of these spaces was determined by responses to the site, solar orientation, program, and structure.



Gehry Residence
Frank Gehry
[1977] Santa Monica, California
It was originally an extension, designed by Gehry and built around an existing Dutch col onial style house. It makes use of unconven tional materials, such as chain-link fences and corrugated steel. It is sometimes considered one of the earliest deconstructivist buildings, al though Gehry denies this.

1 Classic
[7c.-4c. BC] Greece
Designed from principles of order: symmetry, geo metry, and perspective.

2 Romanesque
[6c.-9c. AD] Europe
Characterized by heavy and resistant walls and minimal openings in semi-circular arches.



3 Gothic
[9c.-13c. AD] France
“Gothic” came about to refer to the vertical and majestic architecture pro duced in this period.

4 Baroque
[16c.] Italy
Making use of ornaments and elements that sought to establish a dramatic sense -especially by con trasting light and dark.

5 Neoclassical
[18c.-19c. AD]
Various Countries
Neoclassical architecture sought to revive Classical Greek and Roman build ings.

6 Beaux-Arts
[1835-1920] France
Beaux Arts is characteriz ed by order, symmetry, formal design, grandiosity, and elaborate ornamen tation.

7 Art Nouveau
[1890-1910] France
Inspired by the sinous lines in nature: plants, flow ers and animals.

8 Art Deco
[1910-1939] France
Also called style moderne, Deco buildings often have a sleek, linear appearance with stylized, often geome tric ornamentation.

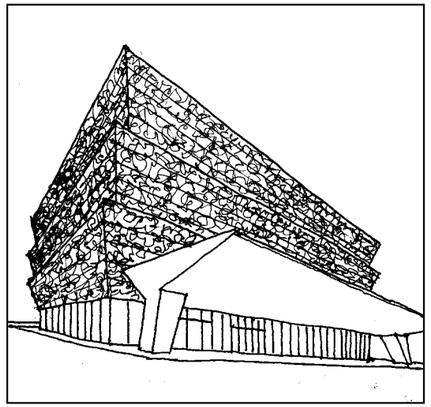
9 Bauhaus
[1919-1932] Germany
The movement encouraged cross-pollination between dis ciplines of arts and crafts. The movement favored the direct in lieu of ornamentation.

10 Modern
[1933-1965] Germany
It can be said it began in Germany with Bauhaus, or France with Le Corbusier, or the U.S. with Frank Lloyd Wright.

11 Post-Modern
[1929-1970] America
Postmodern architecture examines some of Mod ernism’s central principles from new historical and compositional perspective.

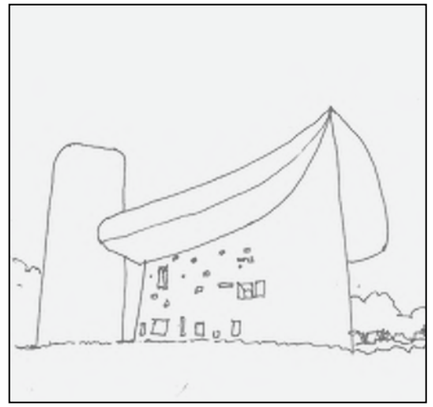
12 Deconstructivism
[1980-Present]
Deconstructivism gives the impression of the framenta tation of the constructed building. It is characterized by an absence of harmony continuity, or symmetry.

1



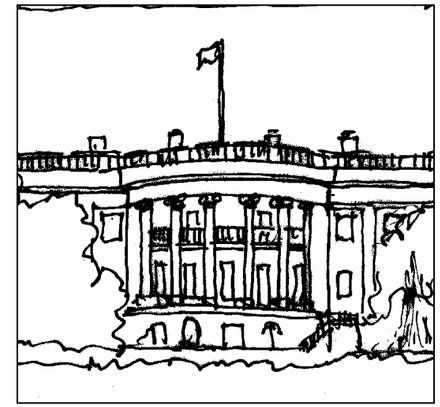
National Museum of African American History and Culture, Washington D.C.

4



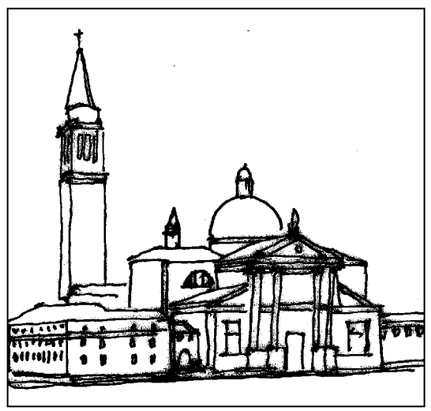
Ronchamp Chapel, France

7



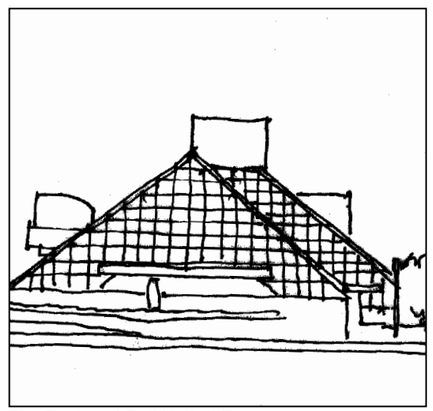
The White House, Washington D.C.

2



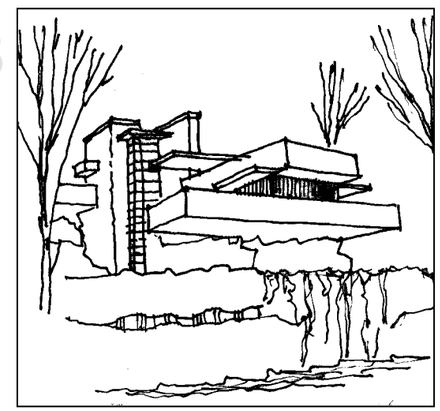
Church of San Giorgio Maggiore, Italy

5



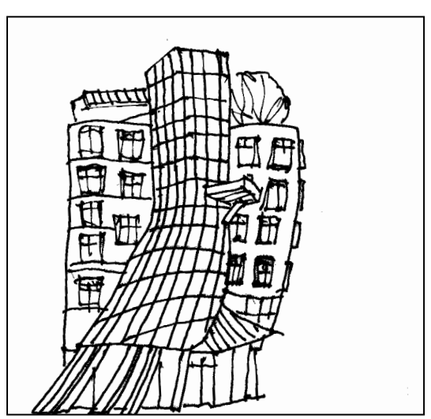
The Rock and Roll Hall of Fame, Cleveland, Ohio

8



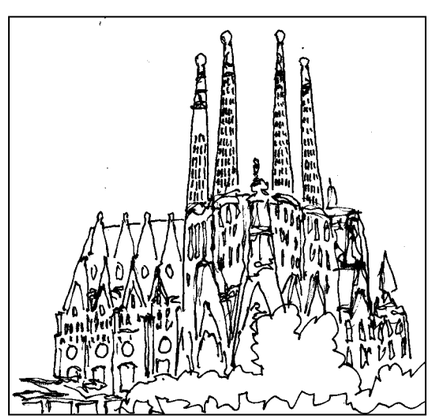
Fallingwater, Rural Pennsylvania

3



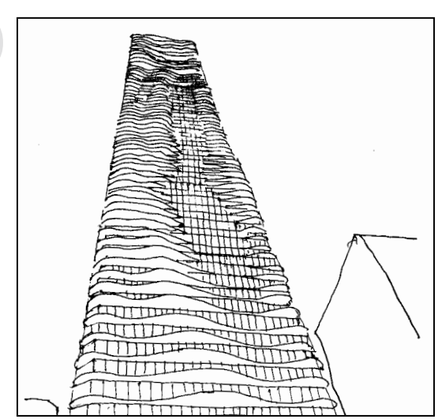
Dancing House, “Fred + Ginger”, Czech Republic

6



La Sagrada Familia, Spain

9



Aqua Tower, Chicago, Illinois

A I.M. Pei
B Andrea Palladio
C Jeanne Gang
D Benjamin Latrobe
E Frank Gehry
F Le Corbusier
G Phil Freelon + David Adjaye
H Antonio Gaudi
I Frank Lloyd Wright

1G 2B 3E 4F 5A 6H 7D 8I 9C

1 HISTORY | MATCH : BUILDING TO ARCHITECT

SKETCHES BY JUD KLINE, FAIA

Line

[1954, Crown Hall, Mies van der Rohe]
Linear elements that possess the nec essary material strength can perform structural functions. Linear elements can express movement across space. and form a three dimensional structural framework creating architectural space.

Form

[2003, Disney Concert Hall,
Frank Gehry]
Form refers to the shape or configu ration of a building. Form and its op posite, space, constitutes primary ele ments of architecture.

Space – Tension

[2016, Museum of Rock,
MVRDV + Cole]
Space encompasses the volume of a structure, the parts of a building we move through and experience. Another way to look at this is in terms of positive and negative space. Tension may be generated by weight and the place ment of space.

Movement

[2009, Galaxy SOHO, Zaha Hadid]
Architecture can feel as though it has energy giving it movement, essentially an illustion for the eye and the mind with the careful composition of forms.

Scale

[1989, La Grande Arche de la Défense,
Johan Otto von Spreckelsen]
When the proportions of architectural composition are applied to a particu lar building, the two-termed relation ship of the parts to the whole must be harmonized with a third term - the person, which gives one the experience ience and emotion to the built forms.

Unity – Balance

[1989, Church of Light, Tadao Ando]
To achieve balance, artists arrange and organize elements of design so that all areas of the composition have equal visual weight. Balance can be achieved symmetrically or asymetrically.

Hierarchy

[1952, Cité radieuse , Le Corbusier]
Hierarchy in architecture is the articu lation of the importance of a form or space by its size, shape, weight, or placement relative to the other forms and spaces of the composition.

Color

[2018, La Marseillaise, Jean Nouvel]
Color is an integral element of our world, not only in nature, but also within the built environment. Color evokes emotion. The brain processes and judges what it perceives on an objective and a subjective basis.

Light

[1997, Chapel of St. Ignatius,
Steven Holl]
Whether daylight or artificial light, light draws attention to textures, colors, and forms within space, helping architecture achieve its true purpose. Light enhances mood and can evoke emotion.

Contrast

[2001, 30 St Mary Axe,
Norman Foster]
Contrast is used as a tool to emphasize a particular point of interest within a space or between two elements. The con trast of light to dark [color], big to little [scale], light to heavy [mass] , solid to void and historic to new are common.

Texture

[2006, Perot Museum of Nature and Science, Thom Mayne]
Texture plays a dual role in architecture: it expresses something of the quality of materials and it gives a particular quality to light.

Pattern

[2015, The Broad,
Diller Scofidio + Renfro]
Pattern is an underlying structure that organizes surfaces or structures in a consistent, regular manner. Pattern can be a repeating unit of shape or form, and it can calso be thought of as the "skeleton" that organizes the parts of a composition.

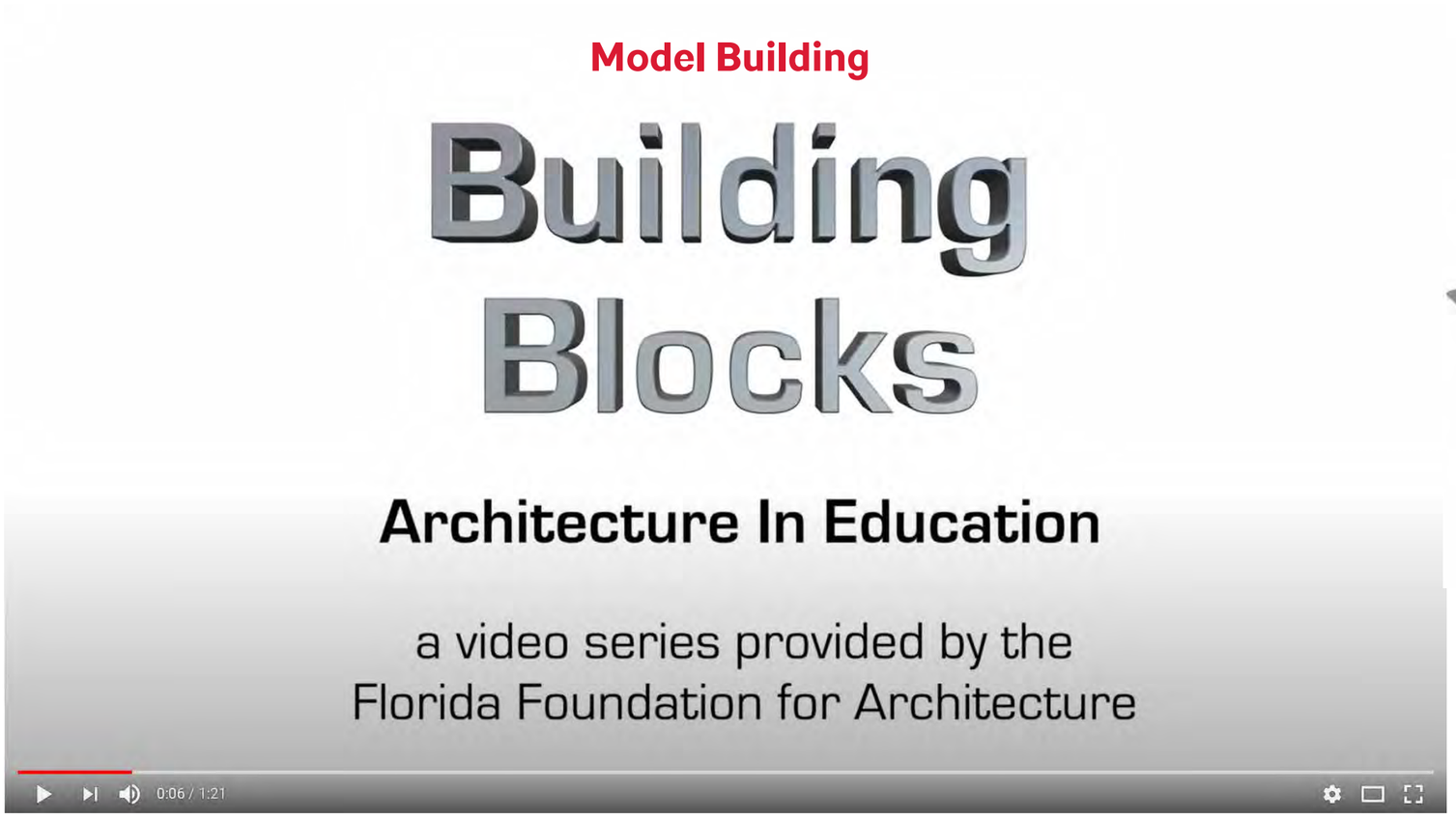
Hands-On Activity : Building a Tower

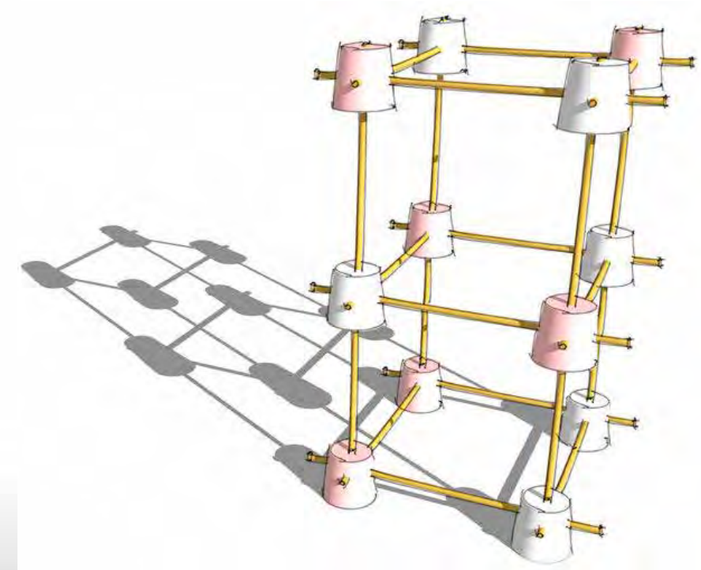
Directions:

1. Watch the video embedded in this document and have fun! Master structure while defying gravity by constructing a spaghetti and marshmallow tower, or a toothpick and gummy bear bridge.

Materials Needed:

- Spaghetti
- Tiny Marshmallows
- Gummy Bears
- Toothpicks





COURTESY OF: PATRICK THORPE, AIA
AND THE FLORIDA FOUNDATION FOR ARCHITECTURE

Air
Fresh air for your lungs, without pollution.

Water
Filtered, treated water to drink.

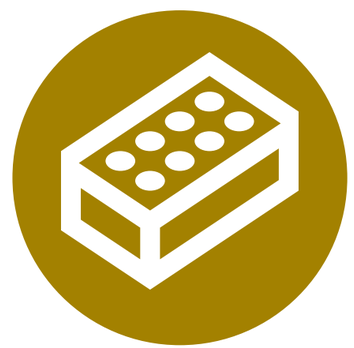
Nourishment
Fruits and vegetables to eat.

Daylight
Natural light to enjoy.

Movement
Exercise to make your body feel good.

Comfort
Not too hot, not too cold, just right.

Acoustics
Quiet spaces to think without distraction.



Materials
Responsible building materials which don't hurt Earth.

Mind
Beauty and nature to enjoy.

Community
The feeling of belonging.

BASED ON THE WELL BUILDING STANDARD, ICONS FROM THE NOUN PROJECT

Sustainability Worksheet

Directions:

1. Think about each item on the list and put a check mark by each thing which you already do. Hopefully you will learn some new sustainable tricks!

My home, family, community is sustainable, because we...

- ☐ recycle
- ☐ eat local foods
- ☐ use cloth grocery bags
- ☐ compost
- ☐ eat healthy
- ☐ walk and ride bikes to places
- ☐ pick up trash
- ☐ re-use our things
- ☐ donate things we don't need
- ☐ plant trees
- ☐ make our own art
- ☐ drink out of re-usable bottles
- ☐ have a garden
- ☐ live in a small home
- ☐ open our windows for fresh air
- ☐ have natural daylight
- ☐ don't waste
- ☐ use low-flow toilet fixtures
- ☐ play outside
- ☐ collect rainwater
- ☐ don't have air conditioning
- ☐ grow drought-resistant plants
- ☐ turn off water when brushing our teeth
- ☐ don't always run our air conditioning

What does it mean to be sustainable?

We live a comfortable life because we have almost everything, but that isn't always going to be true if we don't conserve our resources. Every decision that we make has an impact on our future!

Imagine owning a moneybox for your allowance that is always full. No matter how much of your allowance you take out, it keeps refilling. As much as we would like it to do so, the world doesn't work like that. Money does run out if we keep spending. Many of the things we use every day have a limit on the amount we can use or take out. It might take hundreds or thousands of years for some of them to completely run out, but these "resources" will disappear completely in the future.

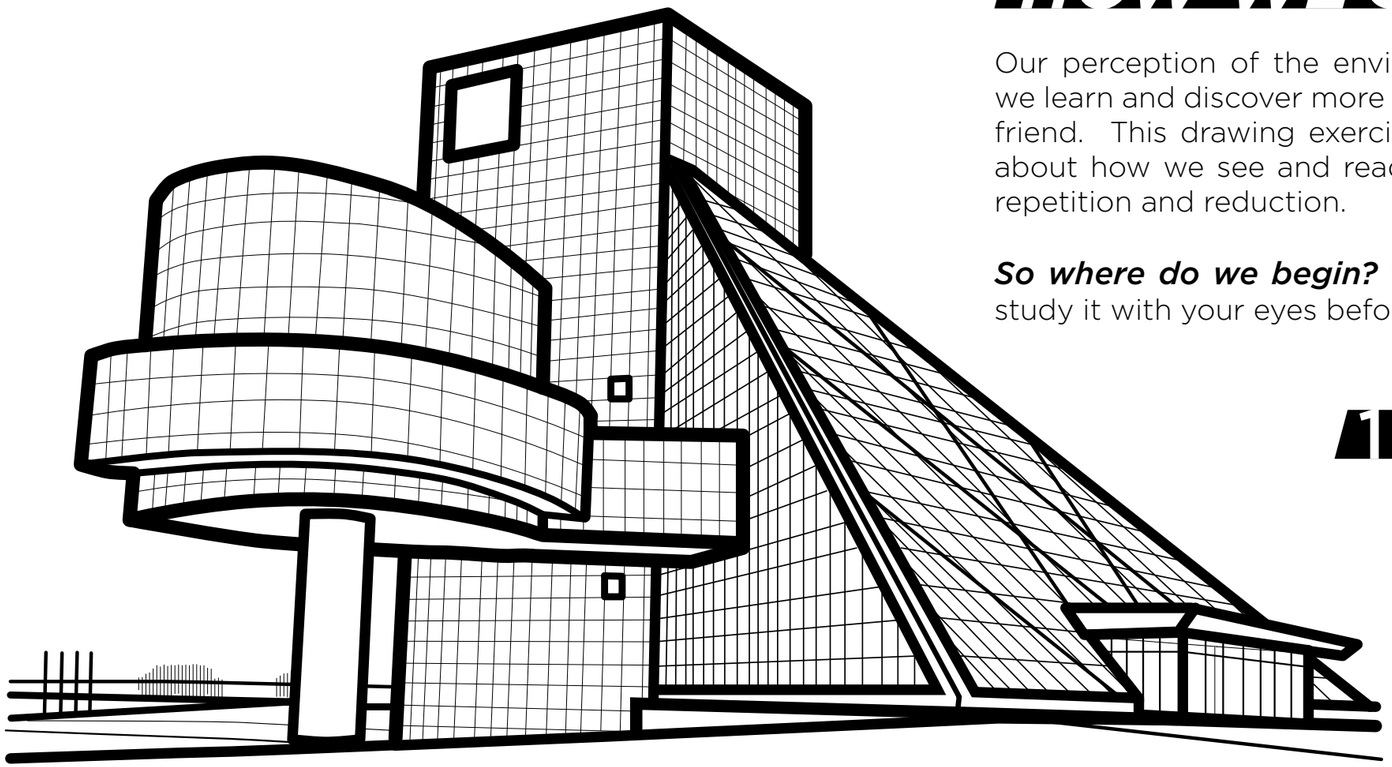
Sustainable architecture strives to meet the needs and conditions of life while not compromising the needs and resources of life in the future. There are many things that architects do to conserve energy:

- we can **re-use existing buildings** when possible conserving waste
- we can locate new buildings on the site so they **use less energy**
- we can **harvest rainwater** to re-use for irrigation and plumbing
- we can design landscapes that **use less water** to grow
- we can use high-performance glazing [glass] to bring in **daylight** and **reduce the impact of the sun's heat** so that the air conditioning doesn't work so hard and we **don't have to rely on artificial light** [high energy costs] to light our space
- we can **use local materials** so they don't have to travel so far
- we can **use recycled materials** so we don't generate more waste

HOW WE SEE A Drawing Activity

Our perception of the environment changes and grows as we learn and discover more about it; much like making a new friend. This drawing exercise is designed to help us learn about how we see and read the built environment through repetition and reduction.

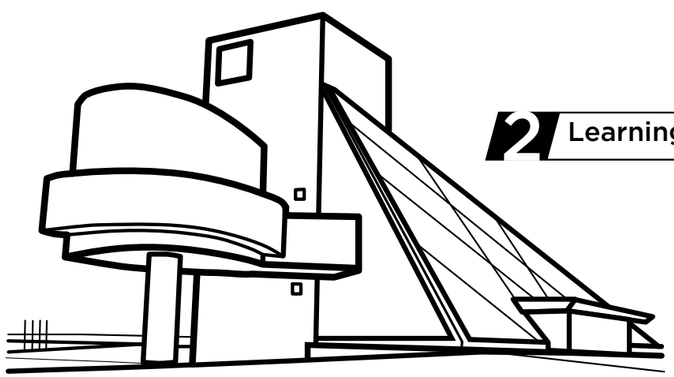
So where do we begin? Select a building to explore and study it with your eyes before starting to draw.



1 Initial Interpretation

The first time we draw something, we learn about space; exploring every detail to understand and absorb every bit of what our eyes see.

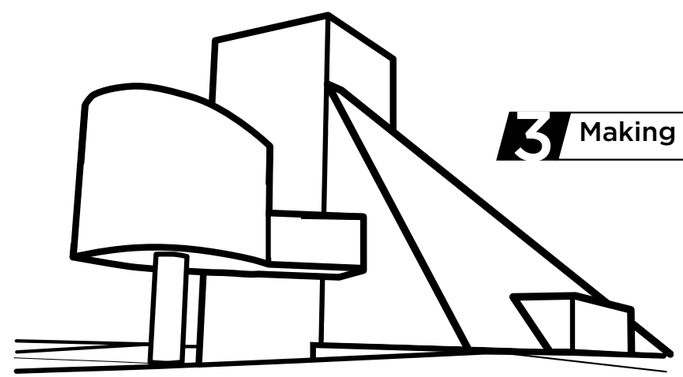
>>>>>>> Spend 10 minutes drawing what you see, paying attention to every detail.



2 Learning from Our Eyes

Once given the opportunity to learn about the environment, our eyes can begin to focus on the important lines that define what we see.

>>>>>>> Spend only 5 minutes re-drawing what you see; thinking about the lines and shapes that mean the most to communicate your subject to a friend.



3 Making a Diagram

Now we should know our subject well enough to close our eyes and imagine it in front of us, we can reduce an image to a group of shapes.

>>>>>>>>>> Spend only 1 minute reducing what you see to shapes; the essential volumes needed to communicate effectively. What results is called a diagram.

COURTESY OF:
JEREMY SMITH, AIA

Comparative Drawing Introduction

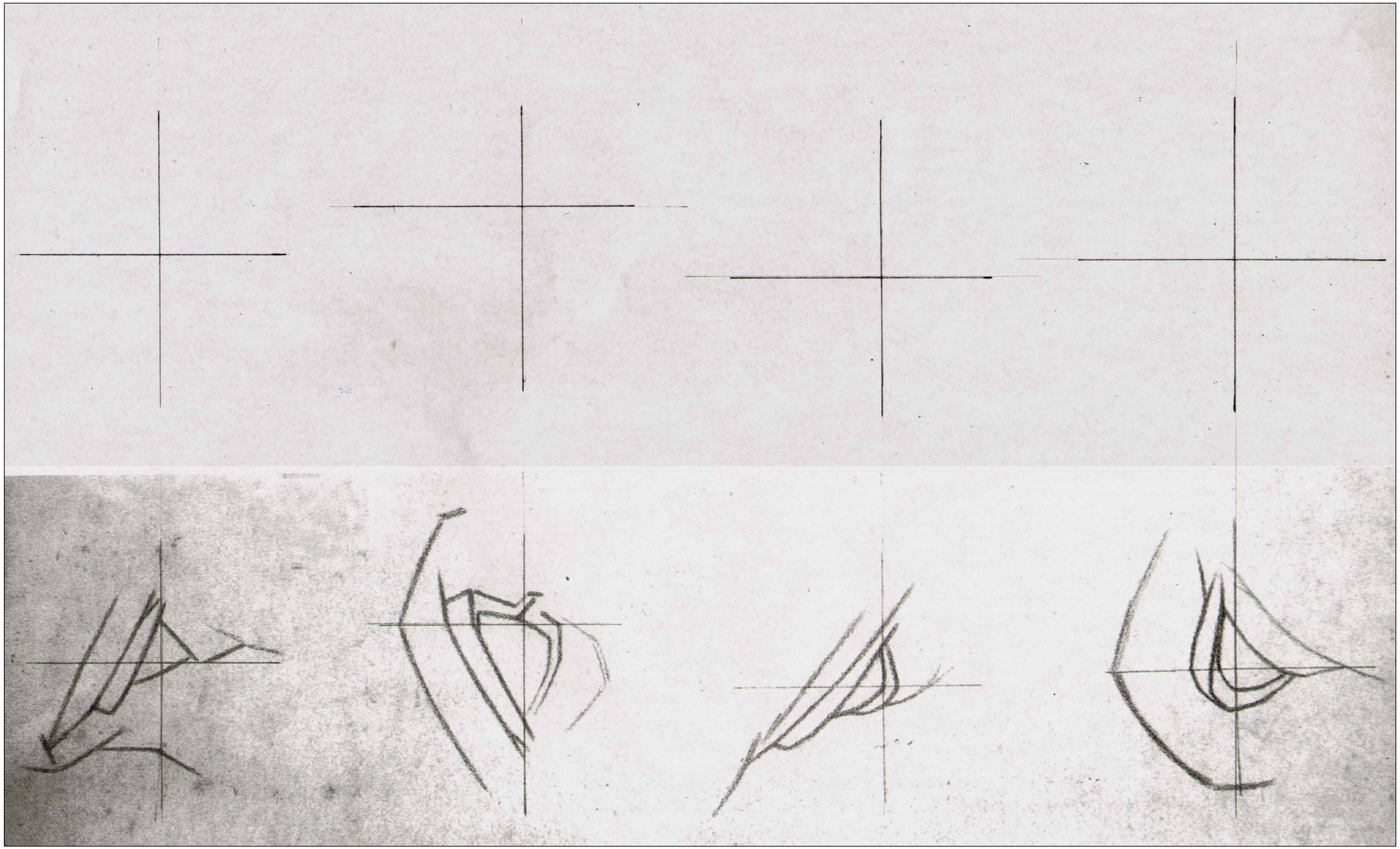
Directions:

1. On the following two pages, you will find a comparative drawing exercise for both left-handed and right-handed persons. Take the sheet with which you identify, rotate the sheet 90 degrees clockwise and use drafting or masking tape to fix the paper to the wall at eye level. Using a pencil, do your best to copy the four eye drawings to the adjacent gridded space. Use the grid as a guide and attempt to match the scale and the position of the drawing to the original.

When you draw something, you really look at it closely. Drawing strengthens memory by perfectly integrating visual, semantic, and motor aspects of the memory trace. This in itself is a great psycholo gical benefit of drawing. Drawing is an ideal way to express inner emotions and feelings without words.

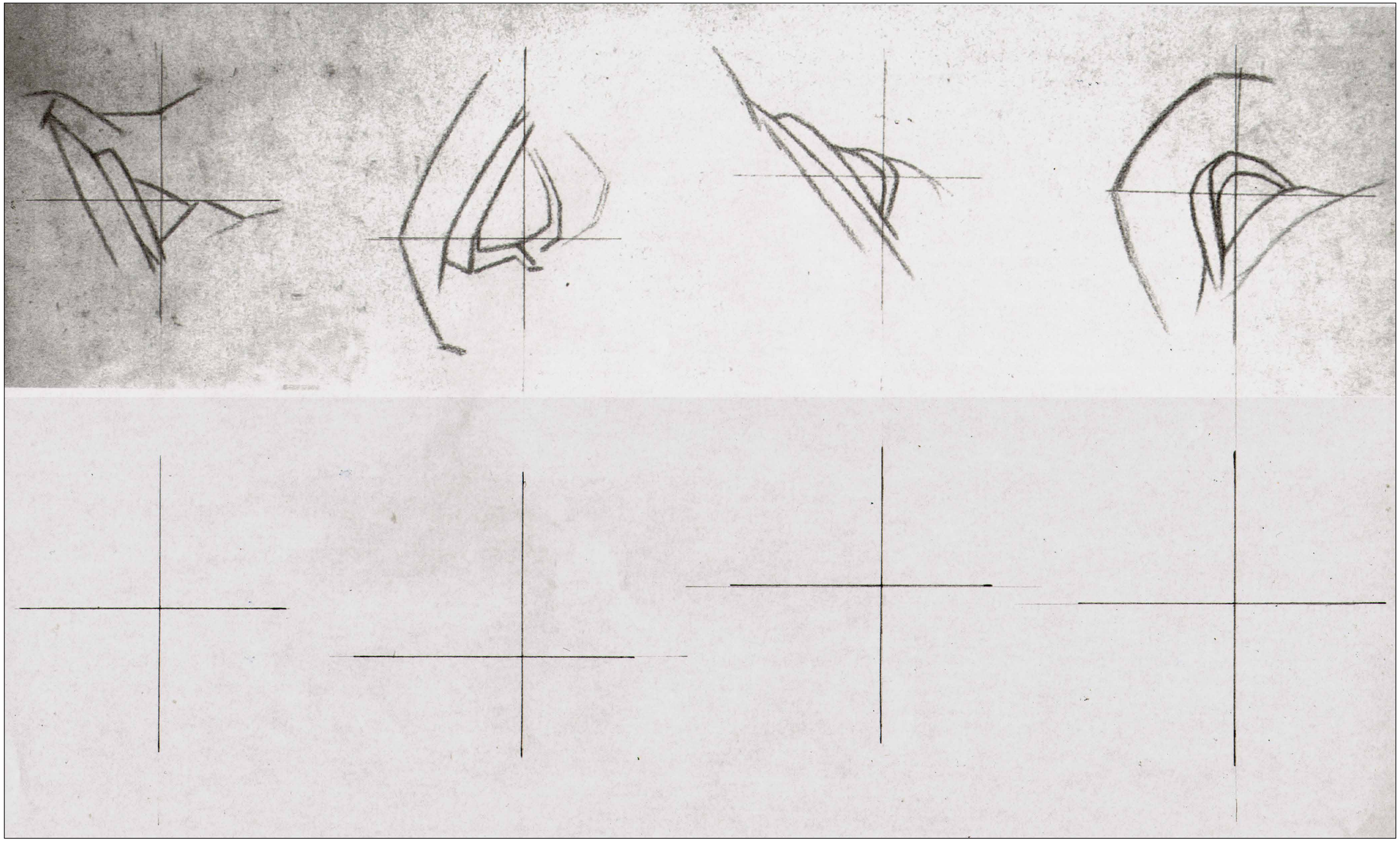
COURTESY OF: BRUCE BONDY
ARCHITECTURAL ILLUSTRATOR

Comparative Drawing Worksheet [Right-Handed] Directions on Page 18



COURTESY OF: BRUCE BONDY
ARCHITECTURAL ILLUSTRATOR

Comparative Drawing Worksheet [Left-Handed] Directions on Page 18



COURTESY OF: BRUCE BONDY
ARCHITECTURAL ILLUSTRATOR

Analytical Drawing

Directions:

1. Each of the chairs below is designed by an architect. A chair is a small-scale three-dimesional composition. Select a chair from below and draw it from multiple angles. You could also select a household object and practice drawing it in from many view points, such asthe example of the glass to the right.

1928 Marcel Breuer Cesca Chair

1930 Mies van der Rohe Brno Chair

1950 Eero Saarinen Exec Chair

1952 Harry Bertoia Side Chair

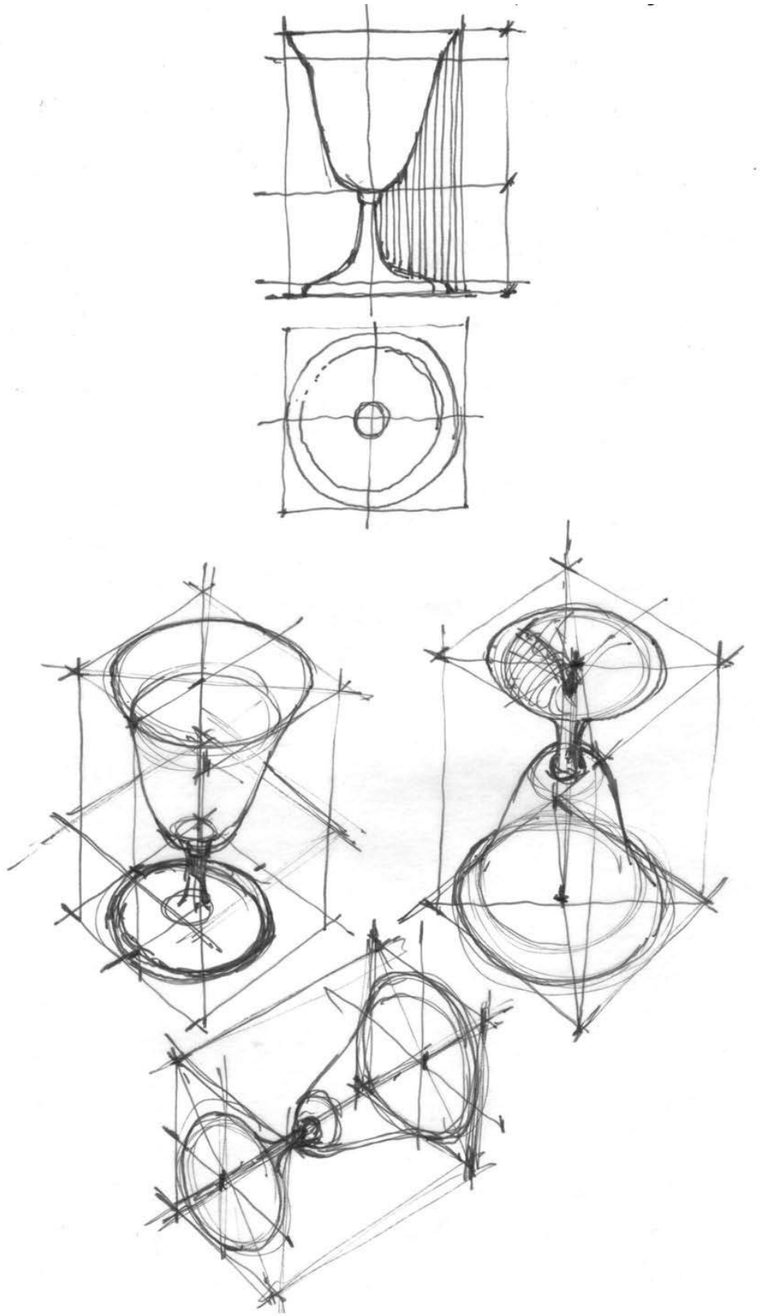
1954 Florence Knoll Lounge Chair

1957 Eero Saarinen Armless Chair

1963 Charles Pollock Exec Chair

1966 Warren Platner Arm Chair

1990 Frank Gehry Cross Check Chair

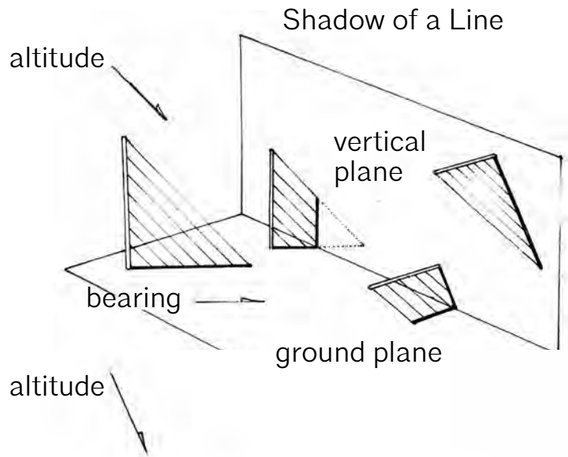


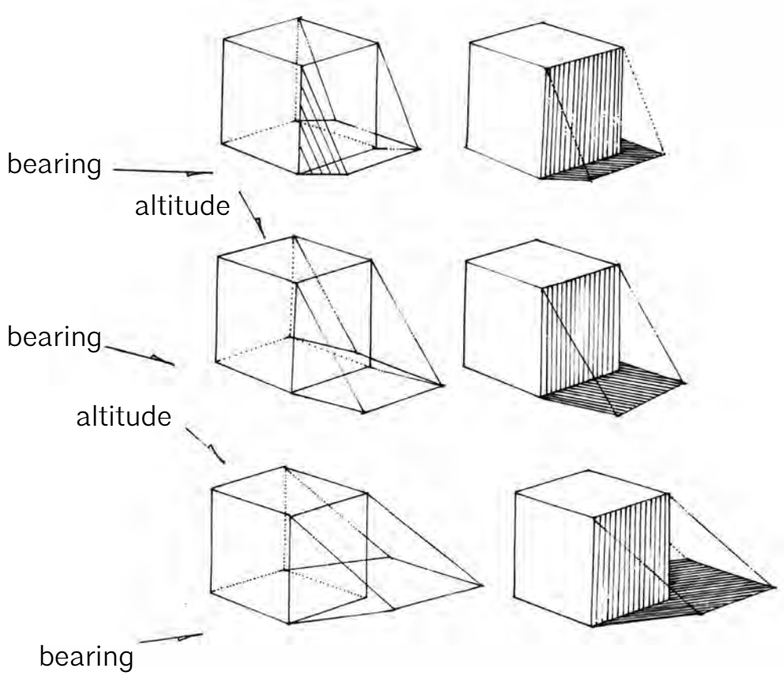
COURTESY OF: BRUCE BONDY
ARCHITECTURAL ILLUSTRATOR

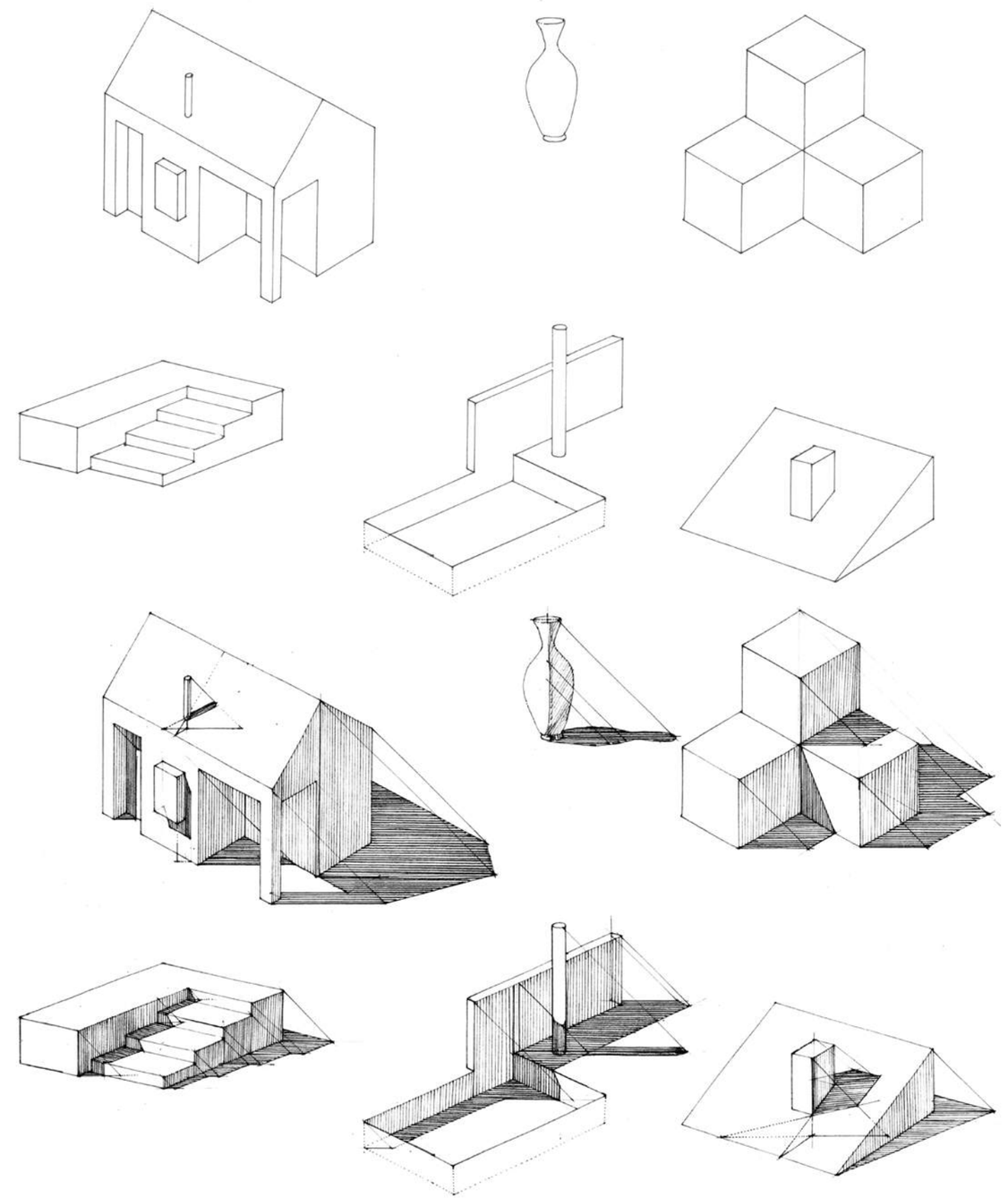
Shadows Worksheet

Directions:

1. Using a pencil, complete the shadows to the forms on the upper right of this page using the examples shown.

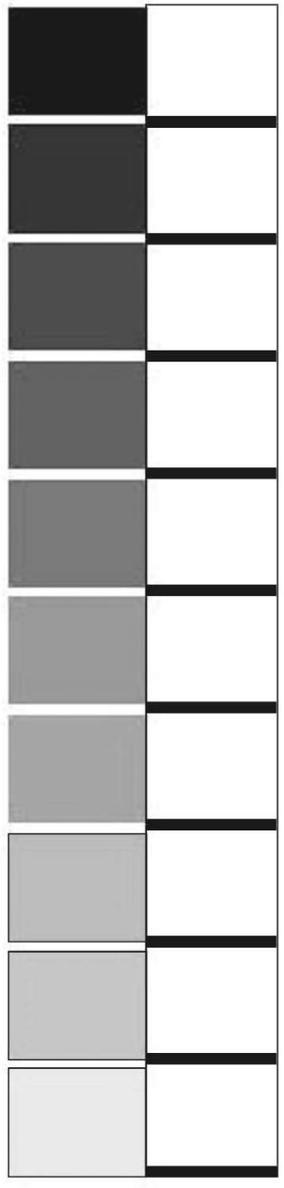




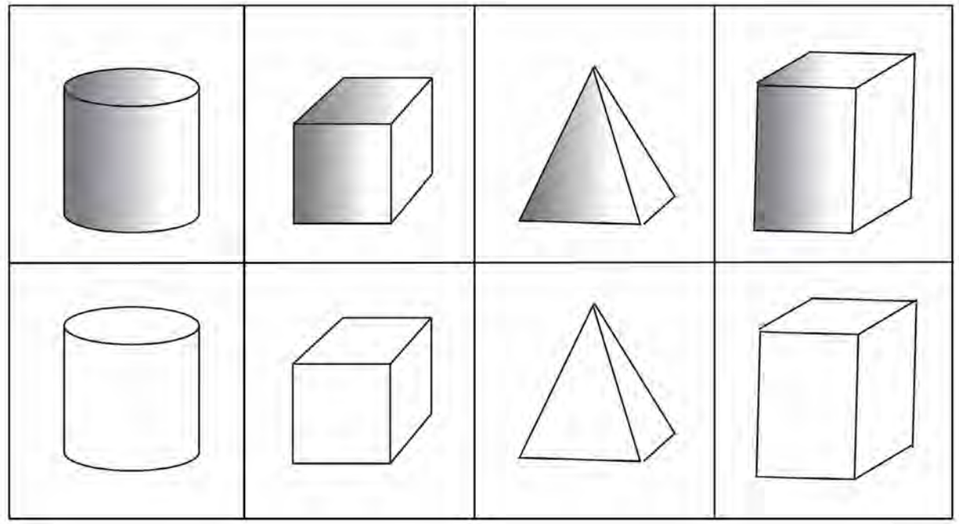


COURTESY OF: BRUCE BONDY
ARCHITECTURAL ILLUSTRATOR

Value Worksheet

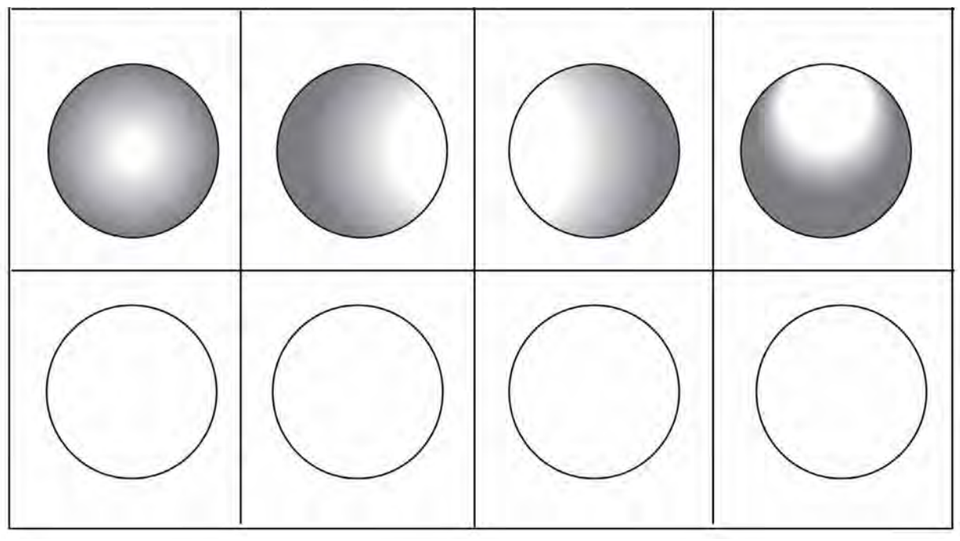


Pencil shading - light source from the right.



Pencil shading

light source front | light source right | light source left | light source top



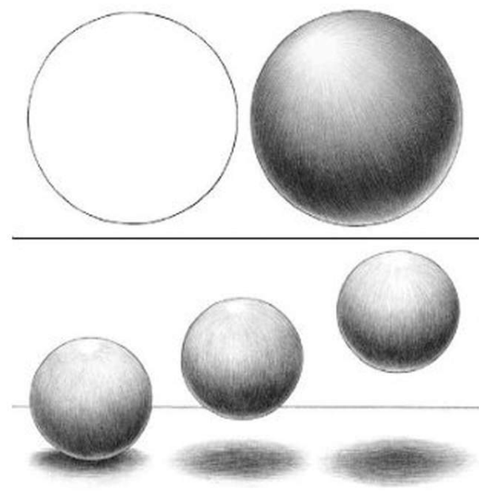
Value: The relative degree of lightness or darkness, a.k.a. “shading”.

Directions:

1. Using a pencil, complete the values scale on the left by matching the values in each cell. Try using the side of your pencil. You may have the best luck by blending the graphite with your finger, a paper towel, a Kleenex or a Q-tip.

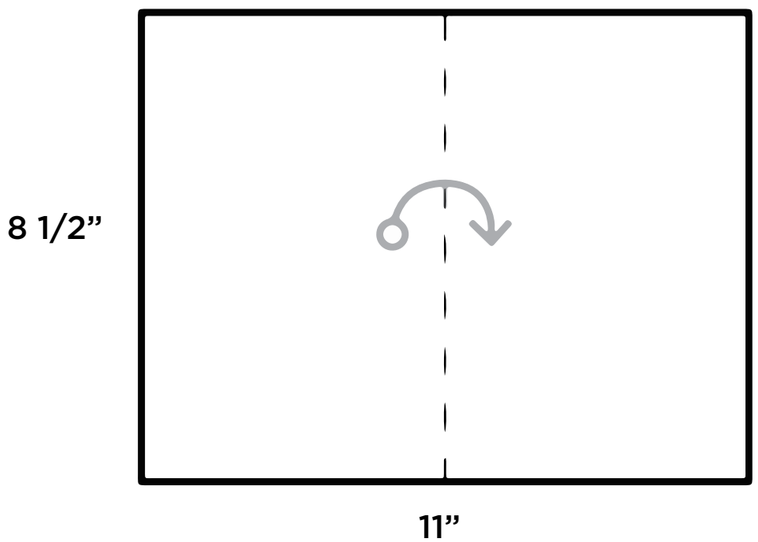
2. Using a pencil, complete the modeledvalues diagram below by making the circle look like a three-dimensional sphere just like the example at the bottom. Again, you will have the best luck if you blend your values.Try to make them gradually change from one shade into another so that it looks like the lights and shadows “wrap” around the sphere.

3. Shade the forms to the left following the light source cues as noted.

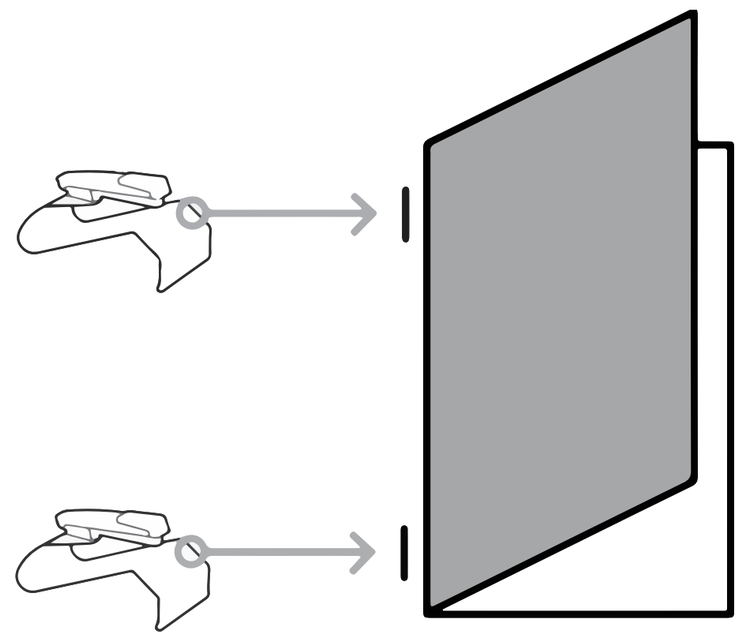


Drawing Practice

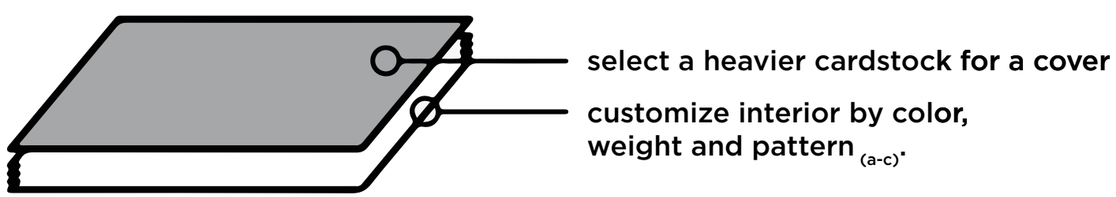
A good travel companion is never out of reach when you have access to some basic office supplies. This DIY guide to creating a perfect bound sketchbook in two easy steps makes increasingly costly journals accesible to all.

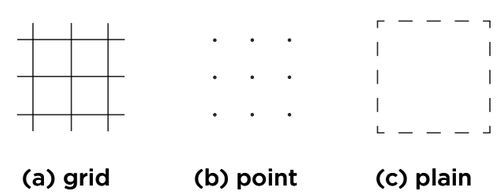


1 Fold Paper in Half



2 Bind with Staples*





COURTESY OF:
JEREMY SMITH, AIA

Productive Doodling

Directions:

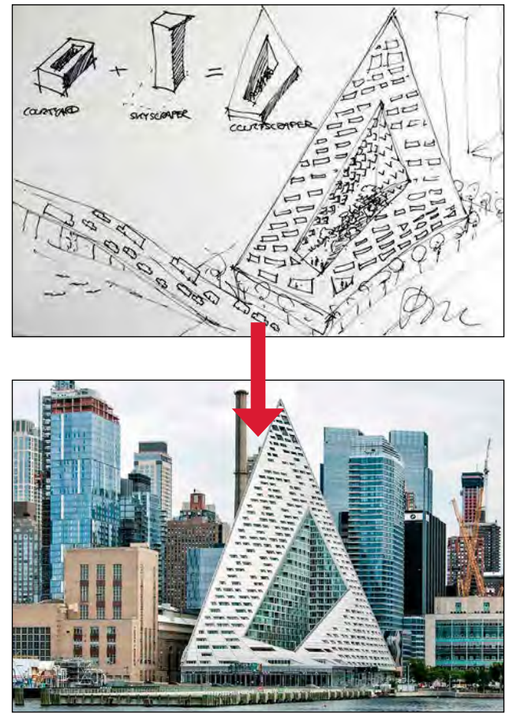
1. On the following two pages you will find 34 doodling exercises to practice and to develop your own exercises from! I think you will find that drawing can be re axing and that the more that you practice, the easier these exercises will become.

The idea is that many of the skills of drawing, like a playing a sport or musical instrument, will be improved through regular, repetitive practice. There is no shortcut around practice and to that end I believe these drawing exercises can be extremely helpful.

I suggest keeping a small sketchbook, like a moleskine, that is easy to take with you. If you use an iPad,there are drawing apps, such as Notability, that are well suited for quick sketching.

2. Use the exercises as a starting point and expand from there. You will like some more than others. Combine them, change them, add to them; the important point is to keep drawing!

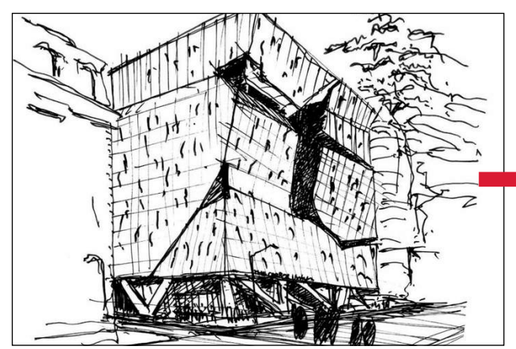
3. Most importantly! Enjoy yourself and have fun! It doesn't have to be perfect! Drawing is a tool which architects use to develop ideas and communicate with their Teams and their clients.



Bjarke Ingels: BIG

Drawing: a Tool

Architects continue to use sketching as a tool to explore new ideas very quickly. Each architect has their own style or "hand" which characterizes the aesthetic of their sketches. The brain has a connection with the hand that isn't quite the same when virtual model-building. The movement of the pen on paper provides a kinetic experience with the generated forms on paper. Many architects still feel that the sketching is crucial to developing their concepts. Remember, more important than the quality of the drawing is the message that it communicates and the exploration which the exercise supports.

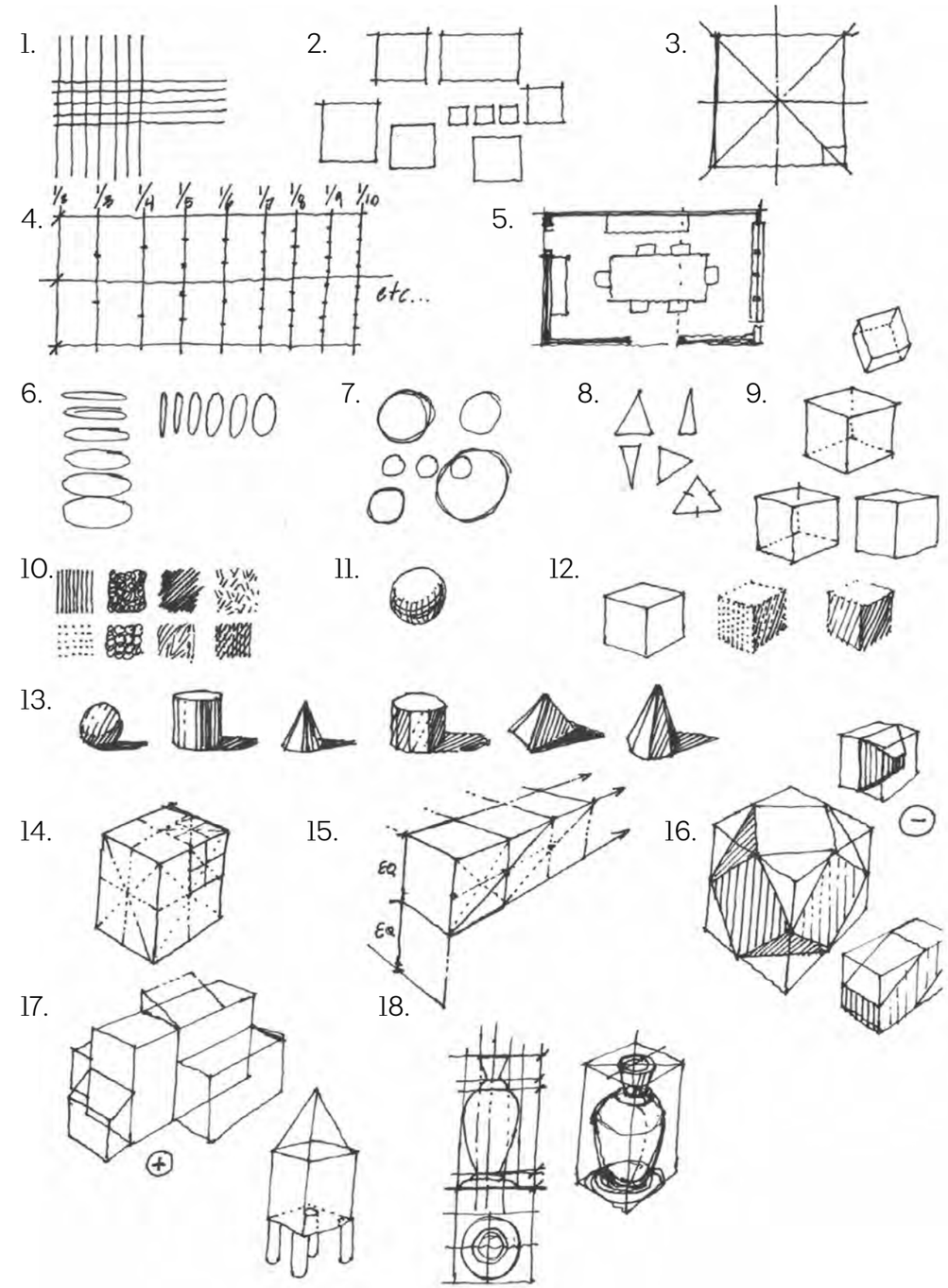


Thom Mayne: Morphosis

Productive Doodling

Key:

1. Parallel lines. Both vertical and horizontal. Develops hand coordination and ability to measure. Draw them equally spaced in both directions for greater challenge.
2. Squares/Rectangles. Develops ability to measure perpendicularity and equal length.
3. Square subdivision. Divide and find the center of a square or rectangle.
4. Division exercise. Practice measuring by dividing a length into increasingly greater increments.
5. Field Measurement. Great practice in judging real world proportions. Do both plan and elevations of room you are in or go by memory of an alternate space to make it more challenging. Measurement practice.
6. Ellipses. Horizontal and vertical. Gradually increase/decrease width while keeping length equal.
7. Circles.
8. Triangles
9. Axonometric cubes. Practice cubes in varying positions. Keep relative planes parallel to each other. Draw both transparent and opaque versions.
10. Textures. Experiment with your drawing instrument and the amount of textures you can create.
11. Sphere. Make a circle look 3 dimensional.
12. Rendered cube. Experiment with various ways of rendering a cube. Don't always use a hard outline.
13. Render basic shapes. Practice creating form with basic shapes. Add shade and shadow.
14. Divide a cube using the diagonals method to find the center.
15. Expand a cube using the diagonals and bisecting through the midpoint of the far side of the receding plane. Remember, in a two point perspective the verticals don't converge or become smaller!
16. Cube sculpture. Use a cube and "carve away" portions. Subtractive method.
17. Use a cube as a starting point but use additive method to expand and alter its shape.
18. Simple analytical drawing. Take an everyday object and carefully draw it in plan and elevation. Then, using your understanding of its geometry, draw the object in a cube or rectilinear form.



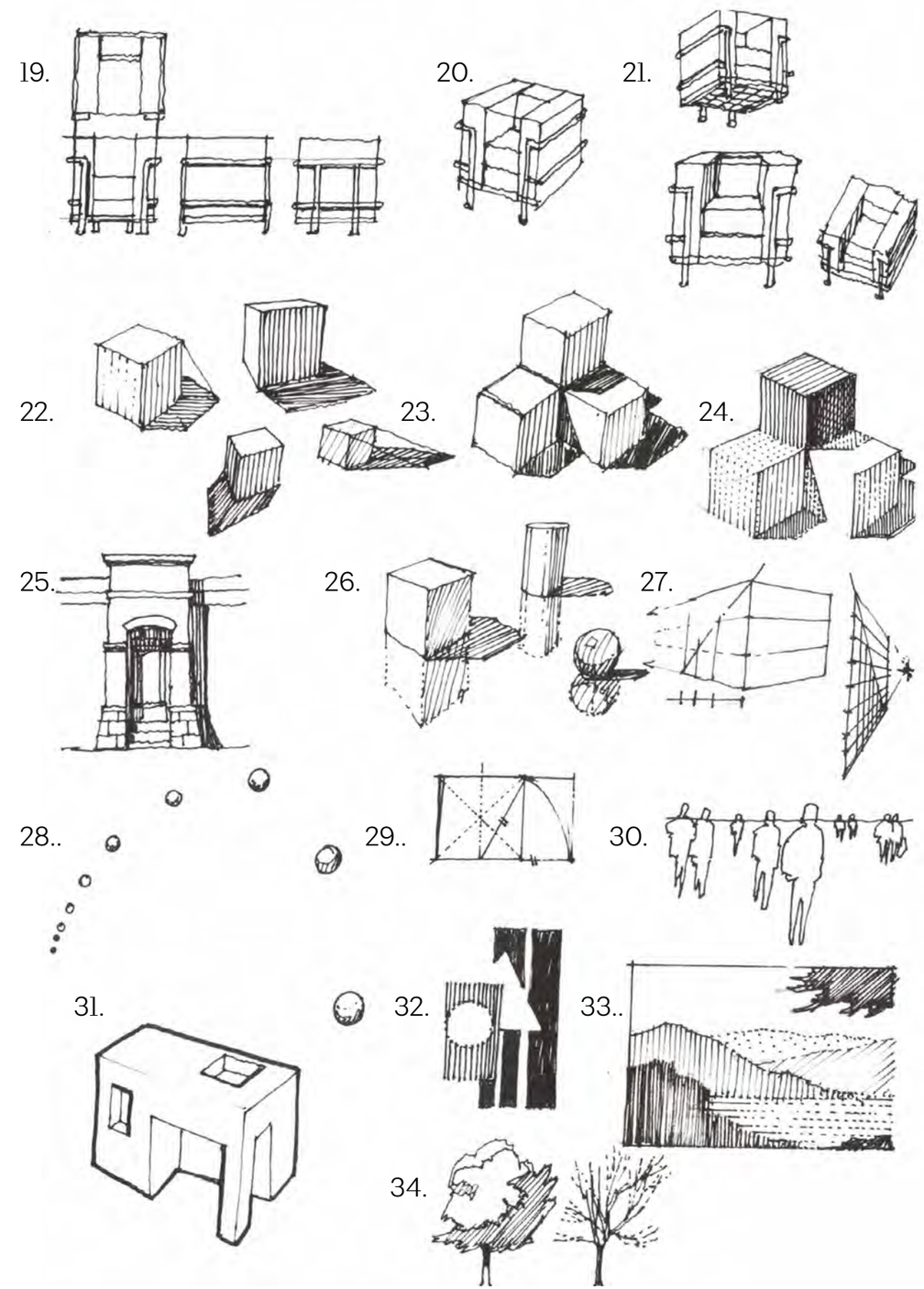
5 DRAWING | DOODLING EXERCISES

COURTESY OF: BRUCE BONDY
ARCHITECTURAL ILLUSTRATOR

Productive Doodling

Key:

19. Iconic chair 1. Pick one of your favorite chairs. Draw it's elevations. Pick an other, repeat.
20. Iconic chair 2. Draw your chair using cube as starting point, either an axono metric cube or in perspective.
21. Iconic chair 2 cont'd. Use the cube as a starting point. Draw your chair from various and increasingly difficult angles.
22. Render a cube with light and shadow. Practice varying the direction (altitude and bearing) of light source
23. Stacked cubes 1. Cast shade and shadow over the form.
24. Stacked cubes 2. Render the cubes different values and then cast shadows that are congruent with the value of the cubes.
25. Render architectural elevation with cast shadows.
26. Basic shapes. Render shade and shadow and reflections.
27. Perspective exercise. Divide the height of a cube. Find the diagonal of reced ing plane. Where lines in perspective cross the diagonal are dropped down [vertical line] they will divide the receding plane in perspective.
28. Movement exercise. Experiment with creating a sense of motion by drawing a repeated shape in various positions.
29. Golden Mean. Find the center of cube. Take the halfway point along base and draw a line to upper right corner. Use that dimension and draw a length from that baseline center to the right. This is a ratio of 0.618 to 1.000 also called the Golden Section.
30. Horizon line entourage exercise. Assume a horizon line of approximately 5"6" and draw various figure "icons" to create a sense of depth. All adult figures heads should be relative to the horizon.
31. Line hierarchy exercise. Section cut lines are heaviest. Contour lines have a greater weight than interior lines. Surface lines are thinnest.
32. Drawing without using outline. Let values and textures define shapes.
33. Atmospheric perspective. As objects or planes recede they tend to have a progressively muted tonal value and contrast. Experiment with depicting this pheno menon with various tones and textures.
34. Trees. Draw trees with and without canopies.

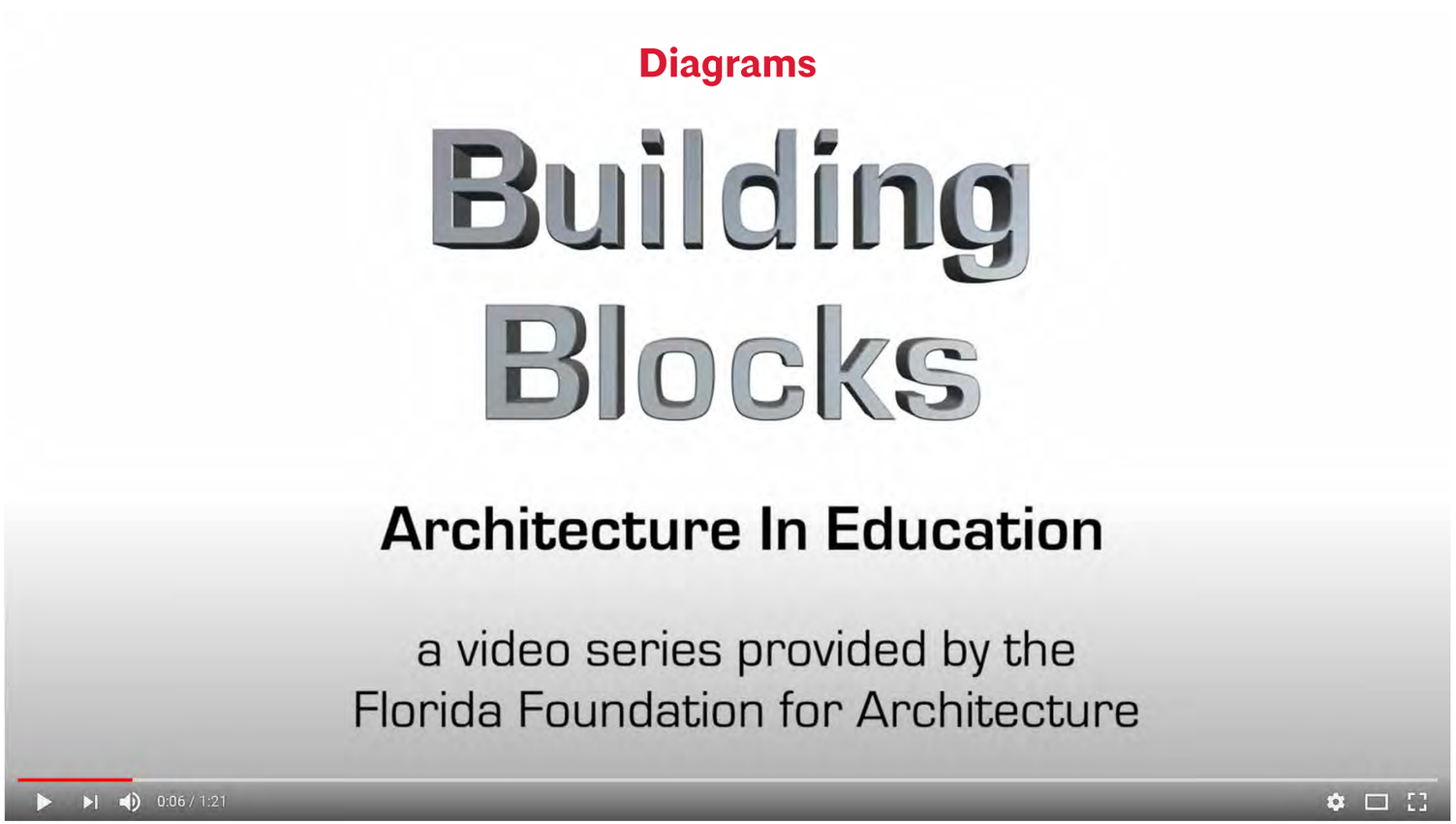


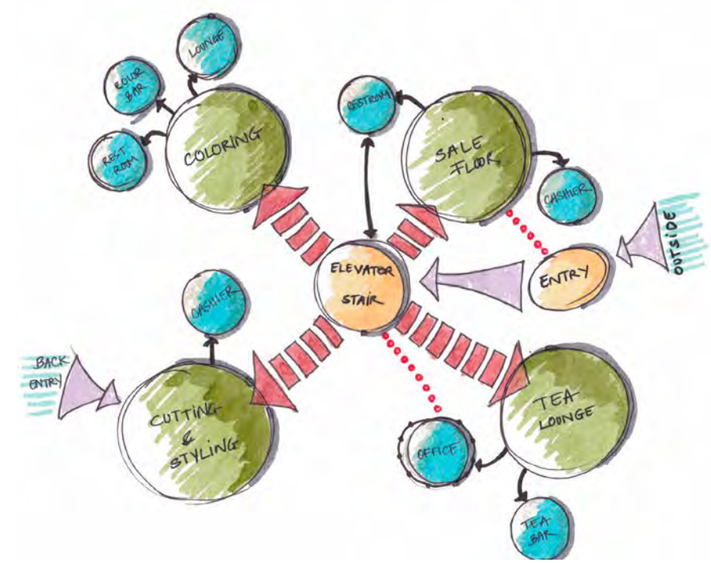
COURTESY OF: BRUCE BONDY
ARCHITECTURAL ILLUSTRATOR

Hands-On Activity : Programming + Diagrams

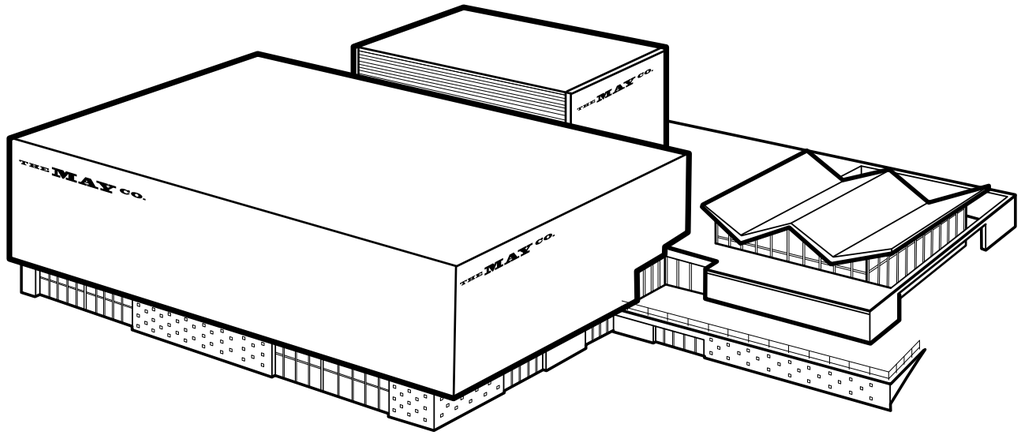
Directions:

1. Watch the video embedded in this document and have fun! Learn about the basics of architecture by creating colorful diagrams of spaces, and use programming to identify the functions of a building.
2. After the video, diagram out your house into basic functions. Use a different color to designate each type of space.





COURTESY OF: PATRICK THORPE, AIA
AND THE FLORIDA FOUNDATION FOR ARCHITECTURE

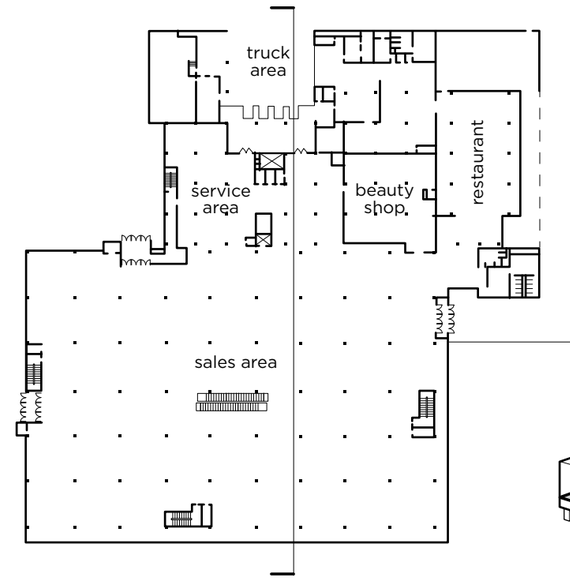


Aerial Perspective

A three dimensional view from above a building or object that accurately describes the composition of forms, viewable on three sides.

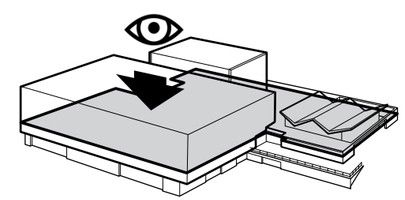
The May Company
University Heights, OH

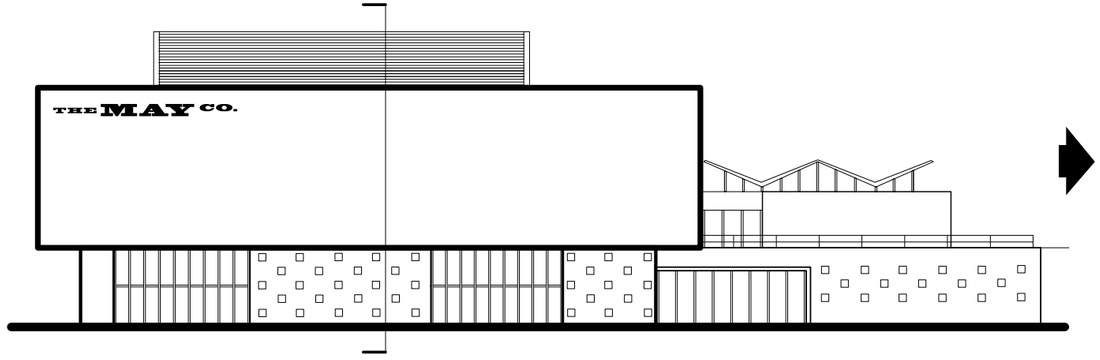
Victor Gruen
1953



Floor Plan

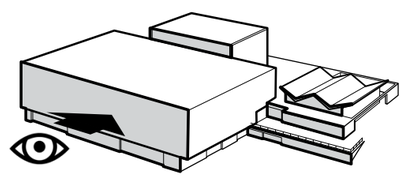
A horizontal cut through a building or object that describes spatial relationships.

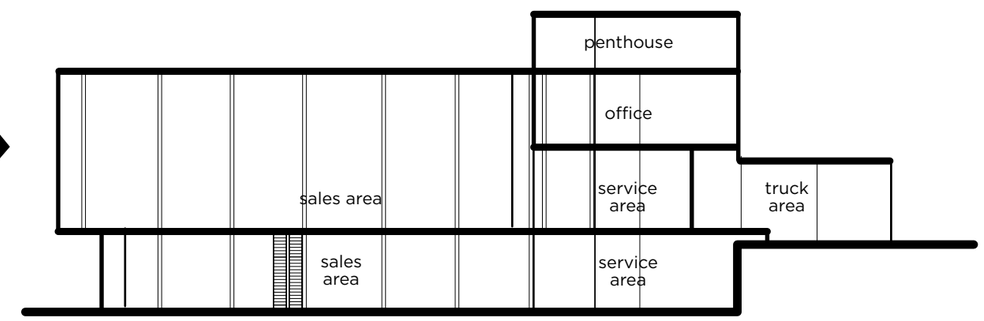




Elevation

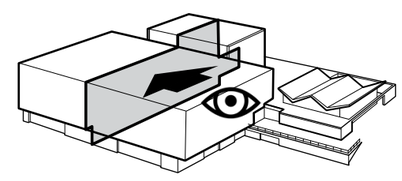
A flattened, two dimensional view of a building or object face that describes proportion and form.





Section

A vertical cut through a building or object that describes spatial relationships.

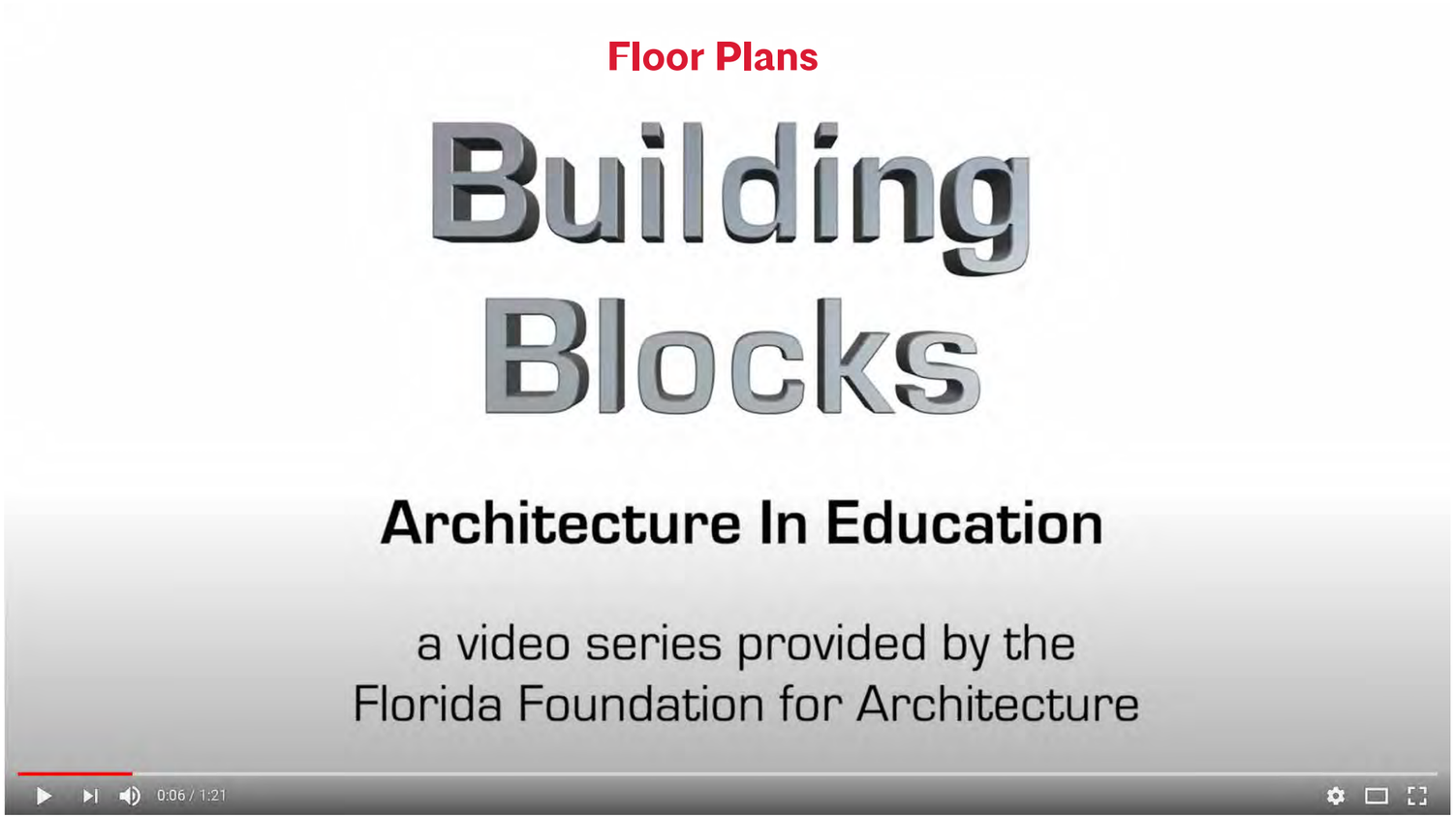


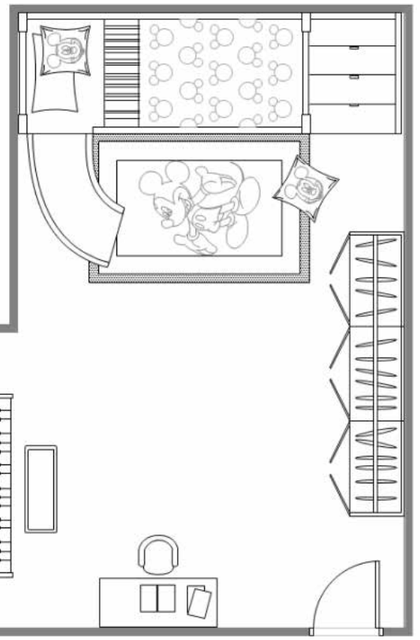
COURTESY OF:
JEREMY SMITH, AIA

Understanding Floor Plans

Directions:

1. Understand how architects use scale to measure and draw a floor plan. Put your skills to the test by measuring and drawing your bedroom, then calculate its area and volume.



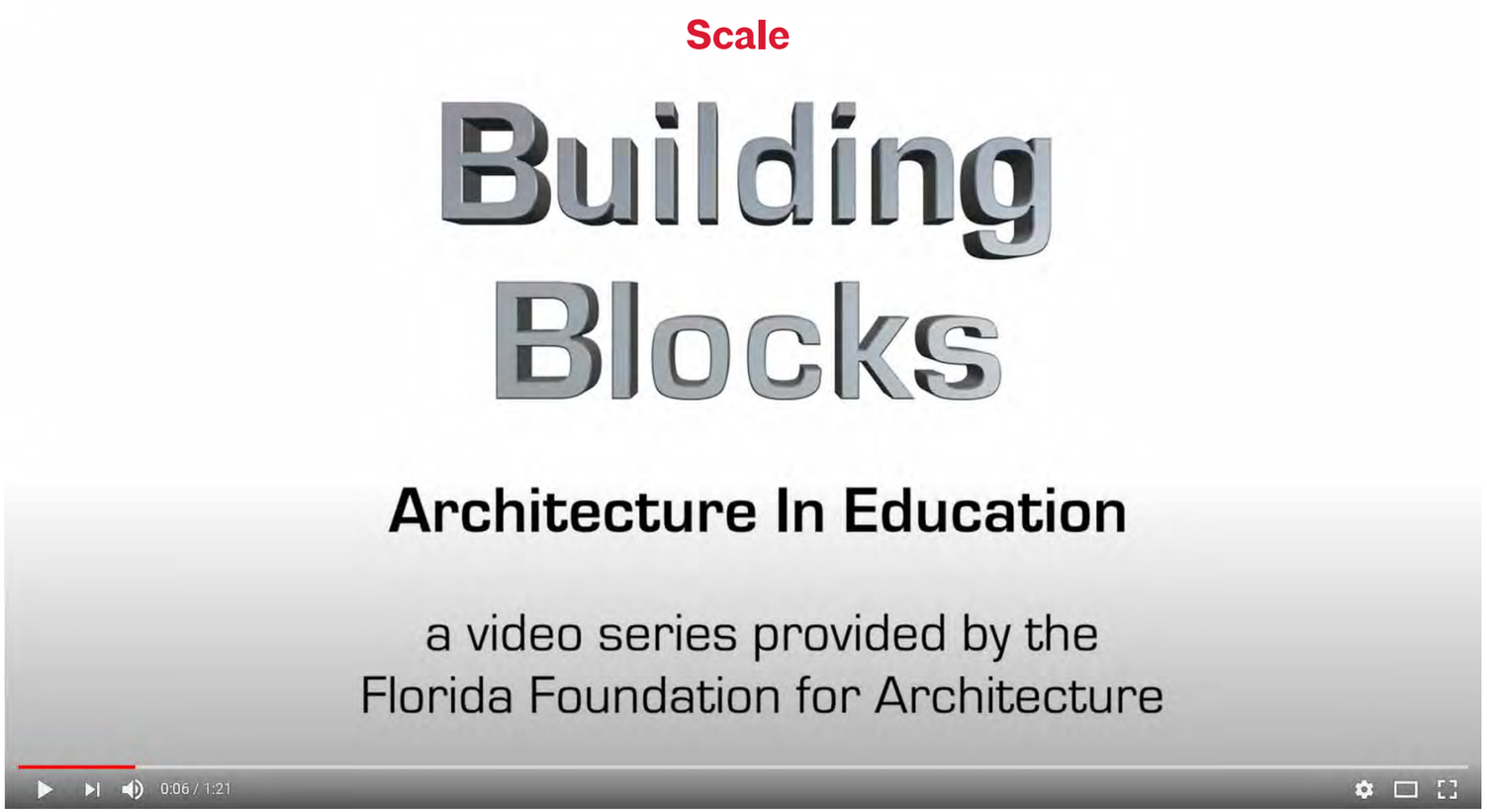


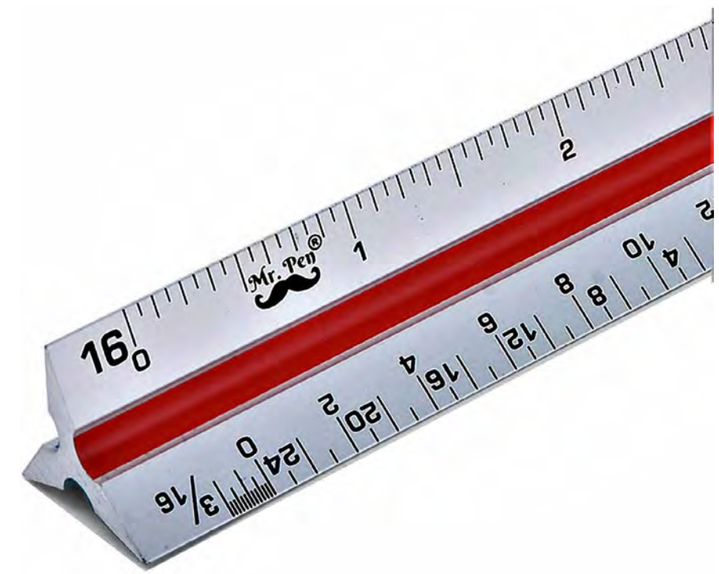
COURTESY OF: PATRICK THORPE, AIA AND THE FLORIDA FOUNDATION FOR

Hands-On Activity : Math + Understanding Scale

Directions:

1. Watch the video embedded in this document and have fun! Take an in-depth look at how architects use scale to create drawings, called construction documents, which are used to show how a building is to be built.



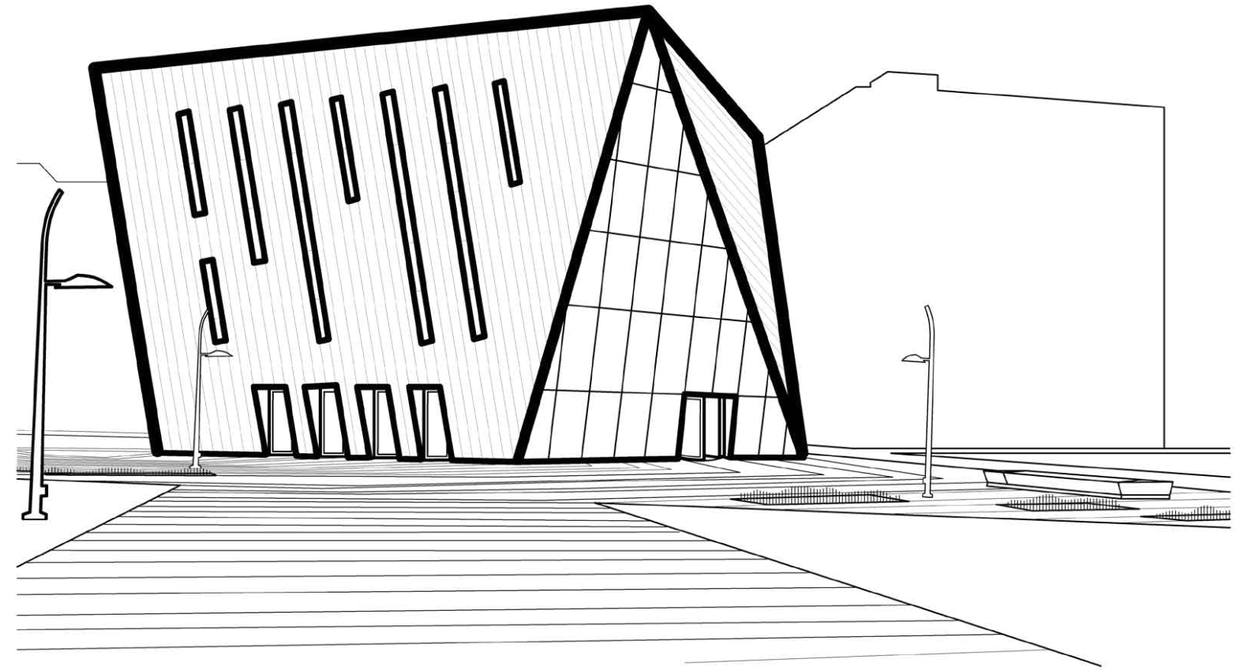


COURTESY OF: PATRICK THORPE, AIA
AND THE FLORIDA FOUNDATION FOR ARCHITECTURE

Physical models are critical tools for Architects to communicate design three dimensionally. Explore Farshid Mousavi's design for the Museum of Contemporary Art Cleveland by coloring, cutting out and folding your own model to understand space and form.

Instructions for Making

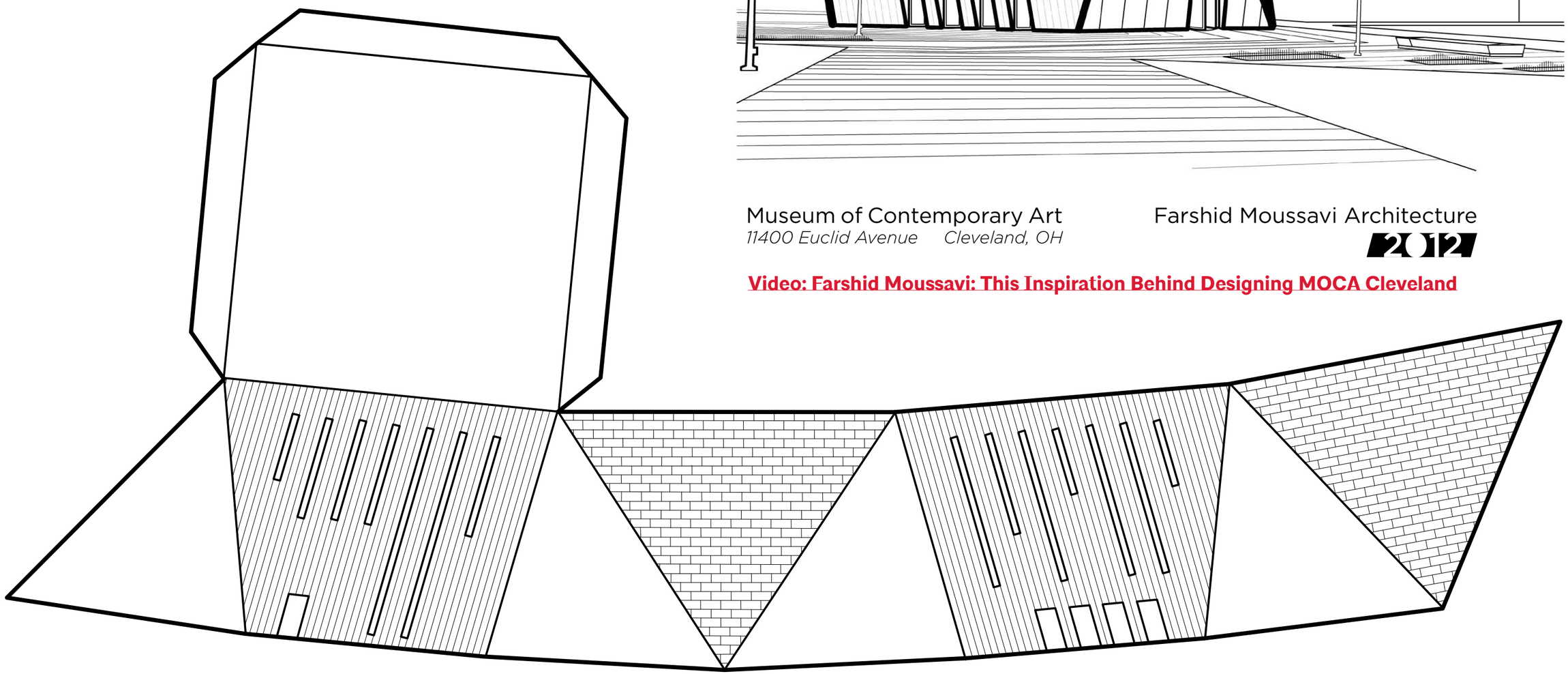
1. color the template
2. cut along these lines
3. fold in along these lines



Museum of Contemporary Art
11400 Euclid Avenue Cleveland, OH

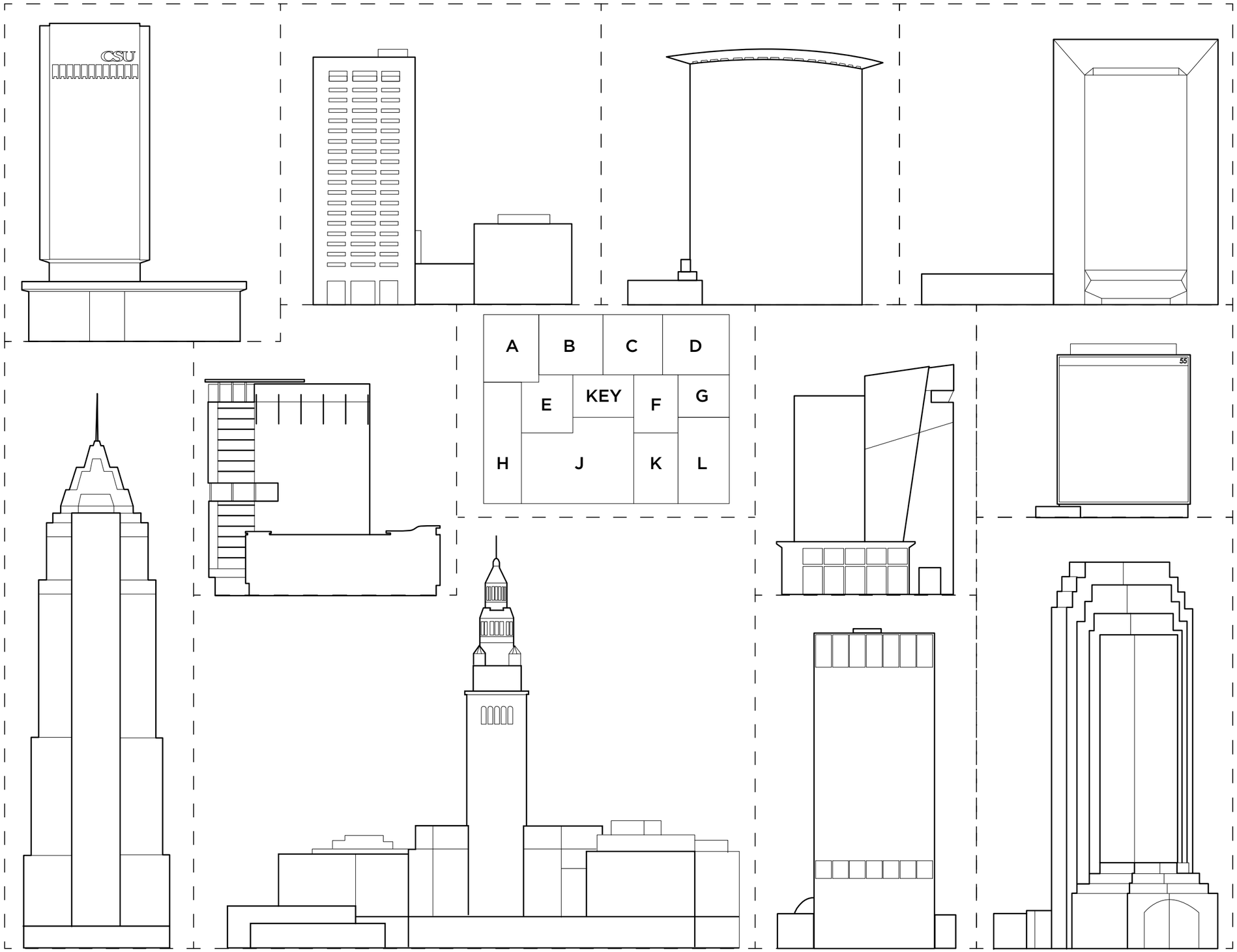
Farshid Moussavi Architecture
2012

Video: Farshid Moussavi: This Inspiration Behind Designing MOCA Cleveland



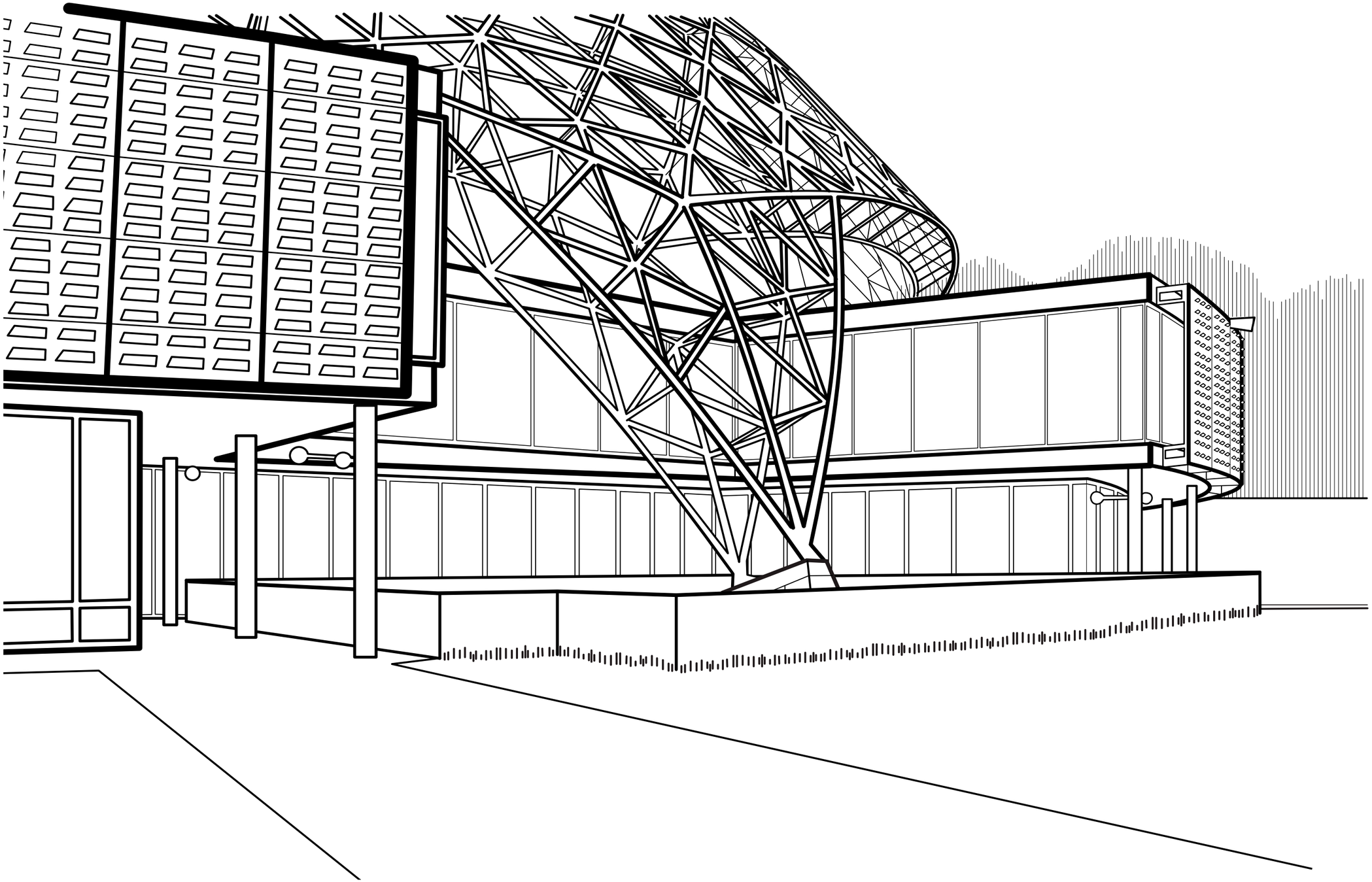
6 COLORING | COLOR + BUILD MOCA

COURTESY OF:
JEREMY SMITH, AIA



6 COLORING | CREATE A SKYLINE

COURTESY OF:
JEREMY SMITH, AIA



Video: Drone Footage of the Geodesic Dome and ASM World Headquarters

ASM World Headquarters John Terence Kelly and R. Buckminster Fuller

9639 Kinsman Road Novelty, Ohio

COURTESY OF:
JEREMY SMITH, AIA

Hands-On Activity : Let's Make a House!

Directions:

Part 1: What Makes a House?

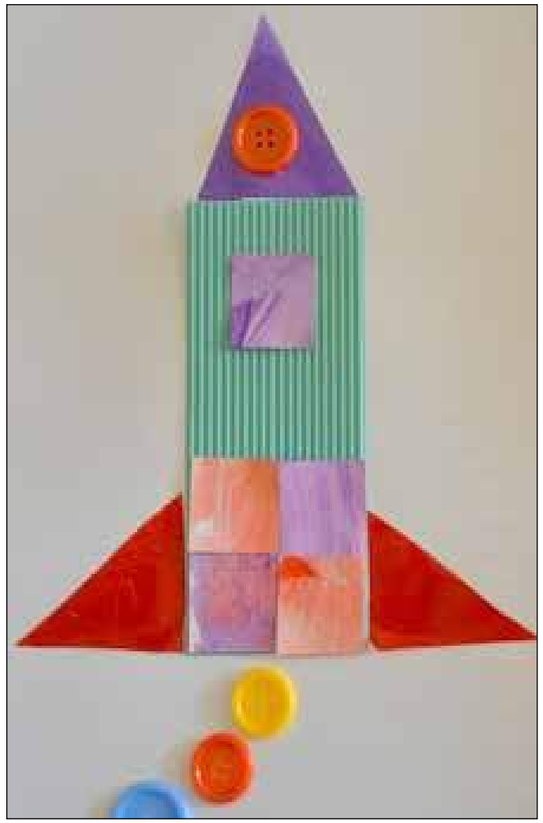
1. Think about what your house looks like on the outside.
2. Does it have squares or circles for windows?
3. Does it have big triangles for a roof?
4. What colors is it?
5. What type of textures or patterns are on the outside?
6. How tall is it (how many stories?)
7. What are the proportions of the house's elements?
8. How many people live in your house?
9. Is your house part of a larger building (i.e. an apartment?)

Part 2: Can you guess if this building is a house?
See pages 7 + 8 of this Toolkit.

Part 3: Let's Make a House! Use your materials to build put shapes and forms together to creat a two-dimensional collage or a three-dimen sional object, and think about how this feels like a house.

Materials:

- Construction paper
- Pre-cut paper shapes (for Pre-K)
- Scissors
- Glue sticks
- Liquid glue
- Markers
- Crayons
- Rulers



Resources

Video:
Modern Architects A to Z Video
Draw Like an Architect: Essential Tips
How to Design Like an Architect | A Modern Home, Doug Patton

Books:
Kid Architect by Gary Vance
Architecture for Beginners by Louis Hellman
The Creativity Challenge by Tanner Christensen
Iggy Peck Architect by Andrea Beaty

Links | Websites:
15 Inspiring Black Architects and Designers You Should Be Following
15 Pioneering Black Architects that Shaped America
50 Women Rocking the World of Architecture
National Organization of Minority Architects
archKIDecture.org
Madame Architect
Pioneering Women
NEXT.cc

Dedication:

The hope of this document is to share meaningful activities for parents with their children of all ages to complete during the summer of 2020 while being safe and continuing to social distance. The aspiration is that this toolkit provide education and entertainment for confined kids, and cultivate a better understanding and appreciation for the built environment.

Special thanks to:

Patrick Thorpe and the Florida Foundation for Architecture, Jeremy Smith, AIA, and Bruce Bondy for their contributions.

About Jodi van der Wiel, AIA, NCARB, IIDA, LEED AP BD+C, WELL AP:

Jodi is a design leader with Vocon, an award-winning architecture firm in Cleveland, Ohio. She has held many roles with AIA Cleveland, including Director of Programming, Secretary, Chair of our Committee on the Environment, and Co-Chair of our Women in Architecture Committee which she co-founded in 2015. Jodi is currently serving as AIA Cleveland's 2020 President. As a mother and architect, she hopes that this Tool Kit serves as a welcome distraction during the Covid-19 pandemic.

jodi.vanderwiel@vocon.com

About Jud Kline, FAIA, NCARB, LEED AP

President of CIVITAD Services, LLC assisting economic development professionals in implementing projects and programs. Previously, he was a partner and Vice President with Herschman Architects for 37 years. He is an Adjunct Professor in the Kent State University College of Architecture and Environmental Design and the North Coast College.

Judson holds a Bachelor of Architecture Degree from Miami University, Ohio, additional studies at the Architecture Association of the Royal Institute of British Architects and Case Western Reserve University.

A councilman in Orange Village, Ohio, Jud serves on the Planning Commission/ Design Review Board and chairs the Orange Sustainable Building Committee. He was AIA Cleveland and Ohio President, a member of the AIA's Diversity Council, 2018 chair for the Center for Civic Leadership, the AIA's K-12 Education Committees, he co-chaired the AIA WIA in 2012. He received the AIA Ohio Public Service Award in 2009, 2016 ACE Mentor of the Year and a AIA Fellow serving as the Ohio Valley Regional Representative.

judkline@aol.com

CREATORS : JUD KLINE, FAIA + JODI VAN DER WIEL, AIA