



eduresourcza.com

TECHNOLOGY GRADE 7-9

TECHNOLOGY DRAWING WORKSHOP

TEACHER DEVELOPMENT UNIT INSET TRAINING

DATE :

VENUE : 15 DISTRICT VENUES IN GAUTENG PROVINCE

TIME : 08:00 – 16:00

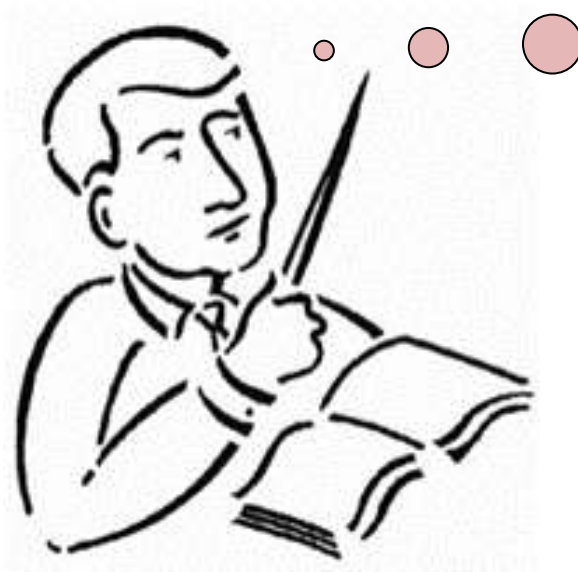


GAUTENG
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Icons that are used in this manual

Descriptions	Icons
Individual work	
Team work	
Pairs	
Video	
Outcomes	
Enrichment Activity	
Participant Activity	
Time allocated	

Graphic Communication



**Why do we make use of
graphic communication?**

Graphic Communication

- It is a non-verbal way of communicating through graphics and graphical aids.
- It involves using visual material to relate ideas, such as drawings, photographs, slides, signs and sketches.
- It is the most effective communication method, because it transcends the barriers of verbal communication.
- Ideas and information are better communicated graphically than verbally.

Graphic Communication

- Graphic communication also compensates for language barriers, for example: the sign below would be interpreted correctly as recycle, across the world by people of different languages.



Drawing Conventions

- Drawing conventions have been developed to achieve a common understanding of drawings across the globe.
- Engineering drawing is a formal and precise way of communicating information about the shape, size, features and precision of physical objects.

Drawing Conventions

- Drawing is the universal language of engineering and drawing standards. *The conventions used* ensure that there is consistency between the draughts persons producing the drawings and the *people* who read them to produce or manufacture products.

Drawing instruments



Activity: Line types and their application

Time = 20 minutes

Method:



Outcomes:

At the end of this activity participants should be able to:

- Identify the different line-types **used in drawing**.
- Understand the application of each line-type.
- Maintain consistency in line-work when **drawing**.

Resources:

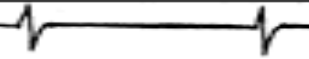
- Math**s** set
- Participants Manual
- Eraser
- Pencil
- A4 sheet/worksheet



Line Conventions

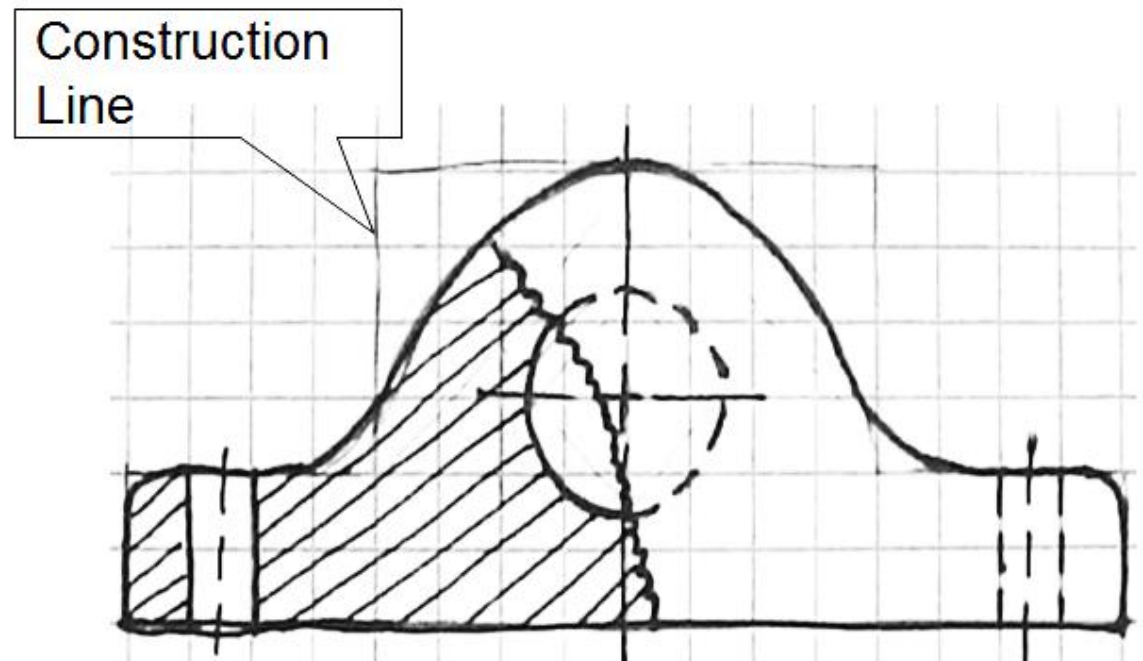
- Lines of varying style and thickness are used in specific ways to develop and communicate graphic messages about an object's geometry. The next few slides show some basic line conventions and their use.

Line Types

Line		Description	General Application	
A		Continuous thick	A1 A2	Visible outlines. Visible edges.
B		Continuous thin (straight or curved)	B1 B2 B3 B4 B5 B6 B7	Imaginary lines of intersection. Dimension lines. Projection lines. Leader lines. Hatching lines. Outlines of revolved sections in place. Short centre lines
C		Continuous thin free hand	C1	Limits of partial or interrupted views and sections, if the limit is not a chain thin.
D		Continuous thin (straight) with zigzags	D1	Long break line
E		Dashed thick	E1 E2	Hidden outlines. Hidden edges.
F		Dashed thin	F1 F2	Hidden outlines. Hidden edges.
G		Chain thin	G1 G2 G3	Center lines. Lines of symmetry. Trajectories
H		Chain thin, thick at ends and changes of direction	H1	Cutting planes.
J		Chain thick	J1	Indication of lines or surfaces to which a special requirement applies
K		Chain thin double dashed	K1 K1 K3 K4 K5	Outlines of adjacent parts. Alternative or extreme position of movable parts. Centroidal lines. Initial outlines prior to forming Parts situated in front of the cutting plane

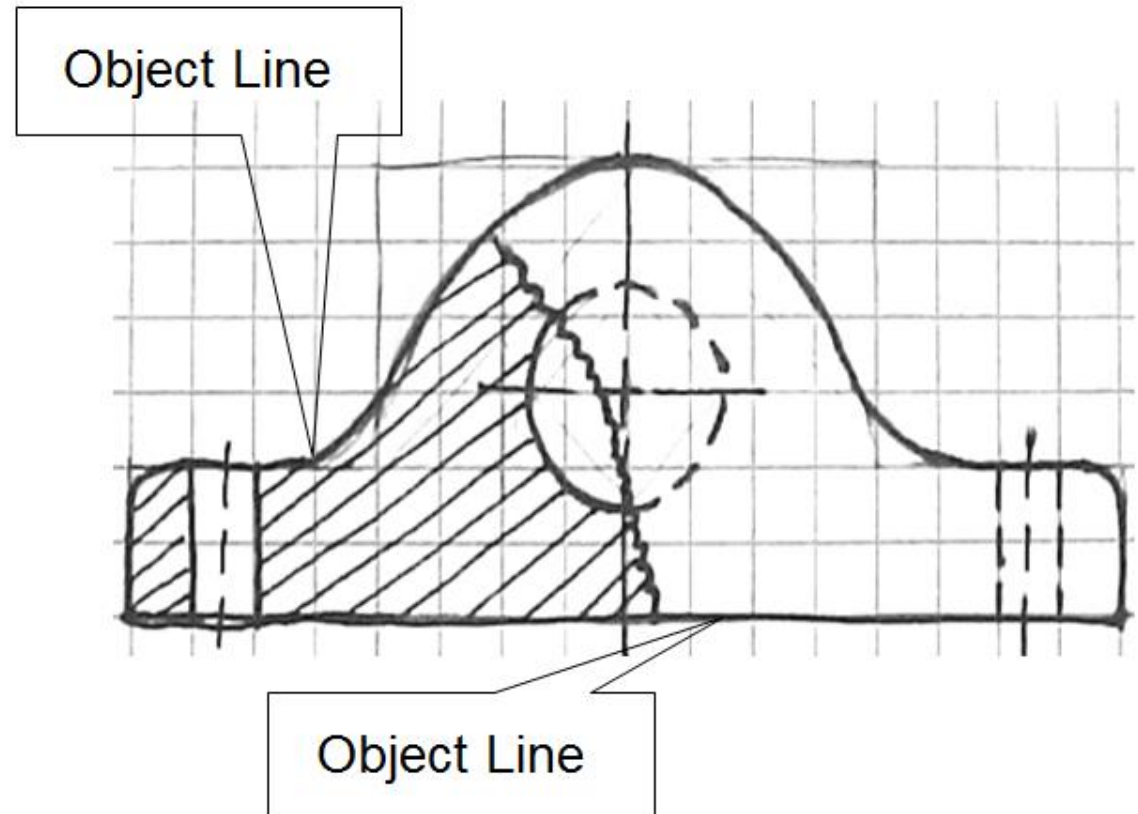
Construction Line

- Very lightly drawn lines to guide drawing other lines and shapes



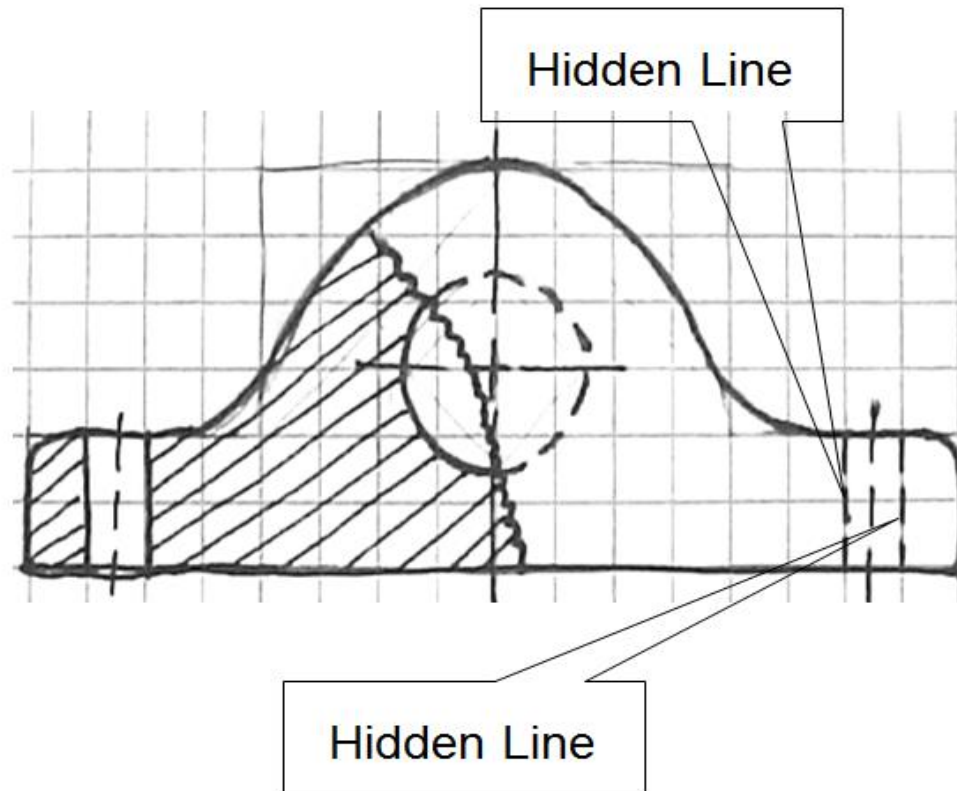
Object Line

- Thick and dark
- Define the object



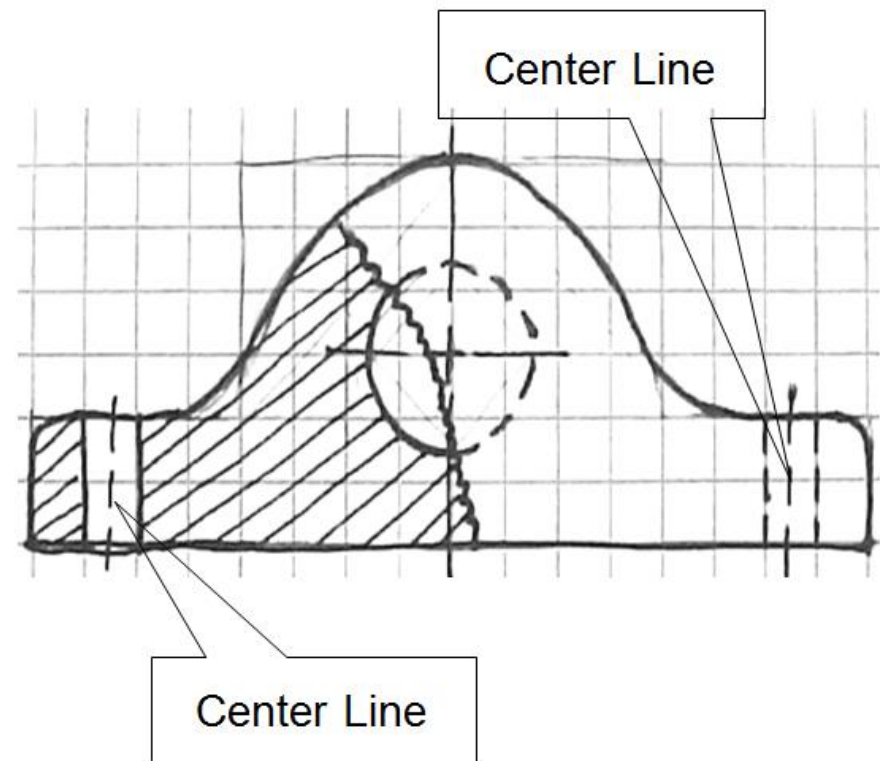
Hidden Line

- Show interior detail not visible from the outside of the part



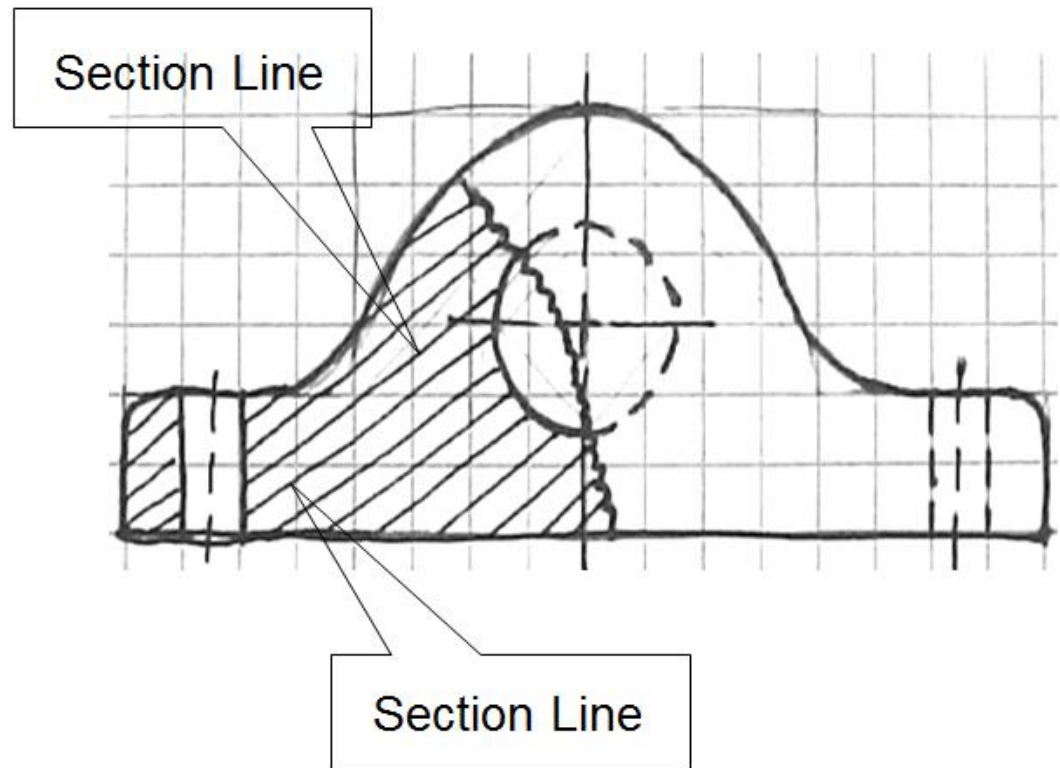
Center Line

- Define the center of arcs, circles, or symmetrical parts
- Half as thick as



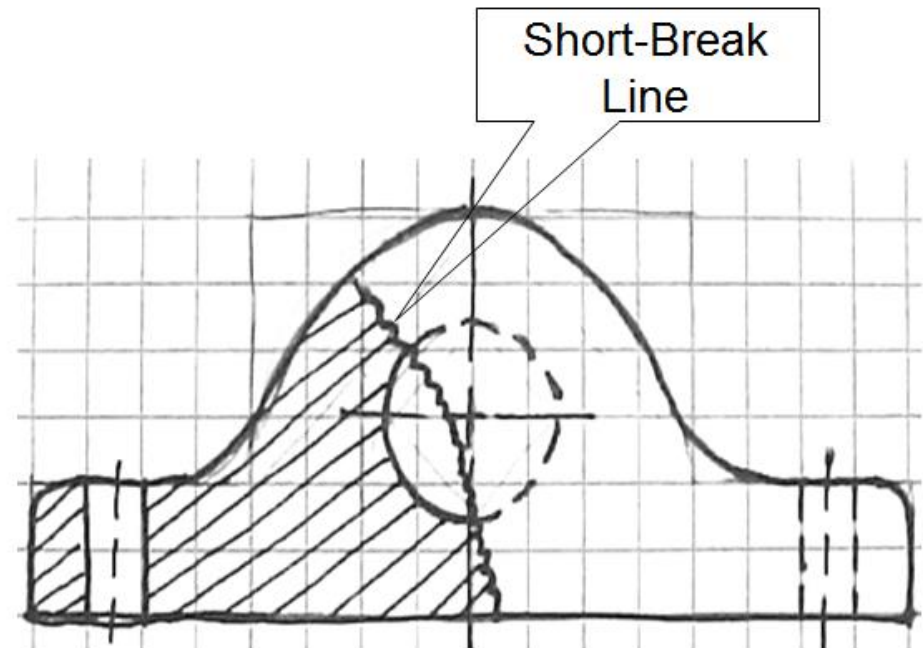
Section Line

- Define where material is cut away



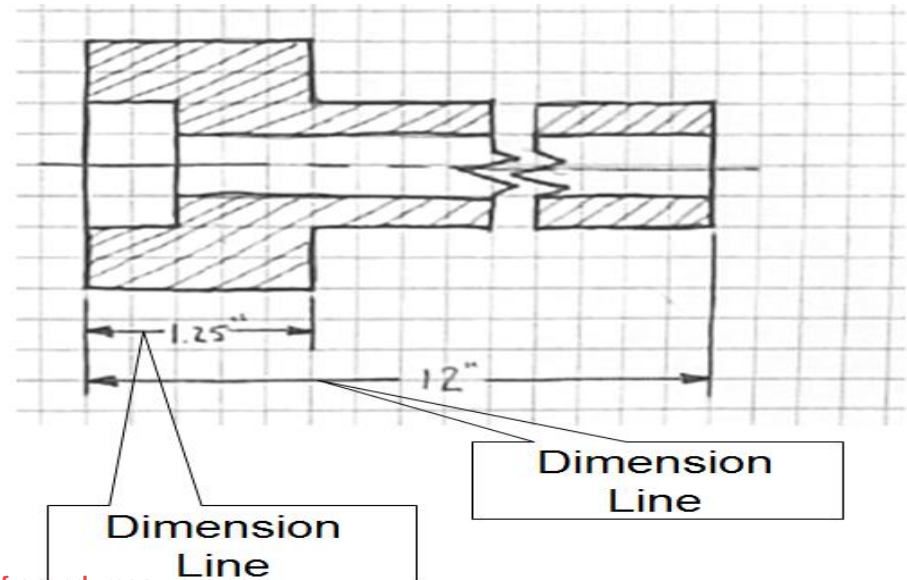
Short-Break Line

- Freehand drawn line
- Shows where **a** part is broken to reveal detail behind the part or to shorten a long continuous part



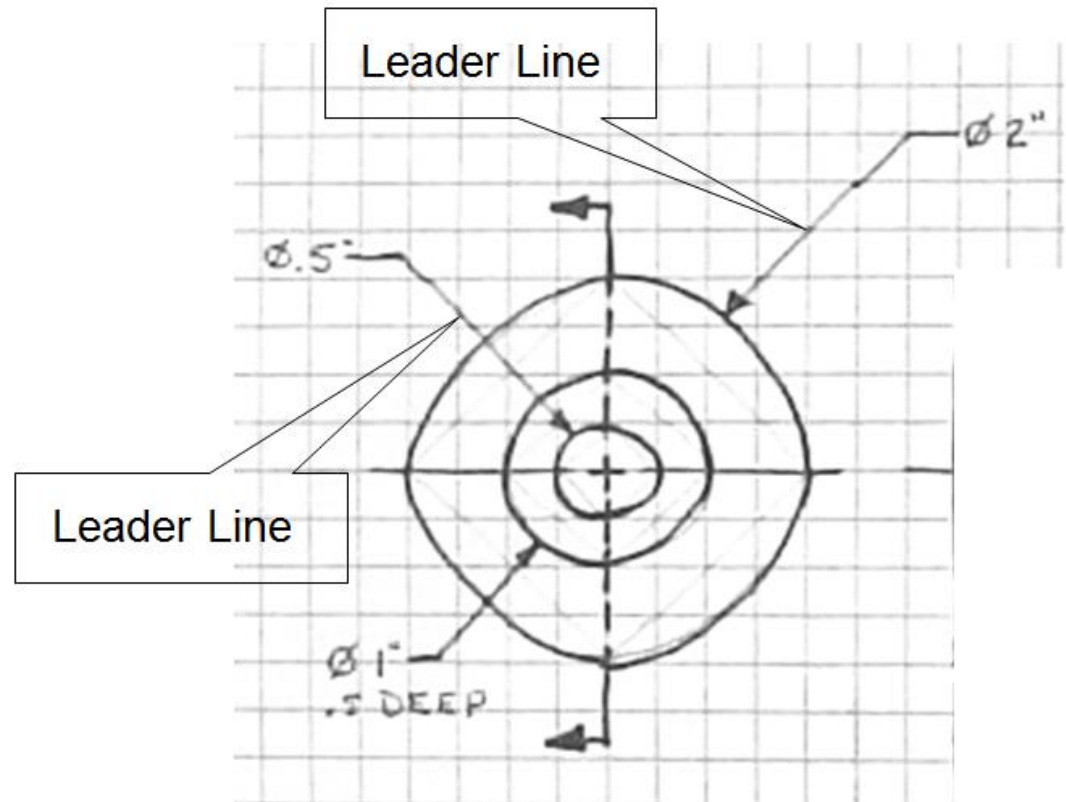
Dimension Line

- Shows distance
- Arrows drawn on ends to show where dimension line starts and ends
- Actual distance is typically located in middle of this line to display distance



Leader Line

- Show dimensions of arcs, circles, and detail



In conclusion - Line Types

- Just like in **any** language where letters are used to form words which are used in communicating verbally and non-verbally, different types of lines are used in drawing. These types of lines have a specific meaning.
- It is therefore important that their application be correct in order to **be interpreted correctly by** whoever reads the drawing.

Exercise - ref pg. 10

- Draw 4 of each of the following line-types in the following positions: horizontal, vertical and diagonal (45° slope) to the right and left:
 - Outline
 - Construction line
 - Hidden line
 - Centre line
- Use the table below to draw the line-types.

Activity 2 – Freehand Drawings

Time = 15 minutes

Method: 

Outcomes:

At the end of this activity participants should be able to:

- Use the freehand drawing technique to draw 2D and 3D views.
- Draw neatly using the correct line-type.

Resources:

- A4 Drawing paper
- Pencil
- Masking Tape

Introduction

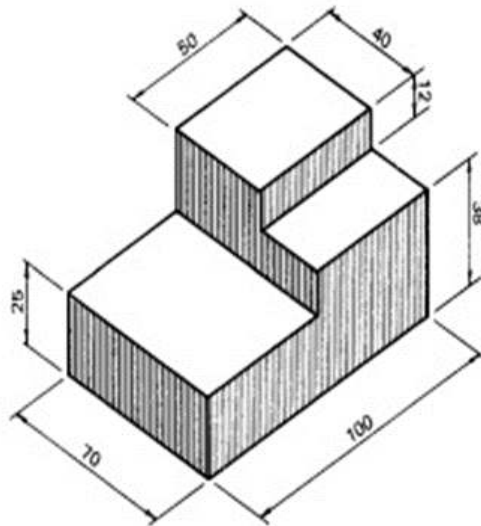
- Freehand drawing is a quick and convenient way of exploring ideas and communicating them to others or developing them into working drawings of a solution.
- Freehand drawings are particularly important during the design stage, where a solution to a problem or a need is developed.

Introduction continued

- It is therefore critically important that aspiring technologists should have this important skill.
- All buildings, vehicles, machines, etc. that we see, started with a freehand design on paper, which was later developed into working drawings from which they were then built or manufactured.

Exercise - ref pg. 11

- Sketch the given drawing in the space provided in free hand.



Activity 3 – Scale Drawing

Time = 20 minutes

Method: 

Outcomes:

At the end of this activity participants should be able to:

- Use the given scale to complete the drawing.
- Use the different line-types correctly in a drawing.
- Add a title and scale neatly below the drawing, between 7mm and 5mm guidelines respectively.

Resources:

- Participant's manual

Introduction

- Scaling is a way of enlarging or reducing the actual object, and representing it on a drawing paper with the same proportions. Scales are generally expressed as ratios that show a relationship in the size of the actual thing and the drawing.

Scaling Up or Down

Scaling is used to either:

- **reduce** the drawing in size so that it will fit onto the page, e.g. **1:2**, **1:5**, **1:50** and **1:100** (commonly used in building plans) or
- **enlarge** the drawing in size so that all required details are clearly visible, e.g. **2:1**, **5:1** and **10:1**.

N.B.

In cases where the actual object can be drawn to the same size on paper, then scale **1:1** (full scale) is used.

Exercise - ref pg. 12

Copy the drawing below in the space provided.
The purpose of this exercise is to practice the application of the different types of lines in a drawing.



Activity 4 – Oblique Projection

Time = 30 minutes

Method: 

Outcomes:

At the end of this activity participants should be able to:

- Draw a given object in oblique, using a 45° set square or a grid.
- Produce a neat drawing with line-types used correctly.

Resources:

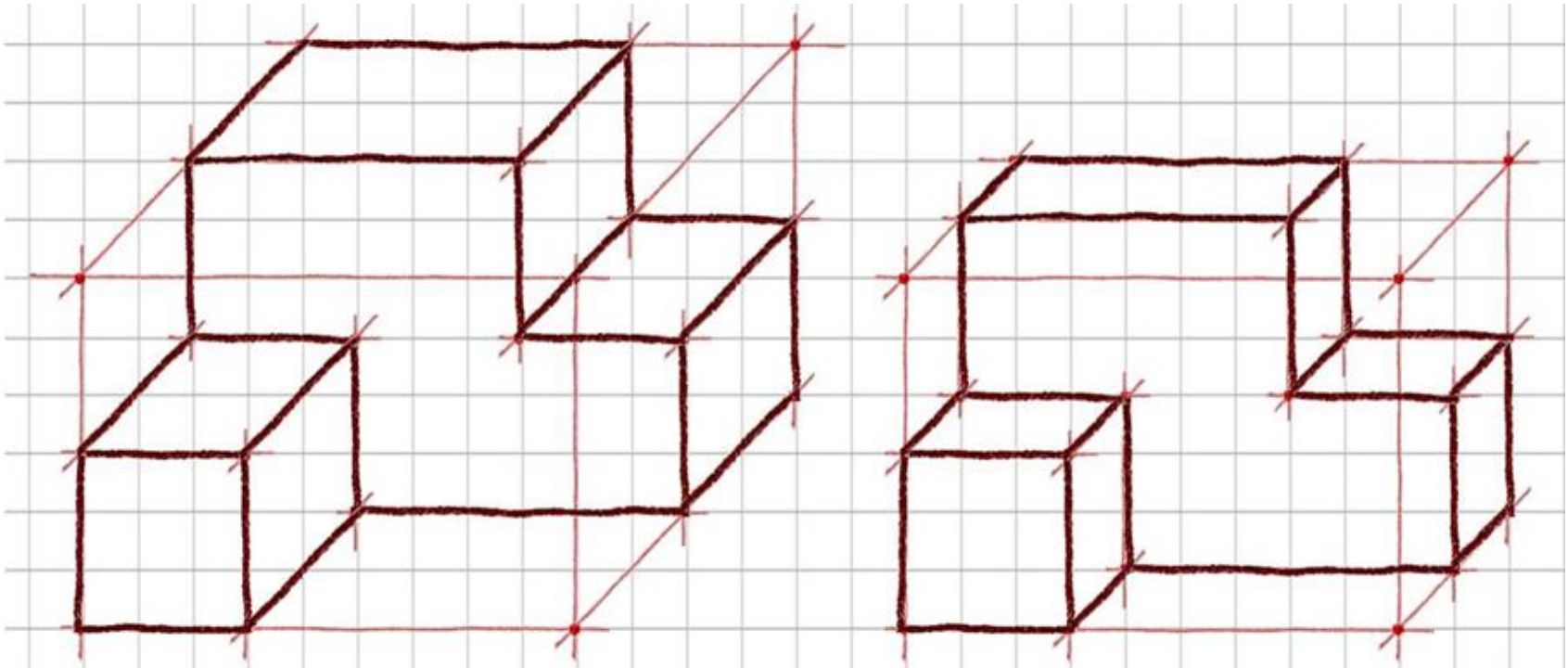
- Video
- Participants Manual
- Set Squares
- Grid

Introduction

An oblique drawing is an easy 3D technique to master because only one side of it is drawn in a slanting position. The part of the drawing which shows more detail is drawn flat, and the sloping side at 45° .

TWO TYPES of Oblique Drawings

the Cavalier and Cabinet oblique drawings, shown below.



What is their differences?

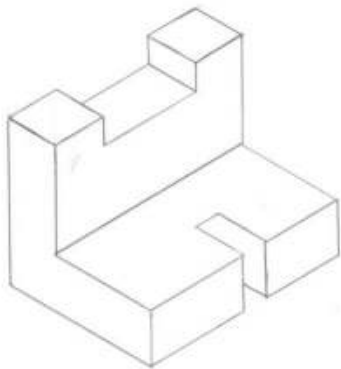
- The difference between the two oblique drawing techniques is that the receding side is drawn to its full length in the Cavalier oblique, but halved in the Cabinet oblique.
- The reason for “halving” the length of the sloping side in the Cabinet oblique drawing, is to make the object look real

Methodology of Teaching Oblique Drawings

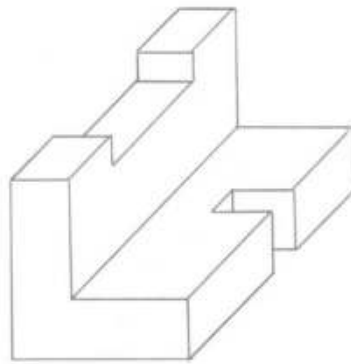
- *For purposes of the Subject, focus will only be on the Cabinet technique.*
- When using a plain drawing sheet, a 45° set square should be used to draw the sloping sides.
- Using an orthographic grid paper is the easiest and quickest method because lines can simply be drawn diagonally through the corners of the squares in the grid.

Pictorial Drawings

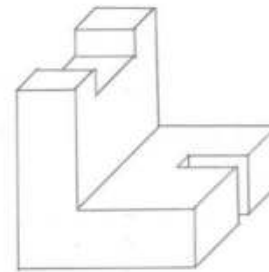
- 2D illustration of a 3D object
- Shows three faces of an object in one view
- Provides a realistic view of an object
- Three types
 - Isometric
 - Oblique
 - Perspective



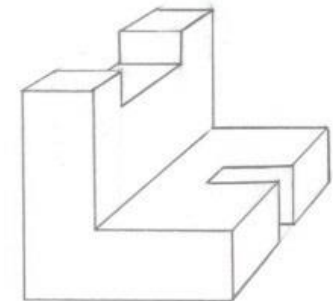
Isometric



Oblique (Cavalier)



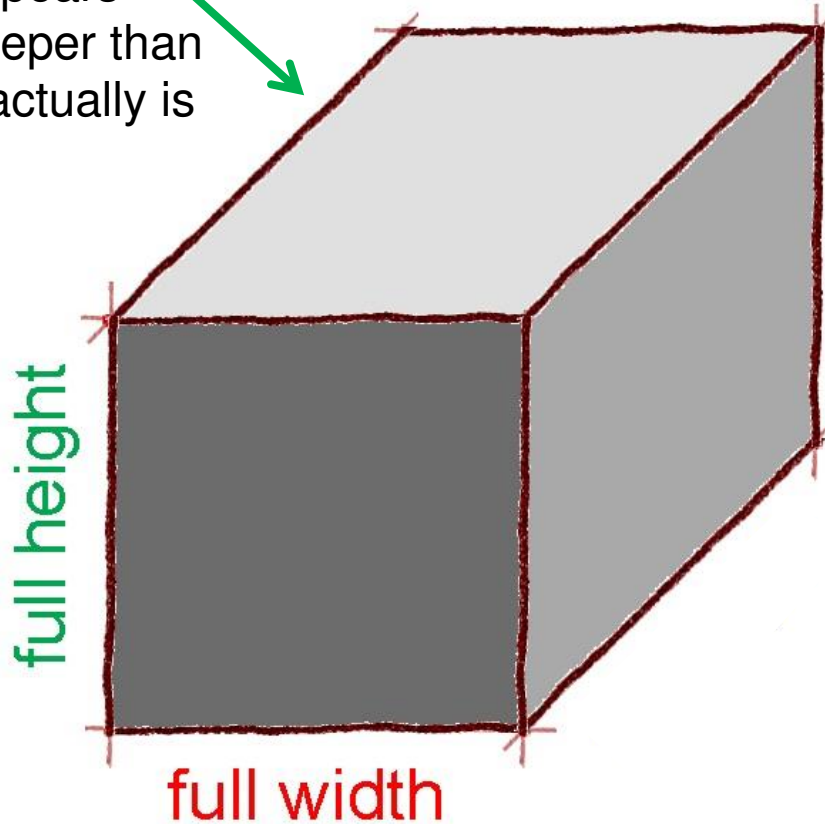
Oblique (Cabinet)



Perspective

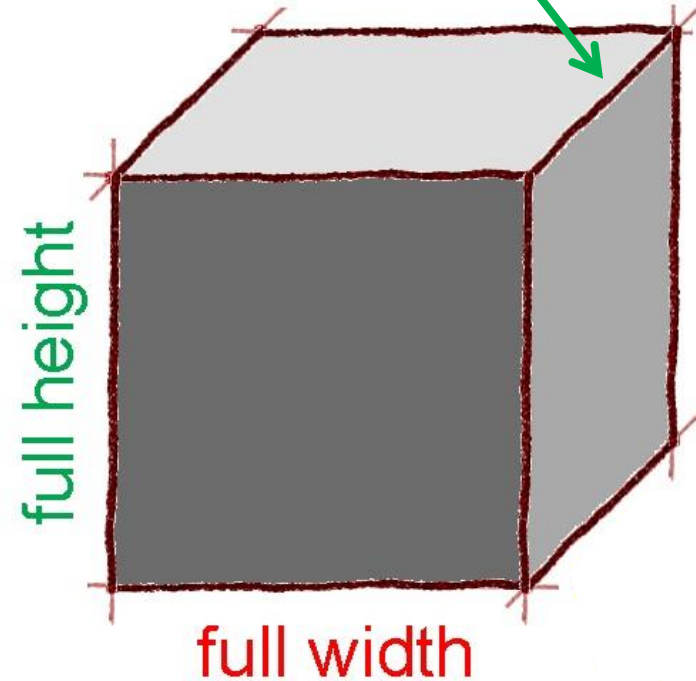
Oblique Pictorials

Object
appears
deeper than
it actually is



Cavalier Oblique

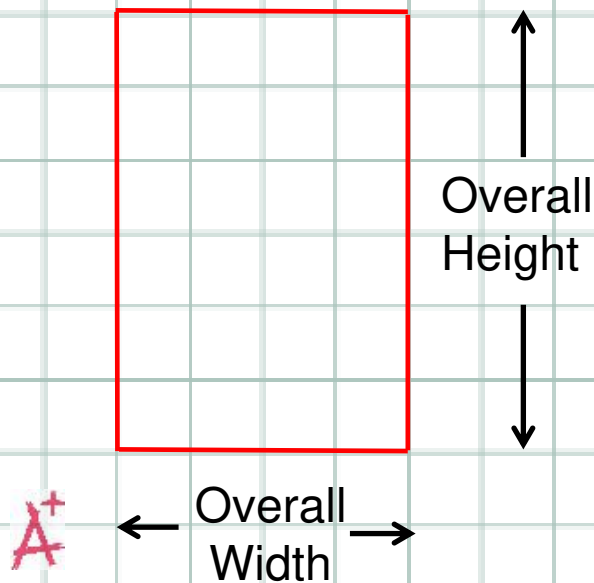
More realistic view
because depth does not
appear distorted



Cabinet Oblique

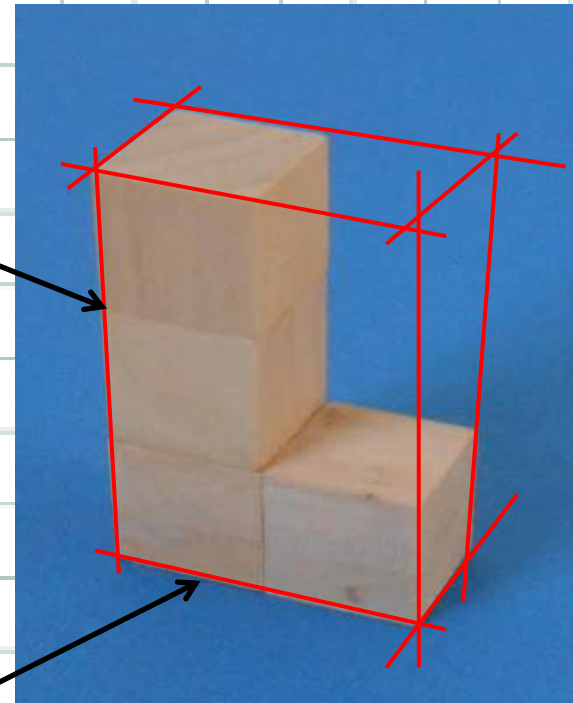
Orthographic

1. Sketch a rectangle to represent the overall height and width of “the box” such that height lines are vertical and width lines are horizontal. This will give a straight-on view of the front of the object.



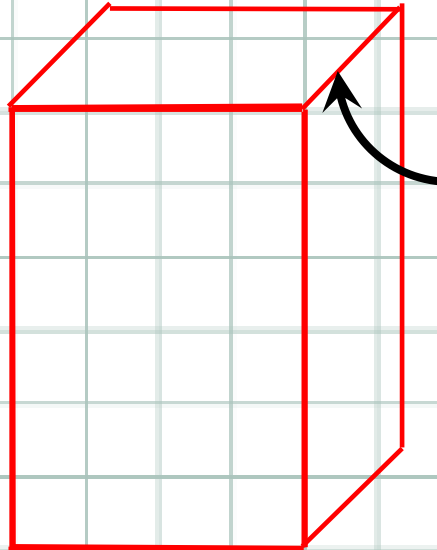
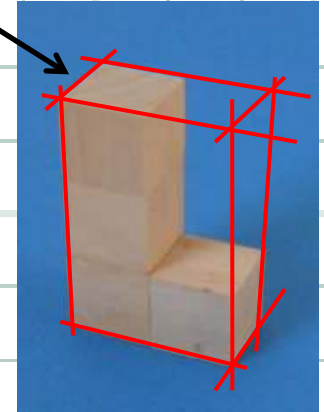
Overall
Height

Overall
Width



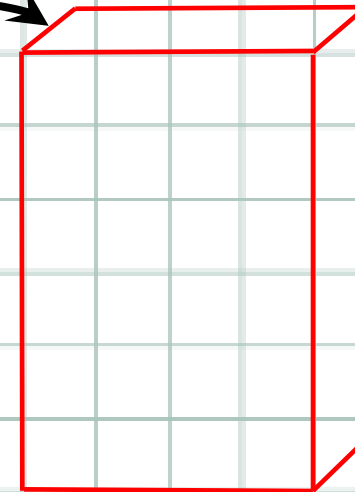
Overall
Depth

2. Complete “the box” by sketching depth lines to the overall depth of the object at a given angle (45 degrees here).



Cavalier is
drawn full
depth

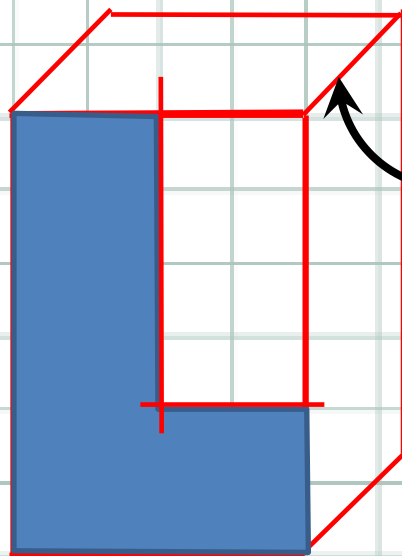
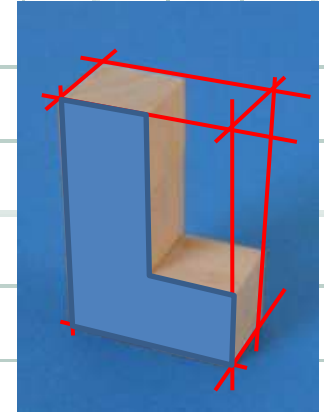
Cabinet is
drawn half
depth



Cavalier Oblique

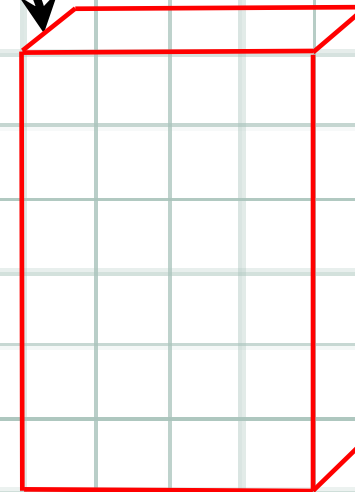
Cabinet Oblique

3. Sketch points and construction lines to identify the edges of the object faces that occur on the visible surfaces of “the box.”



Cavalier is
full depth

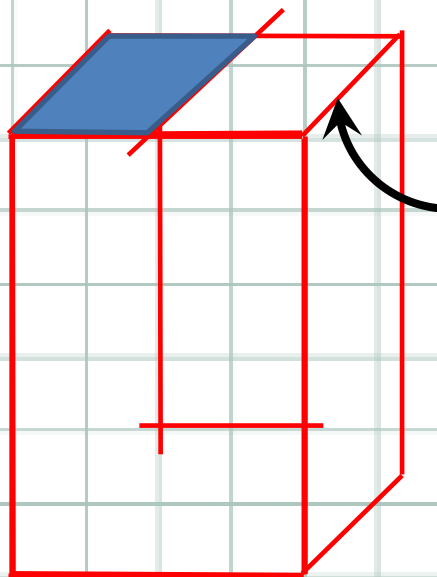
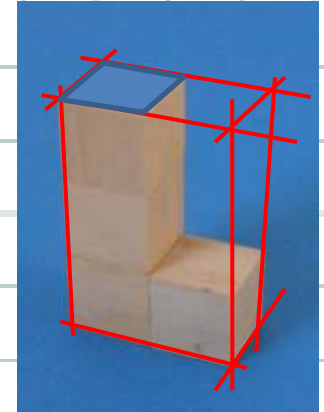
Cabinet is
half depth



Cavalier Oblique

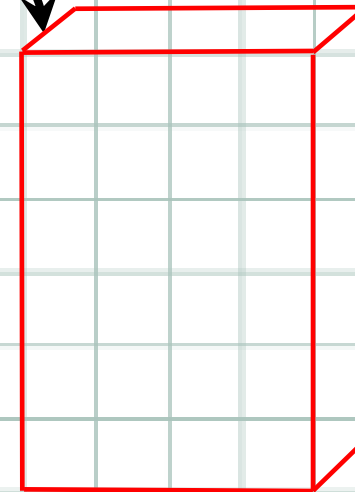
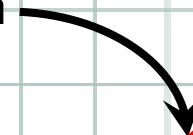
Cabinet Oblique

3. Sketch points and construction lines to identify the edges of the object faces that occur on the visible surfaces of “the box.”



Cavalier is
full depth

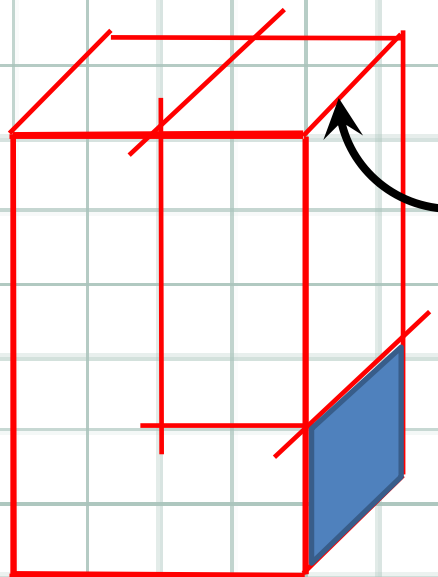
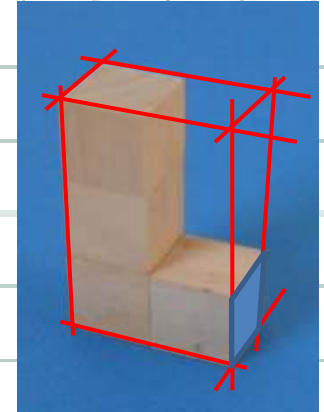
Cabinet is
half depth



Cavalier Oblique

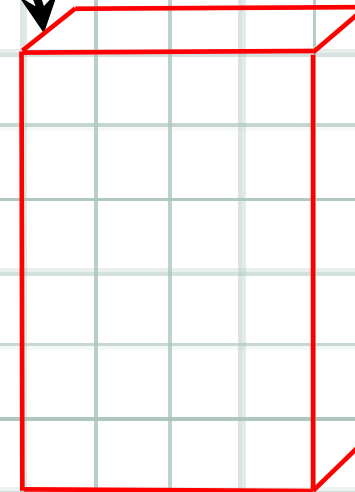
Cabinet Oblique

3. Sketch points and construction lines to identify the edges of the object faces that occur on the visible surfaces of “the box.”



Cavalier is
full depth

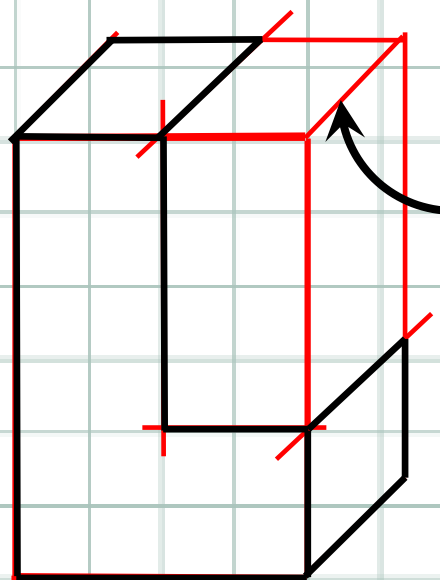
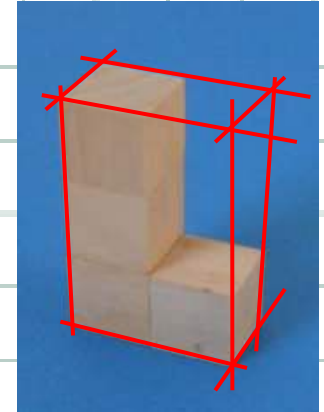
Cabinet is
half depth



Cavalier Oblique

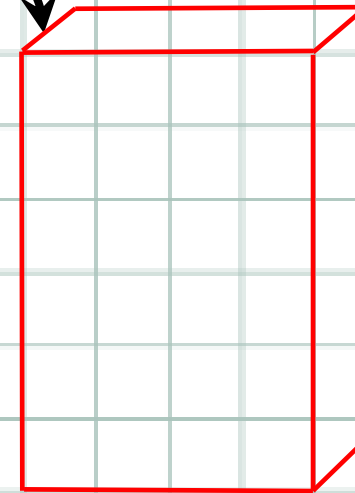
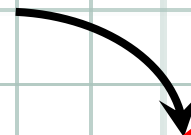
Cabinet Oblique

4. Use object lines to trace over the construction lines to delineate the edges of the object faces that occur on the visible surfaces of “the box.”



Cavalier is
full depth

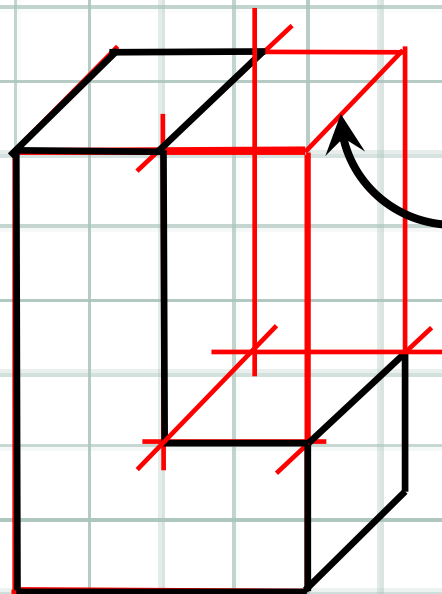
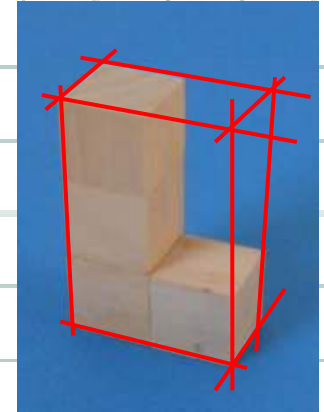
Cabinet is
half depth



Cavalier Oblique

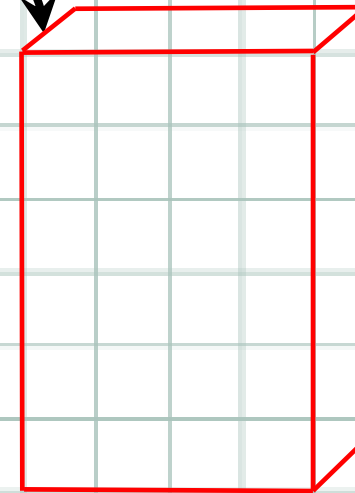
Cabinet Oblique

5. Sketch additional construction lines to identify edges of the object inside of the box.



Cavalier is
full depth

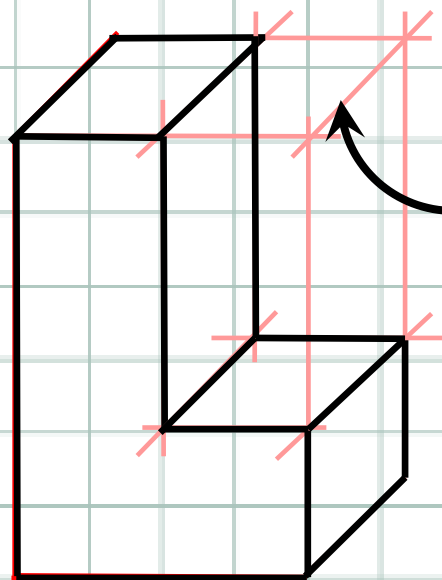
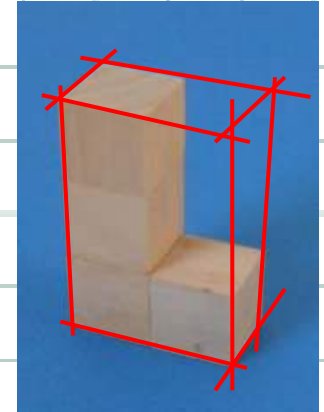
Cabinet is
half depth



Cavalier Oblique

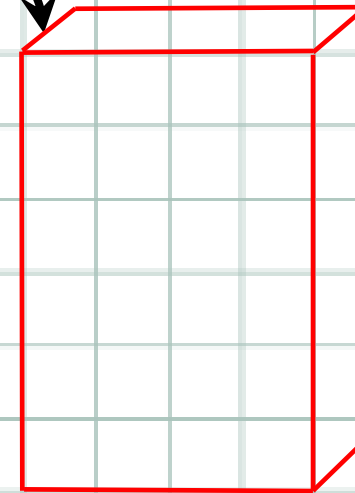
Cabinet Oblique

- Trace over construction lines with object lines to delineate the remaining object lines.



Cavalier is
full depth

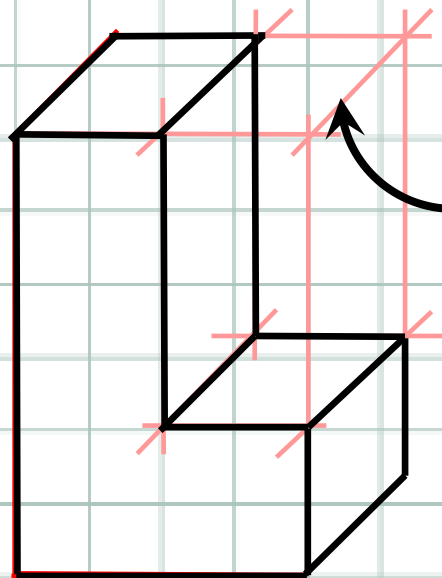
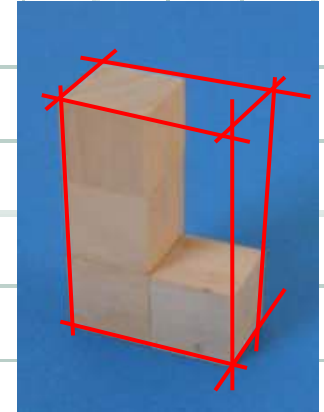
Cabinet is
half depth



Cavalier Oblique

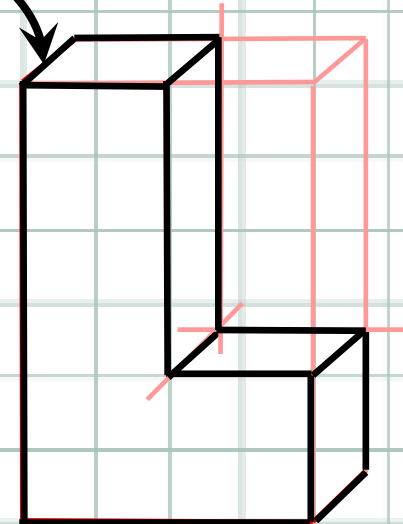
Cabinet Oblique

Create the Oblique Cabinet view.



Cavalier is
full depth

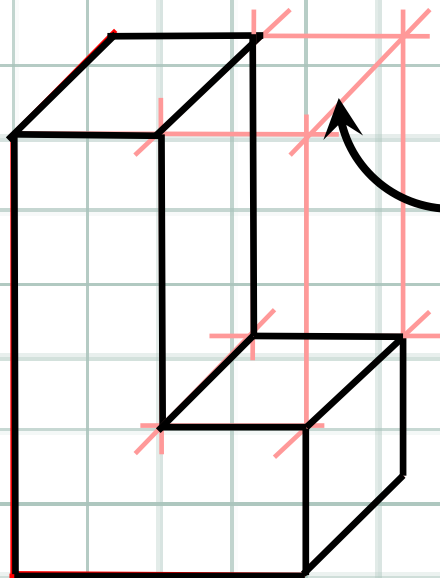
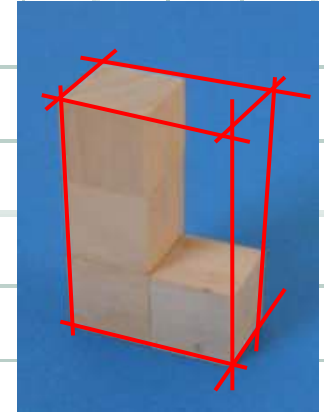
Cabinet is
half depth



Cavalier Oblique

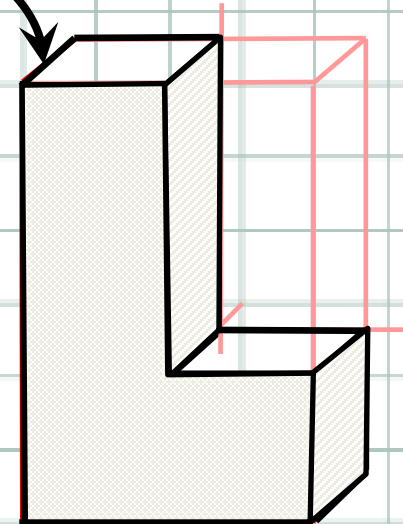
Cabinet Oblique

7. You may use tonal shading to enhance the appearance of the perspective sketch and create a more realistic representation.



Cavalier is
full depth

Cabinet is
half depth



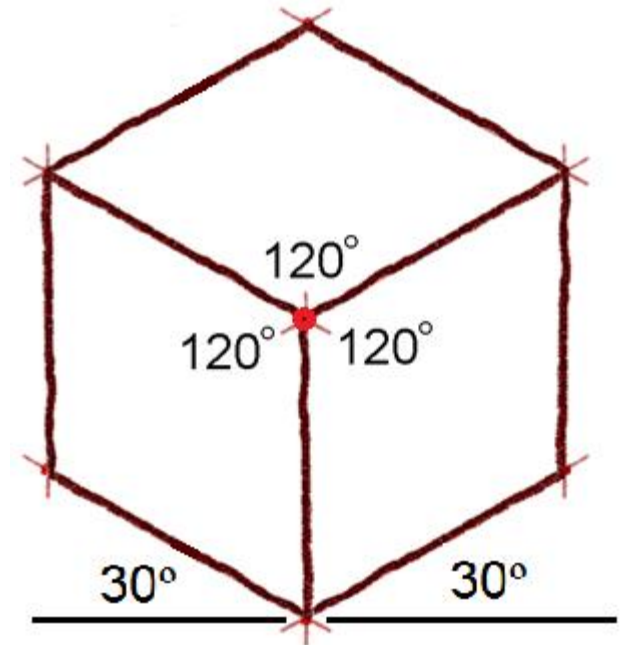
Cavalier Oblique

Cabinet Oblique

Isometric Pictorial

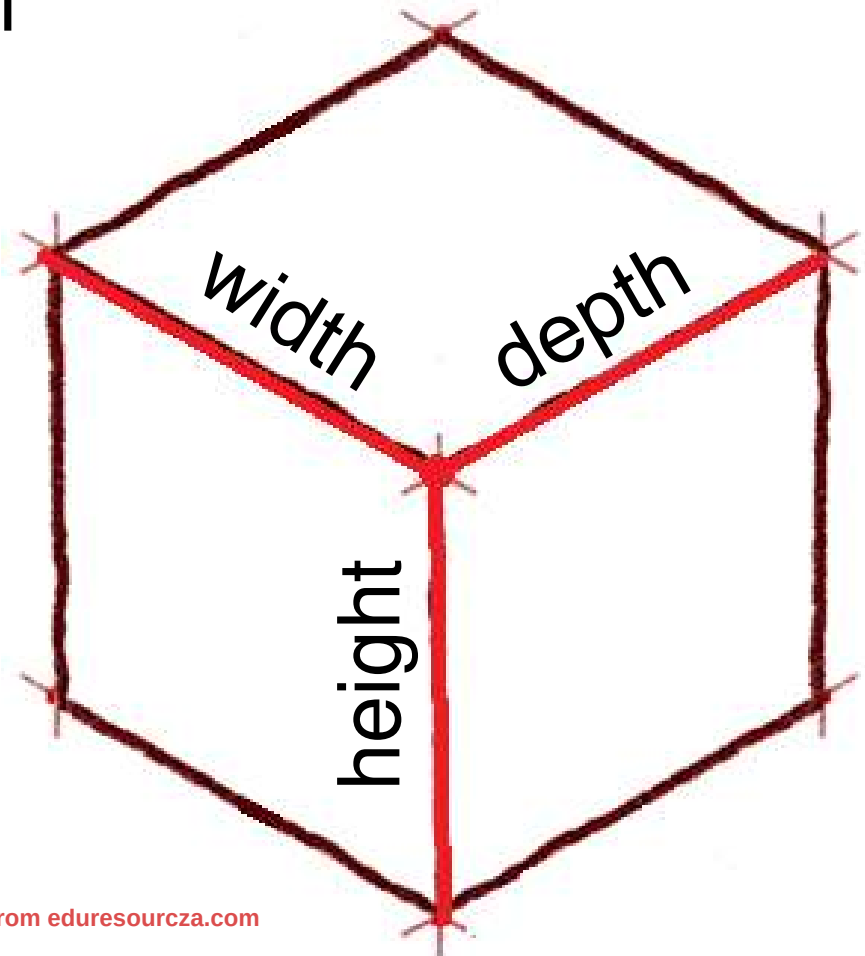
Isometric means *equal measure*.

- Three adjacent faces on a cube will share a single point
- Edges converge at one point will appear as 120 degree angles or 30 degrees from the horizon line

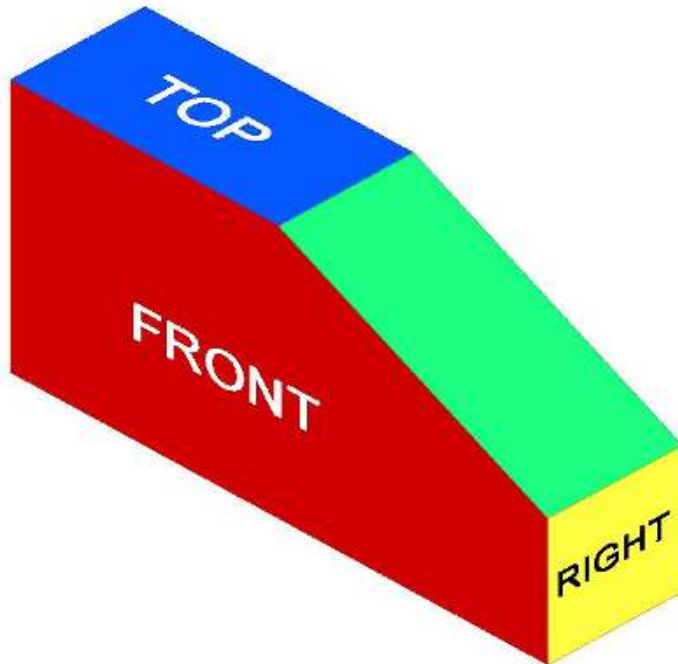


Isometric Pictorial

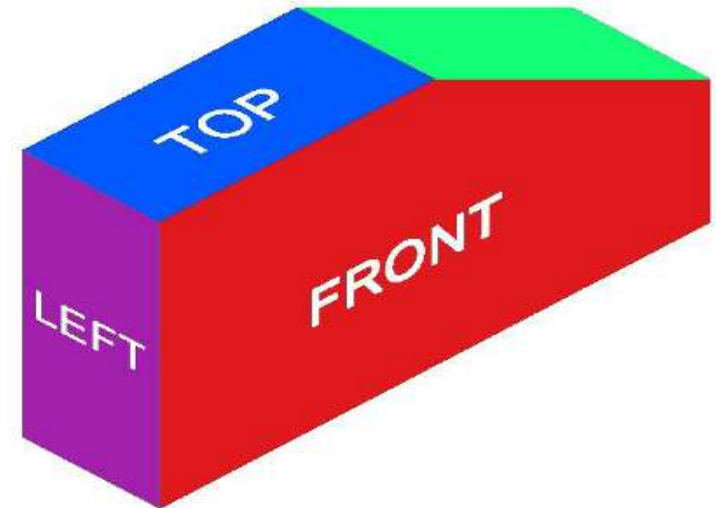
- These three edges represent height, width, and depth



View labels



Top, Front, Right-Side view orientation



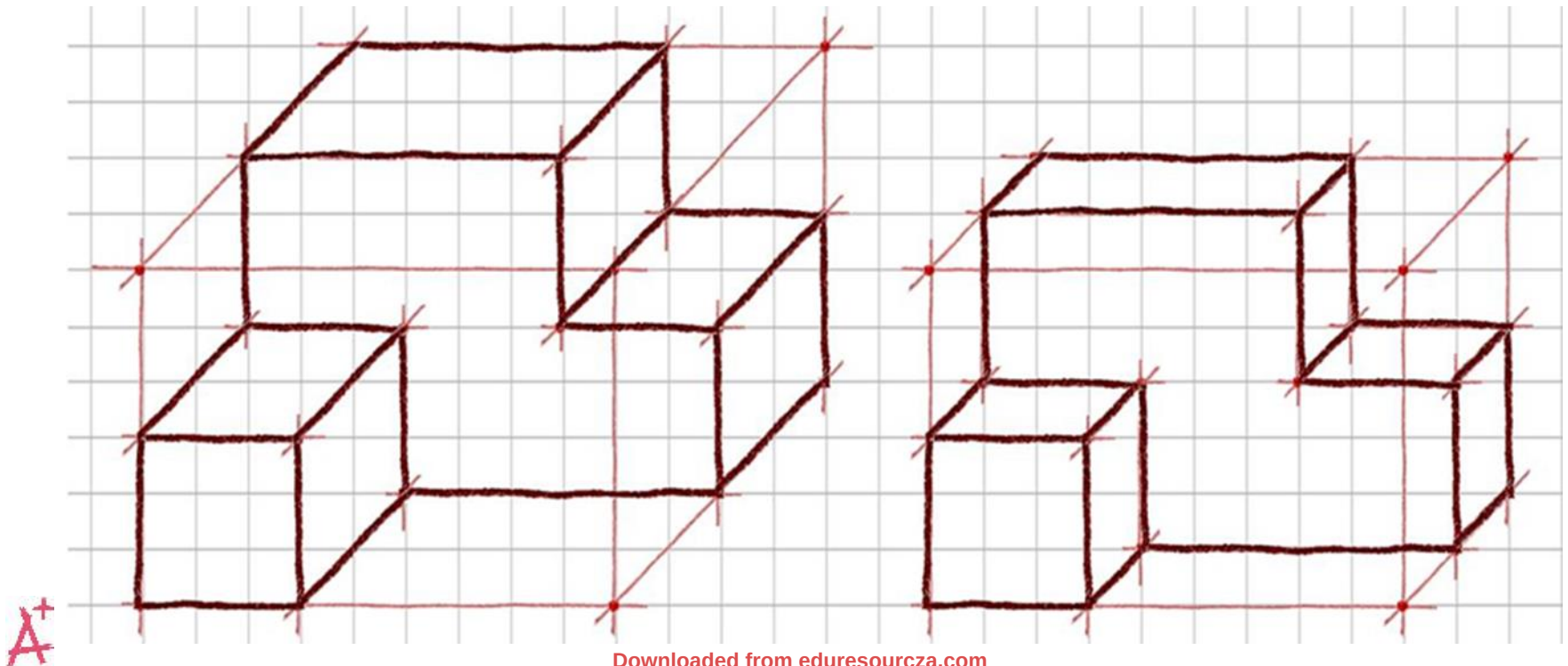
Top, Left-Side, Front, view orientation

View Selection

- Recommendations for how to select the front view
 - Most natural position or use
 - Shows best shape and characteristic contours
 - Longest dimensions
 - Fewest hidden lines
 - Most stable and natural position

Exercise - ref pg. 14

Use the two given views to draw an oblique view of the object in the space provided below.



Activity 5: First Angle Orthographic Drawings

Time = 60 minutes

Method: 

Outcomes:

At the end of this activity participants should be able to:

- Understand view placement in First Angle Orthographic Projection.
- Draw the required orthographic views.
- Use the different line-types correctly in the drawing.

Resources:

- Video
- Participants manual
- Grids

Introduction to First Angle Orthographic Drawing

It is important to first understand where the concept of First Angle Orthographic Projection comes from. It is a method of projecting a 2-Dimensional view of a 3-Dimensional object by placing **an object in space in the first quadrant** , and drawing the views as **seen from the different sides** onto the projection planes as shown in the illustration below. The planes are then opened and put in a flat position. This explains view arrangement in First Angle Orthographic Projection.

Introduction to Third Angle Orthographic Drawing

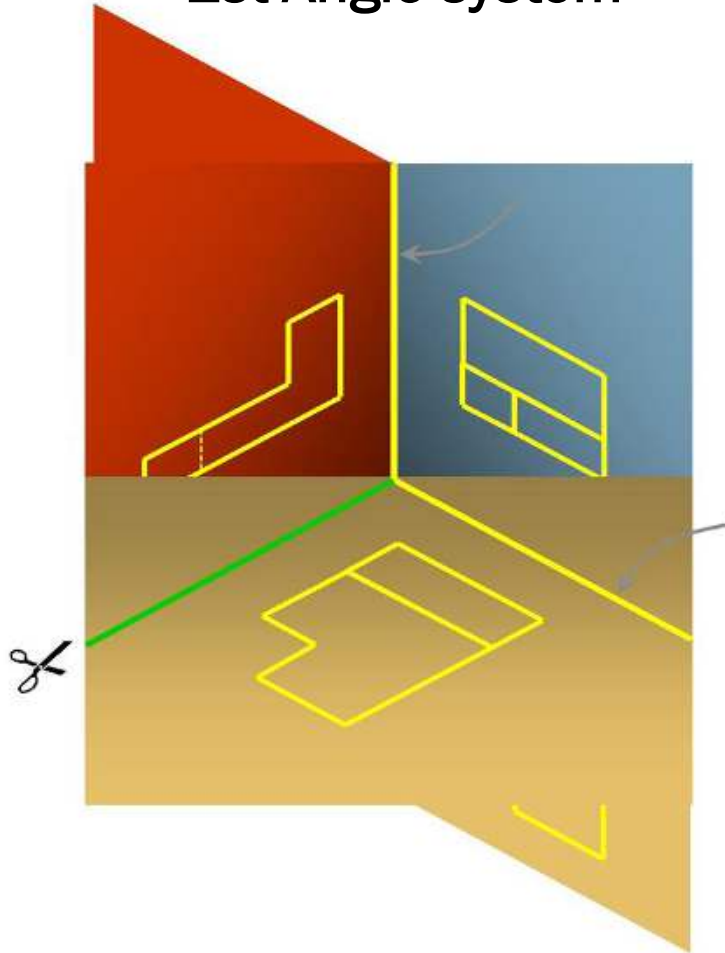
The other method of projecting the orthographic views is done by placing an object in the third quadrant (Third Angle Orthographic Projection).

Methodology of teaching Orthographic Drawings

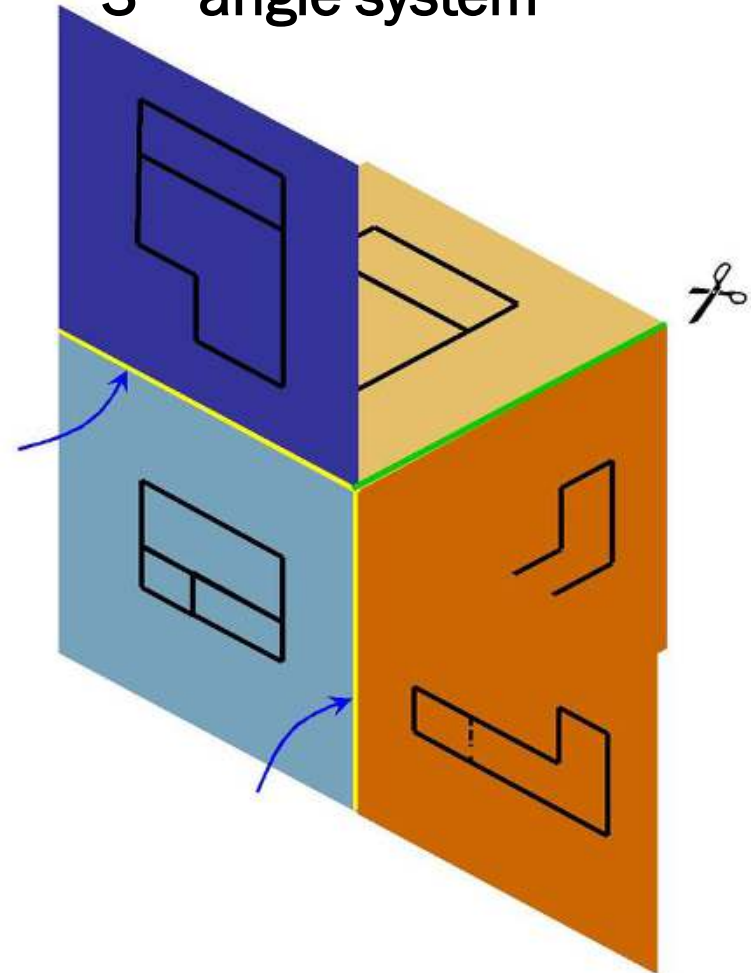
- We however for the purpose of our focus in the Senior Phase only do First Angle Orthographic Projection.
- The difference in view placement in F.A.O.P and T.A.O.P, is as a result of the position of the viewer, the object and the projection plane. In F.A.O.P, the object being viewed is between the viewer and the projection plane, whilst the projection plane is between the object and the viewer.

Orthographic Views

1st Angle system

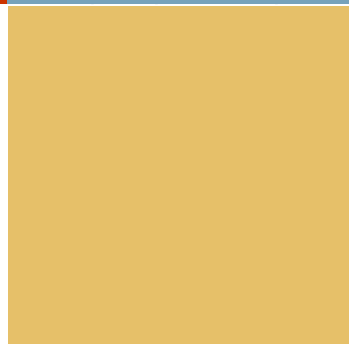
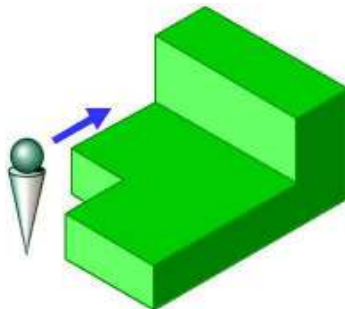
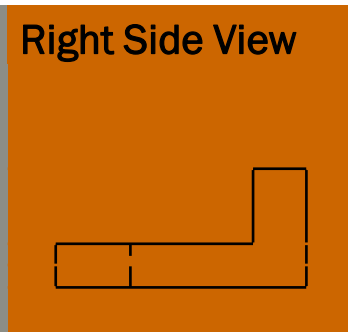
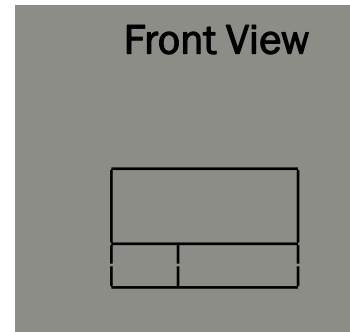
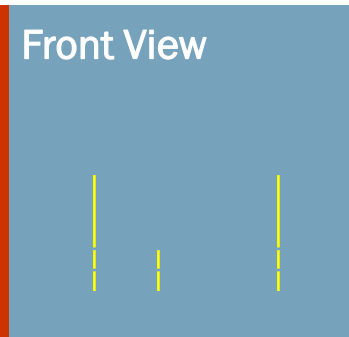
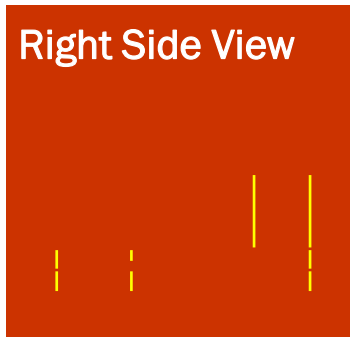
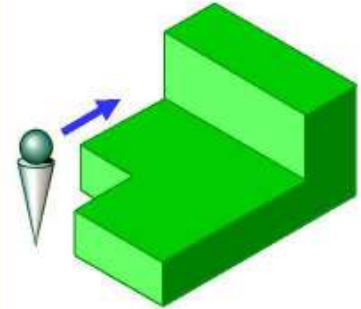
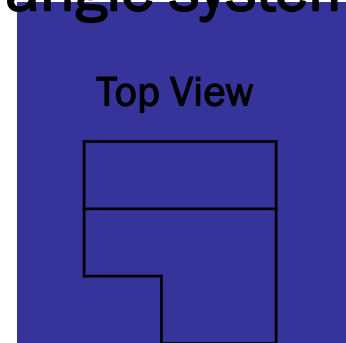


3rd angle system



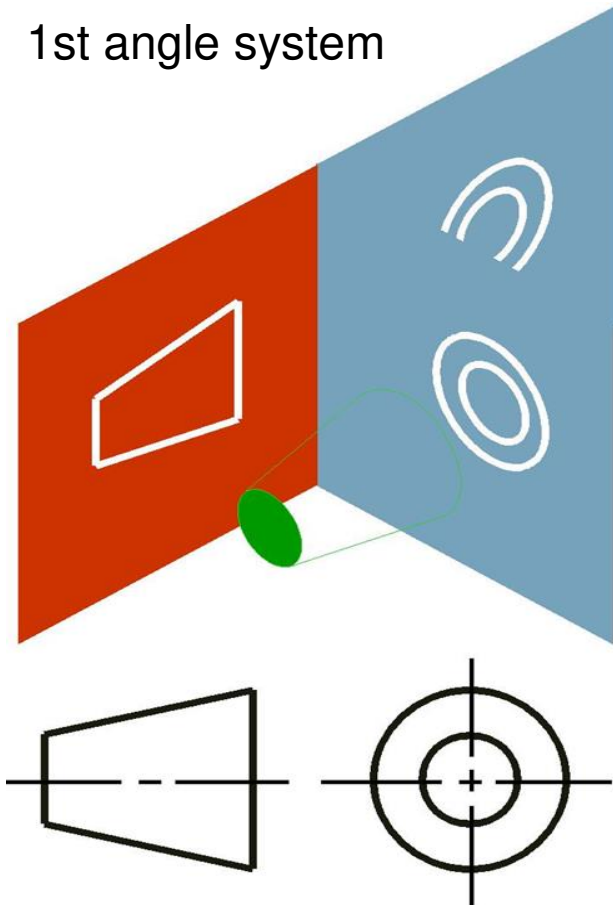
1st angle system

3rd angle system

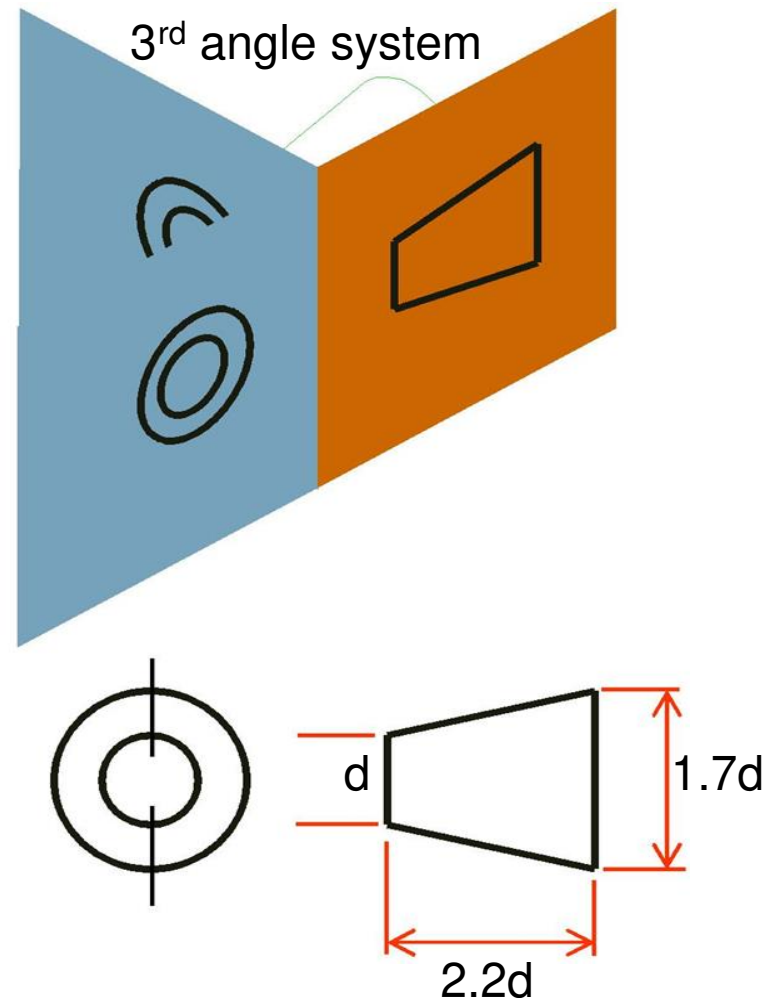


Projection Symbols

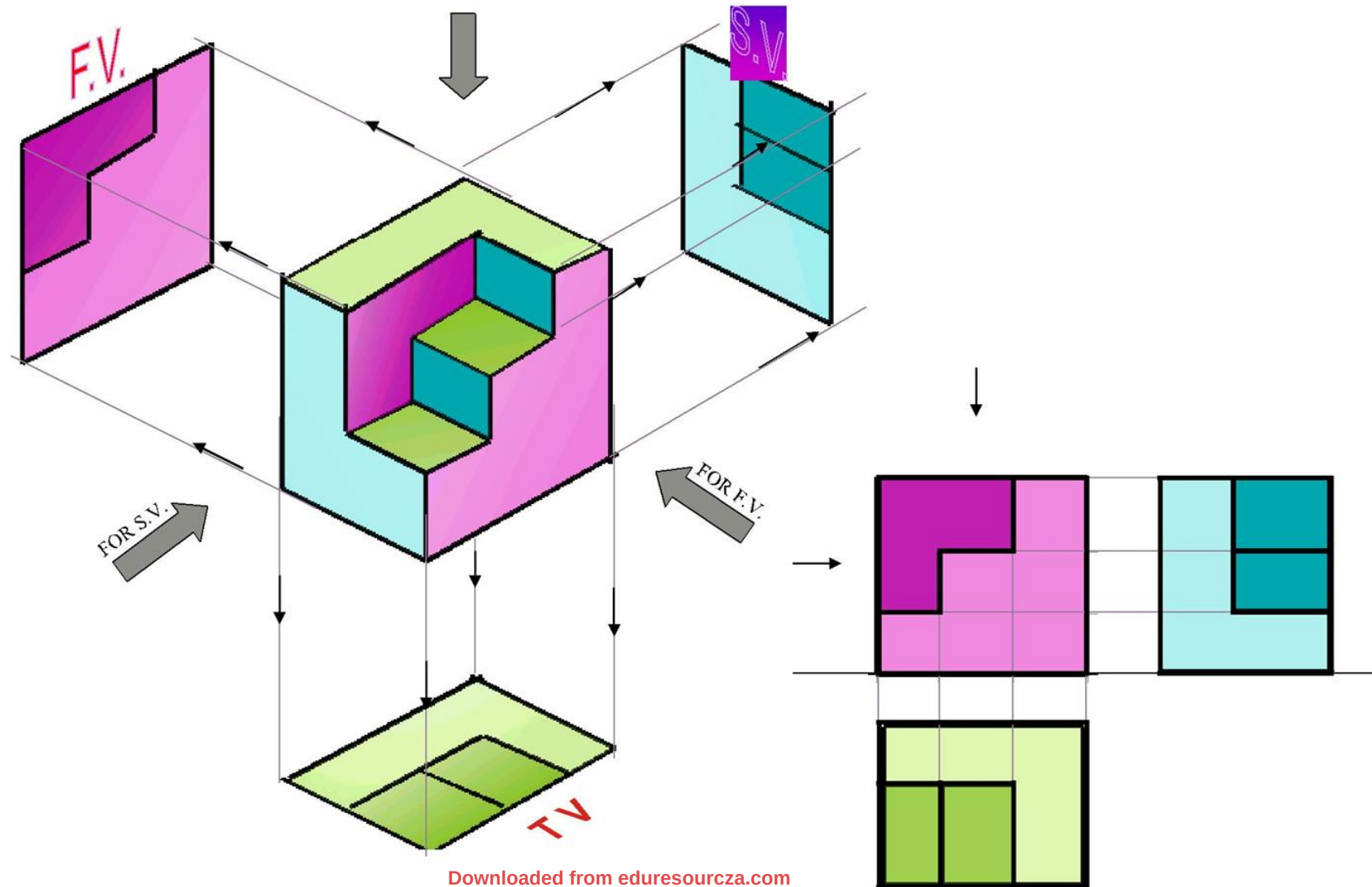
1st angle system



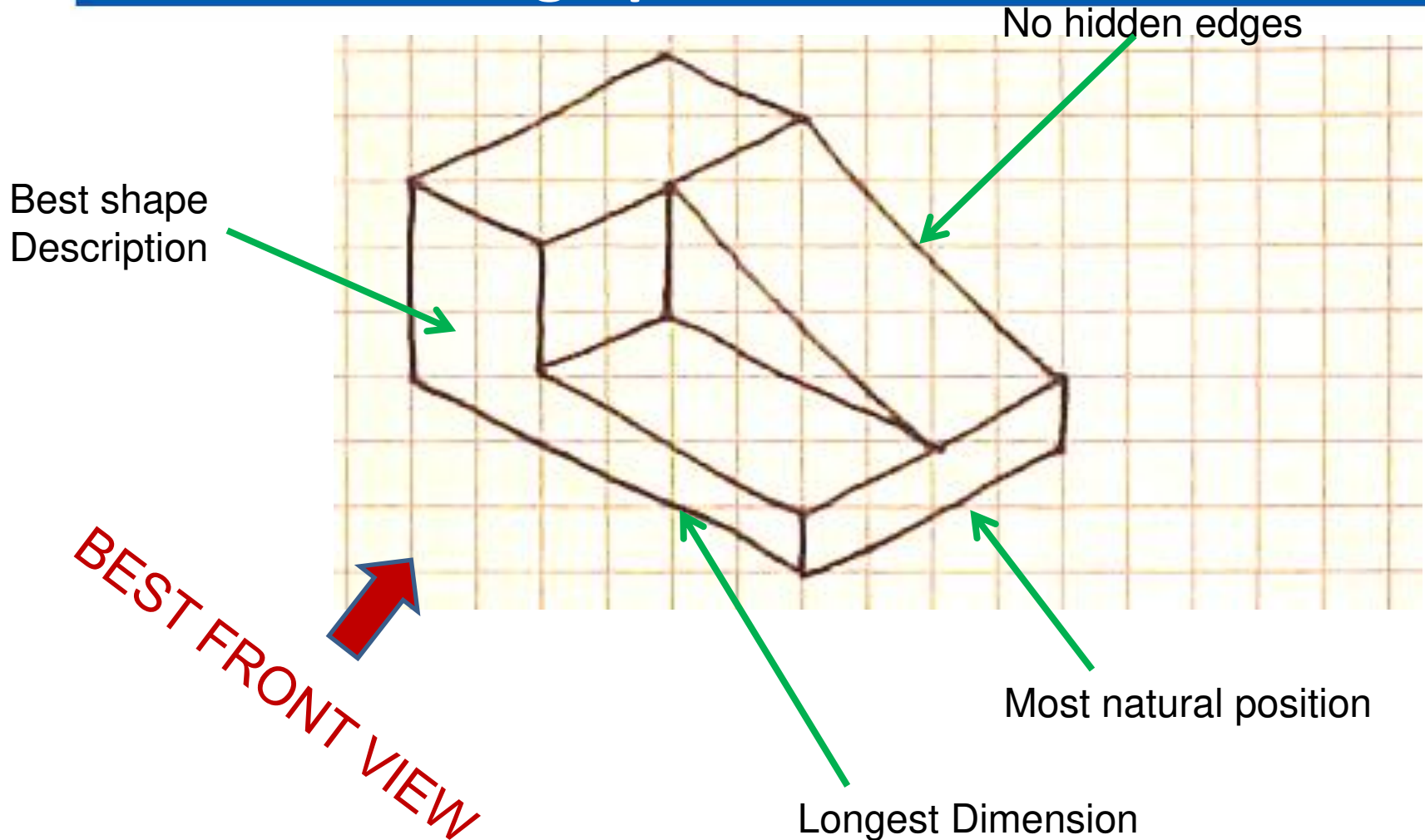
3rd angle system



Example



Orthographic View Selection



Exercise ref. pg. 53

Figure 1

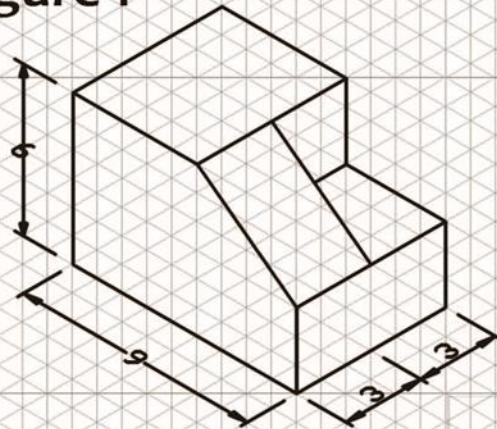


Figure 2

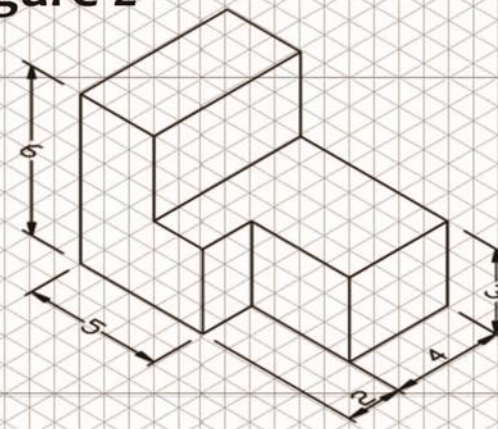


Figure 3

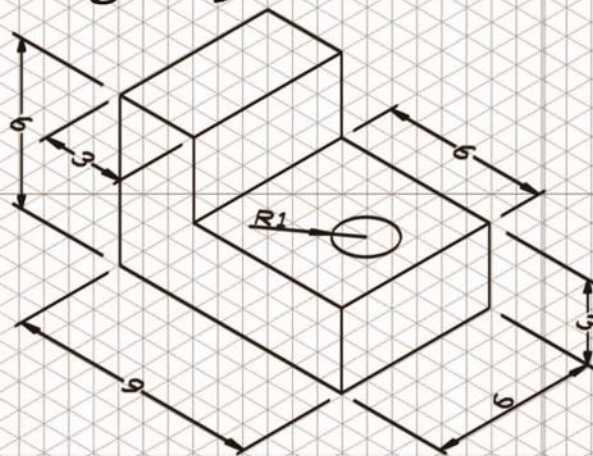
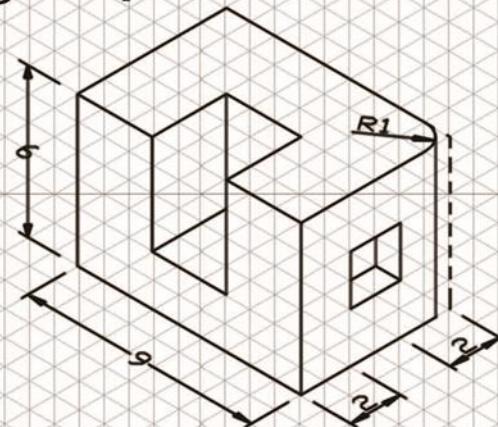


Figure 4



Activity 6 – Isometric Projection

Time = 90 minutes

Method: 

Outcomes:

At the end of this activity participants should be able to:

- Draw an isometric view from the given orthographic views
- Position the views correctly according to the given views
- Draw neatly using the correct drawing conventions

Resources:

- Videos
- Participants Manual

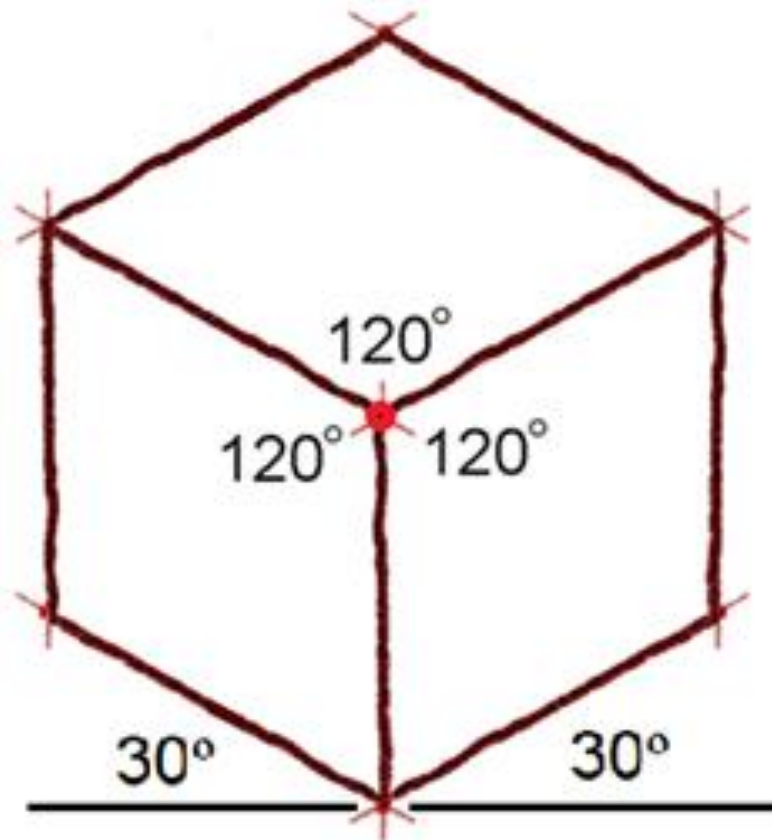
Isometric drawing

An isometric drawing is a pictorial (picture-like) representation of an object, where all the three sides are drawn at full scale. This means that no sides are shortened to make the object look real (like in the Cabinet oblique drawings). Isometric drawings are positioned at 30° to the horizontal on both sloping sides. Isometric means equal measure.

Characteristics of an Isometric Drawing

- Three adjacent faces on a cube will share a single point
- Edges converge at one point will appear as 120 degree angles or 30 degrees from the horizon line
- These three edges represent height, width, and depth

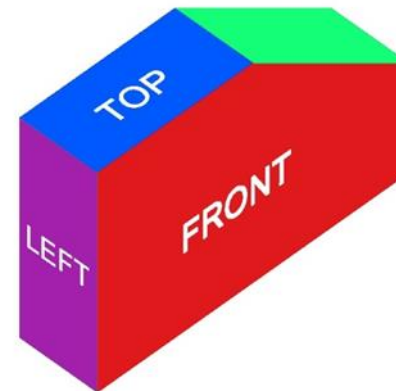
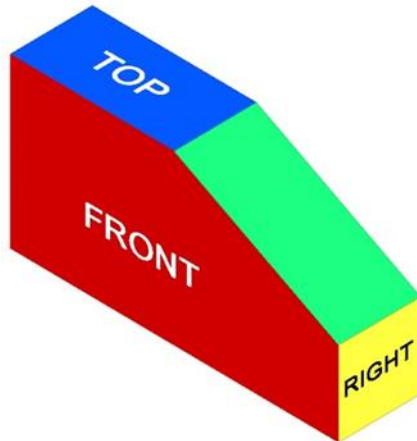
Isometric Illustration



Analysis of the FRONT VIEW

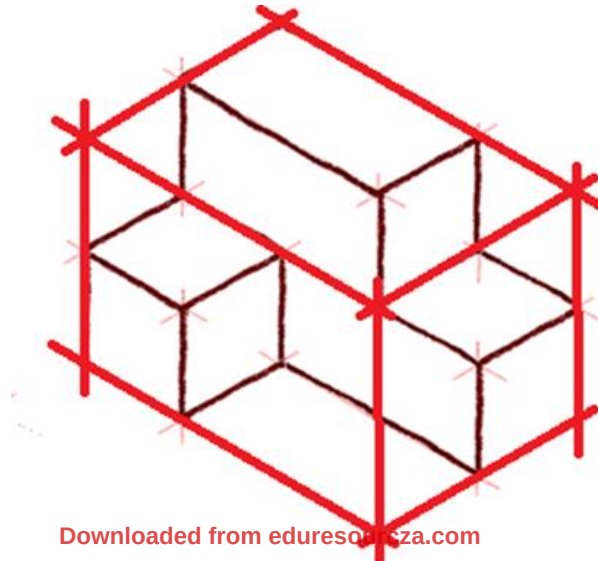
The front view would usually be the longest side or the side that shows more detail.

Depending on which side it is, you then can either have a left side view, or a right side view.



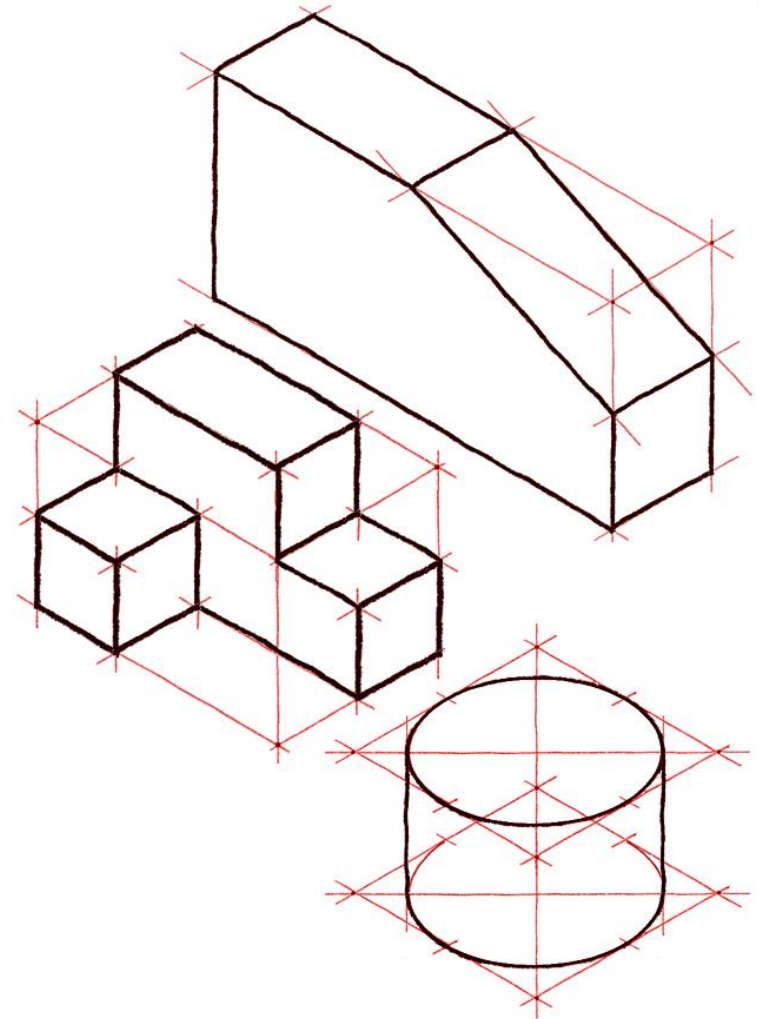
Example

- The box method is a sketching technique used to maintain proportionality drawing an isometric view. It starts with a sketcher envisioning an object contained within an imaginary box.



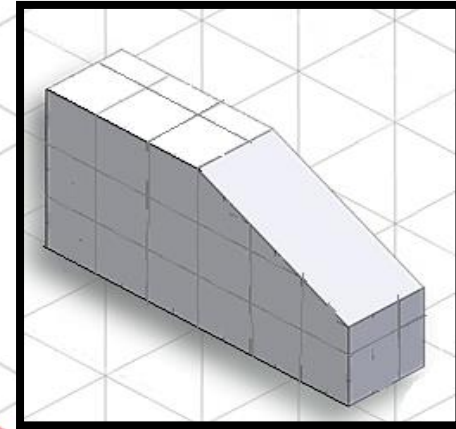
Isometric Sketching

- The following examples show steps used to create isometric sketches of simple geometric objects, including tonal shading techniques.



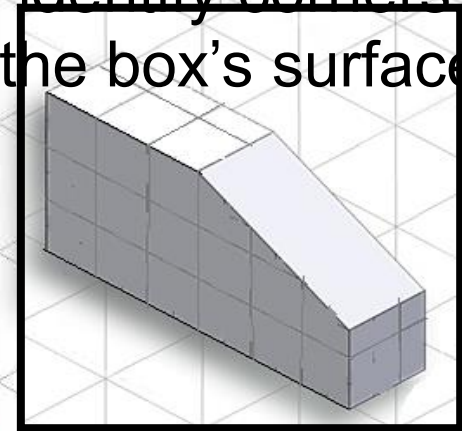
Step 1: Construct the Box

Lay out the box that will contain the isometric view using points and construction lines.



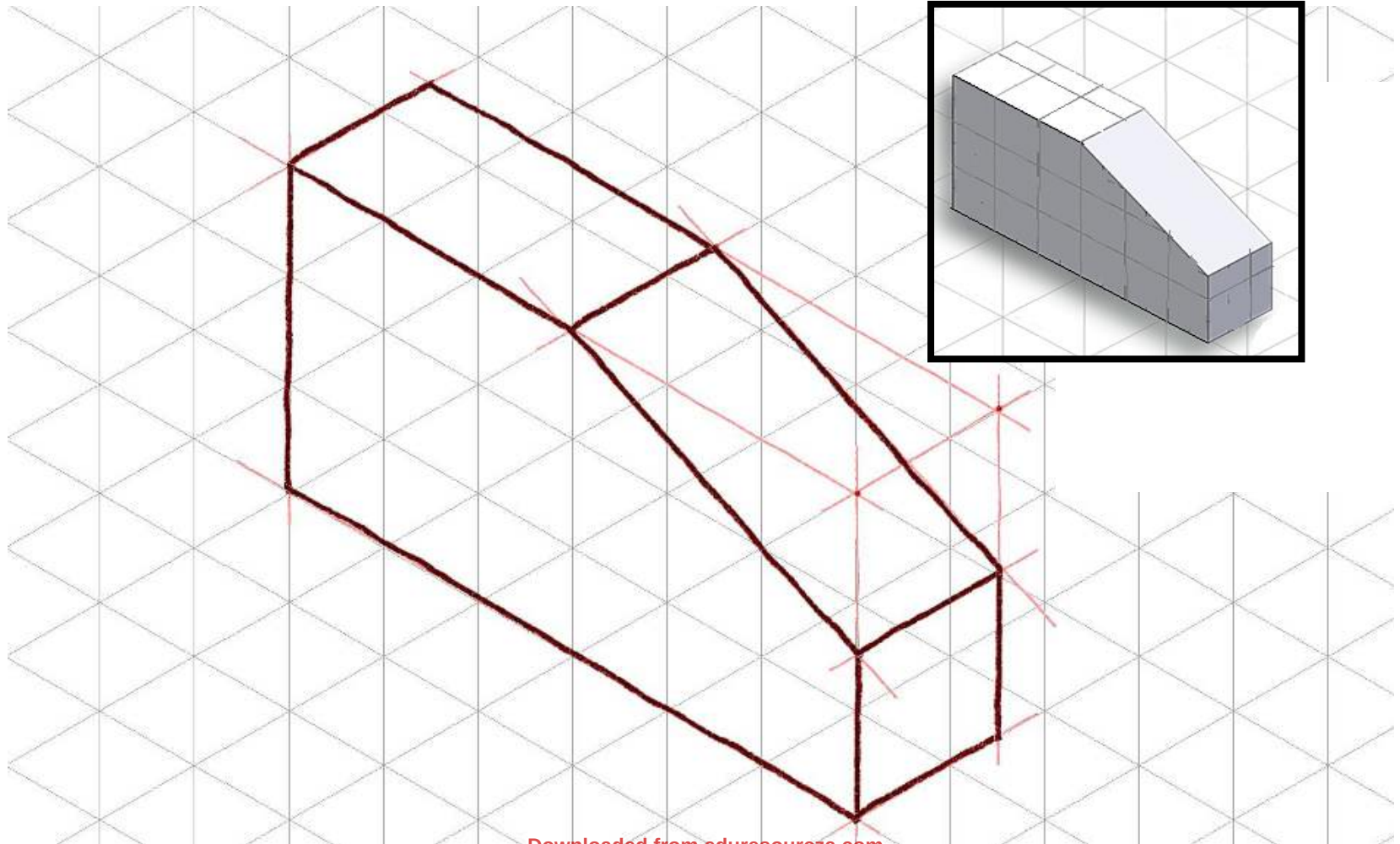
Step 2: Outside Faces

Use points and construction lines to identify corners and edges of object faces that occur on the box's surface.



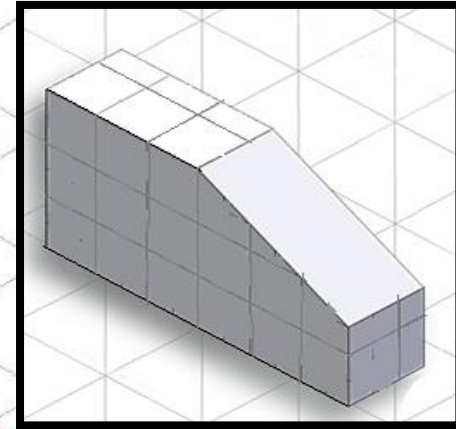
Step 3: Outside Faces (continued)

Trace visible edges of parts with thick, dark object lines.



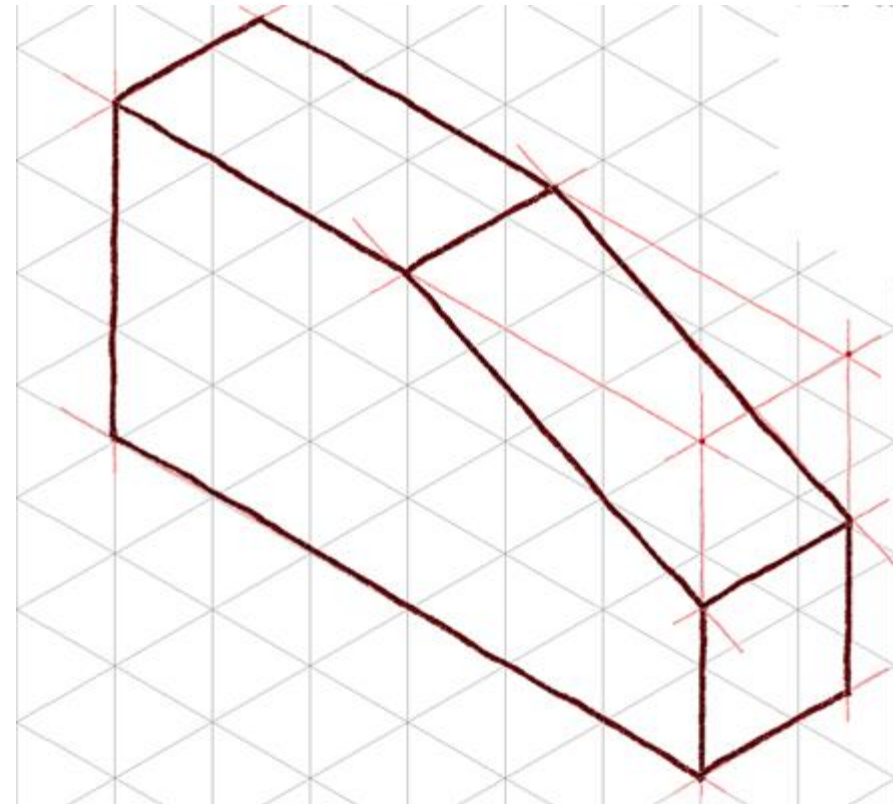
Step 4: Inside Faces

In this case, there are no inside faces.

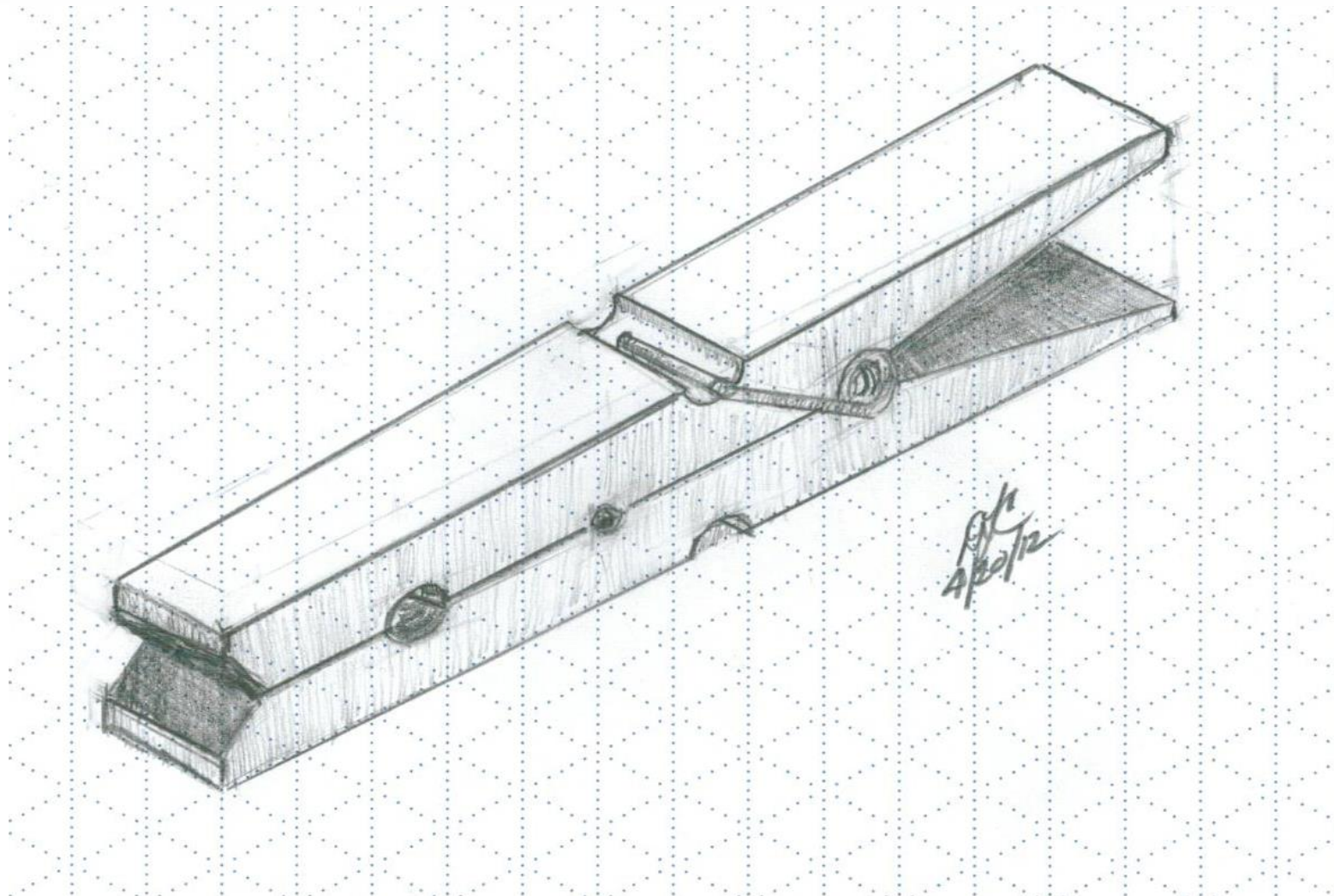


Step 5: Tonal Shading

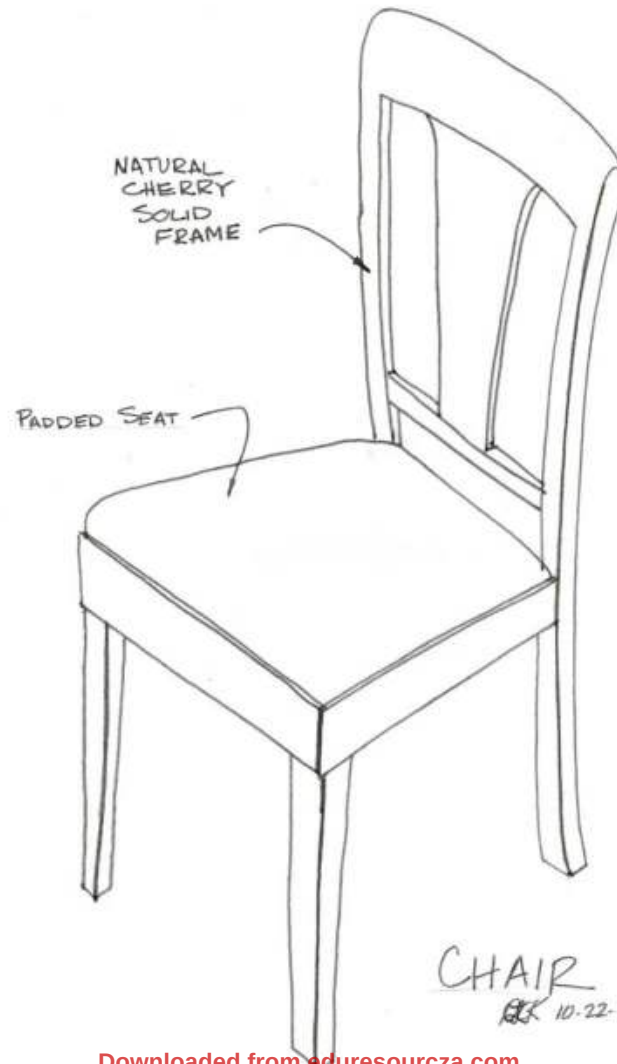
- Decide the light source position, and add tonal shading to two of the three faces.
- A shading option is to use parallel lines drawn closely together on a face.
- Increase contrast by cross-hatching lines on darkest face.



Isometric Sketch Example



Isometric Sketch Example

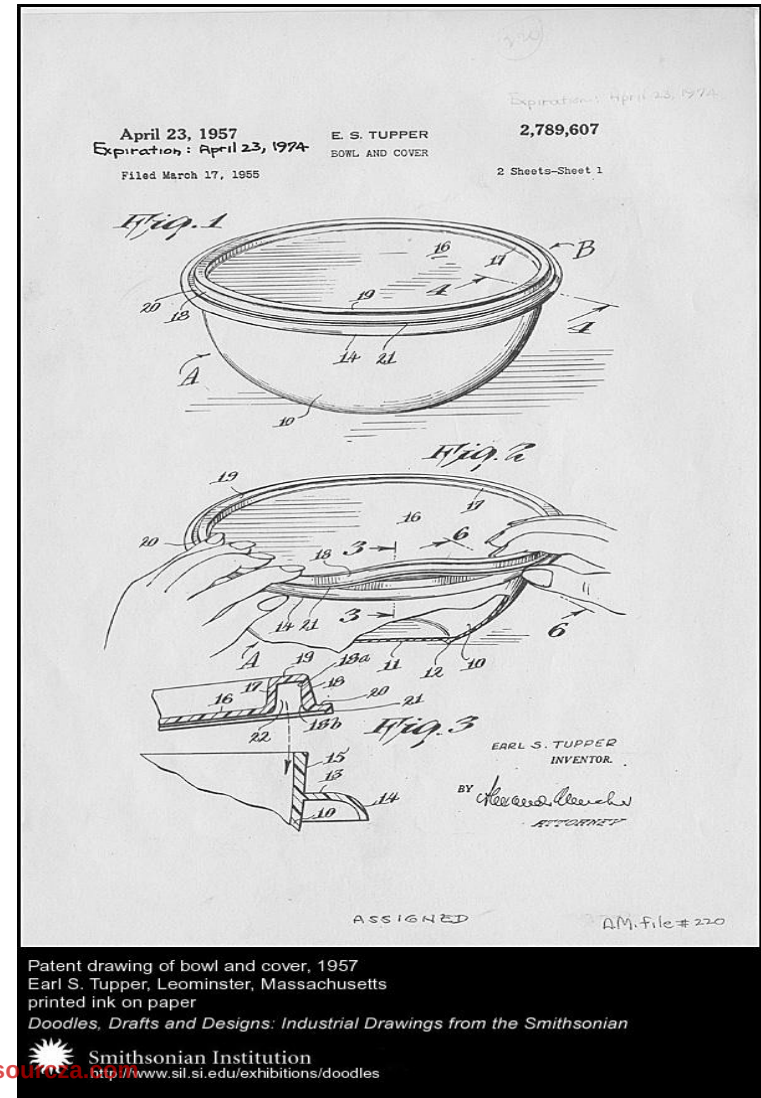


CHAIR
10.22.12

Isometric Sketch

Historical Example

- Earl Silas Tupper (1907–1983) invented an air-tight Tupper Seal in 1947
- Patent drawings of bowl and cover, 1957 (isometric pictorial)

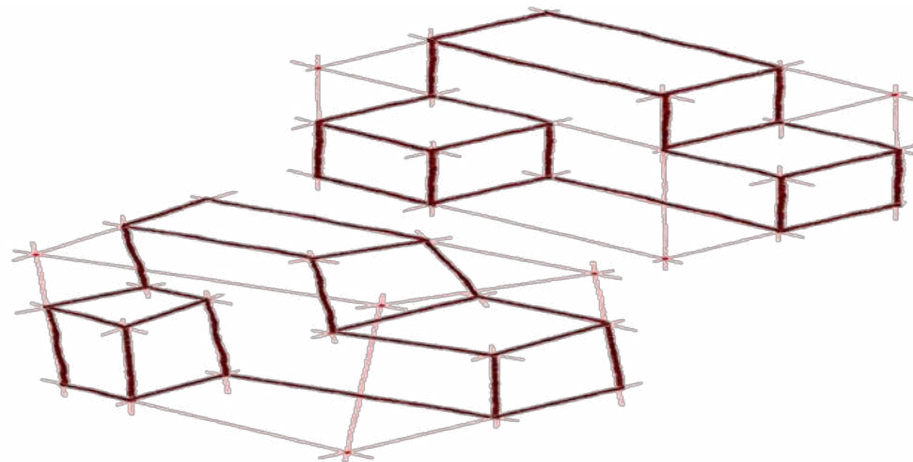


Courtesy Smithsonian Institute:

<http://sil.si.edu/exhibitions/doodles>

Let's Practice

Good sketching requires a sense of proportion, and the ability to estimate size, distance, angles, and other spatial relationships.

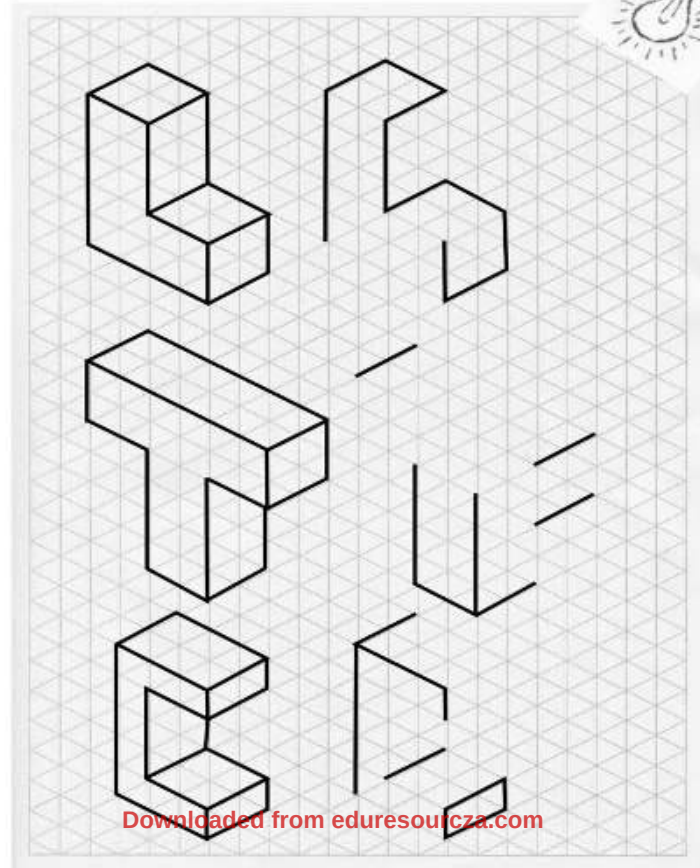


Exercise - ref pg. 57

Use the given orthographic views to draw the isometric view of the models.

Name _____

Form _____

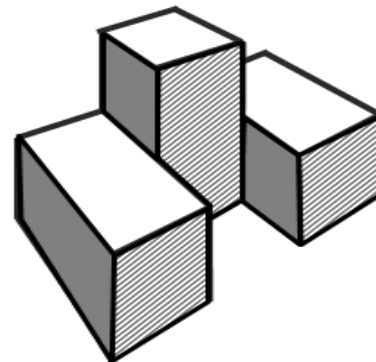


Activity 7-

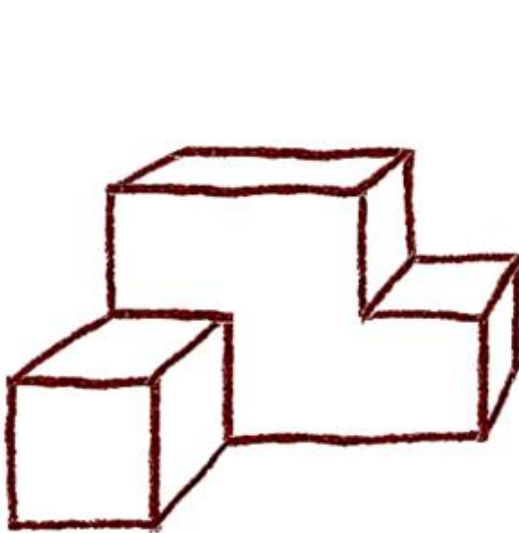
Perspective Sketching

Perspective Drawings

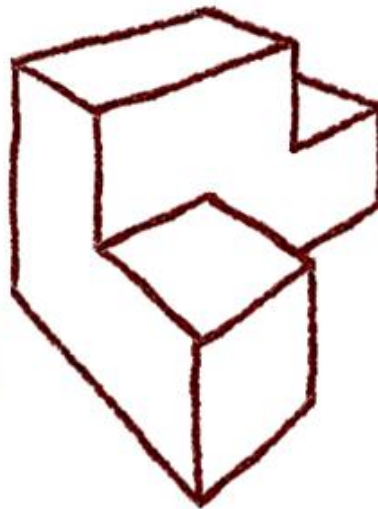
A perspective drawing offers the most realistic three-dimensional view of all the pictorial methods, because it portrays the object in a manner that is most similar to how the human eye perceives the visual world.



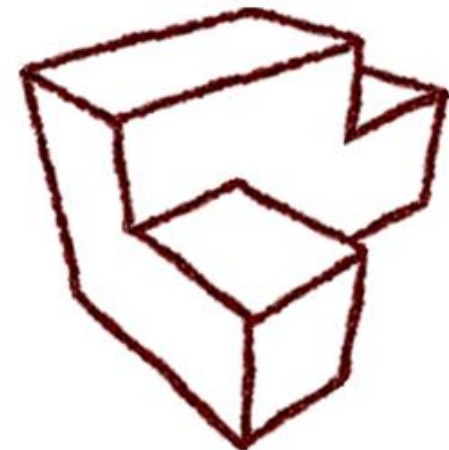
Perspective Drawings



1-Point



2-Point

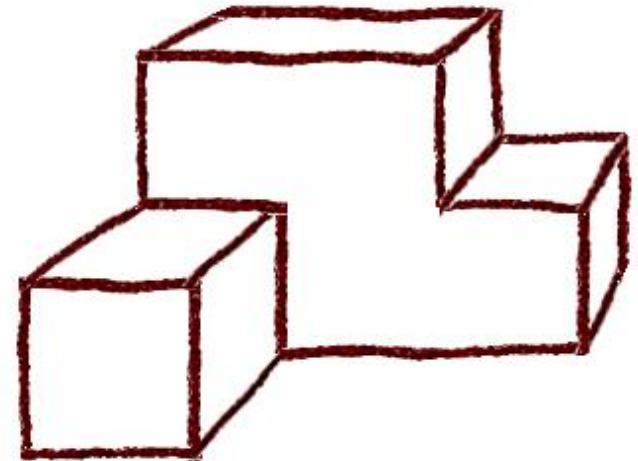


3-Point

One-Point Perspective

The **one-point** perspective is relatively simple to make, but is somewhat awkward in appearance when compared to other types of pictorials.

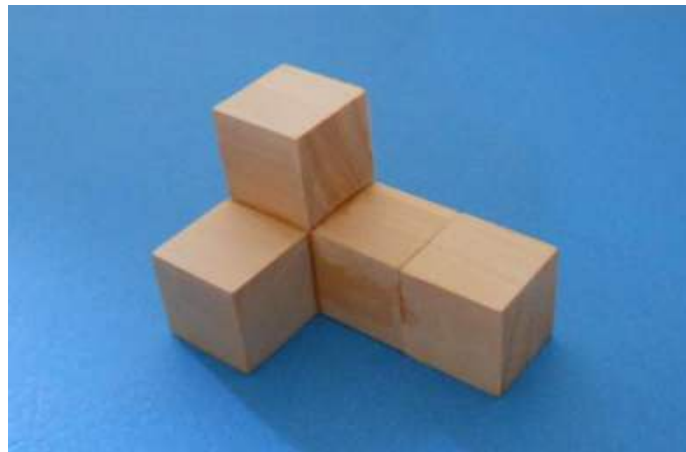
- A horizontal line represents the horizon.
- **One** vanishing point is identified on the horizon line.
- A series of lines are drawn from distinctive points on the object to the vanishing point, outlining the object being constructed.



One-Point Perspective

The following slides show the steps in creating a one-point perspective of the puzzle piece shown below.

Two different methods will be demonstrated.



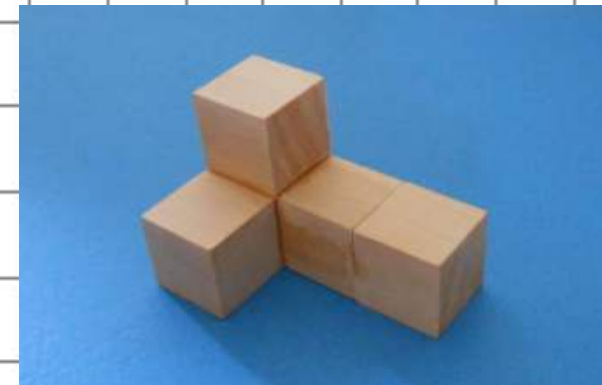
Horizon Line

V.P.

METHOD 1—The Box Method

1. Sketch a horizontal line across the upper portion of the paper to represent the horizon, and identify a vanishing point.

The vanishing point can be placed anywhere along the horizon line.



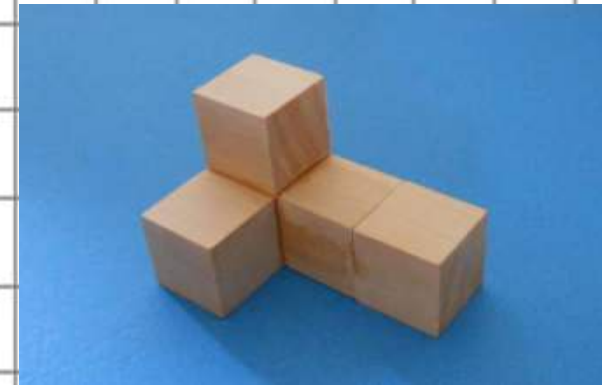
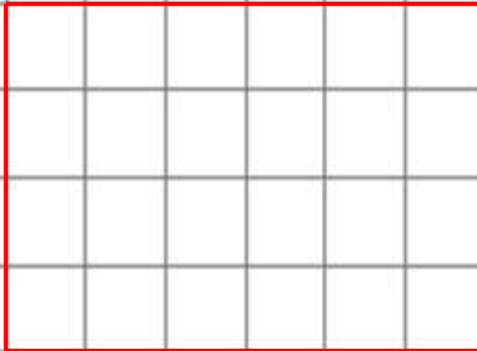
One-Point Perspective

Horizon Line

V.P.

2. Sketch the front face of a box representing the overall size of the object.

The front face is constructed with vertical height lines and horizontal width lines.

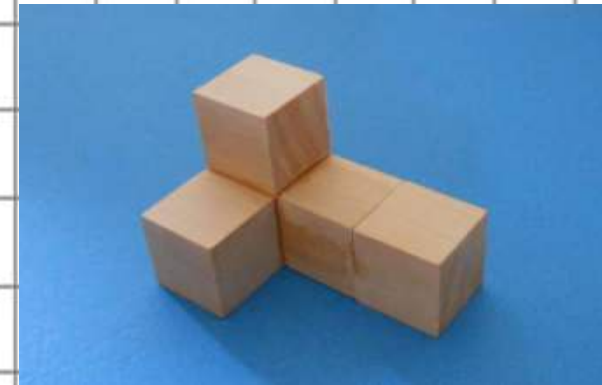
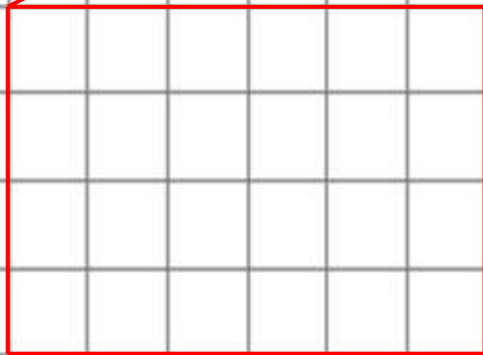


One-Point Perspective

Horizon Line

V.P.

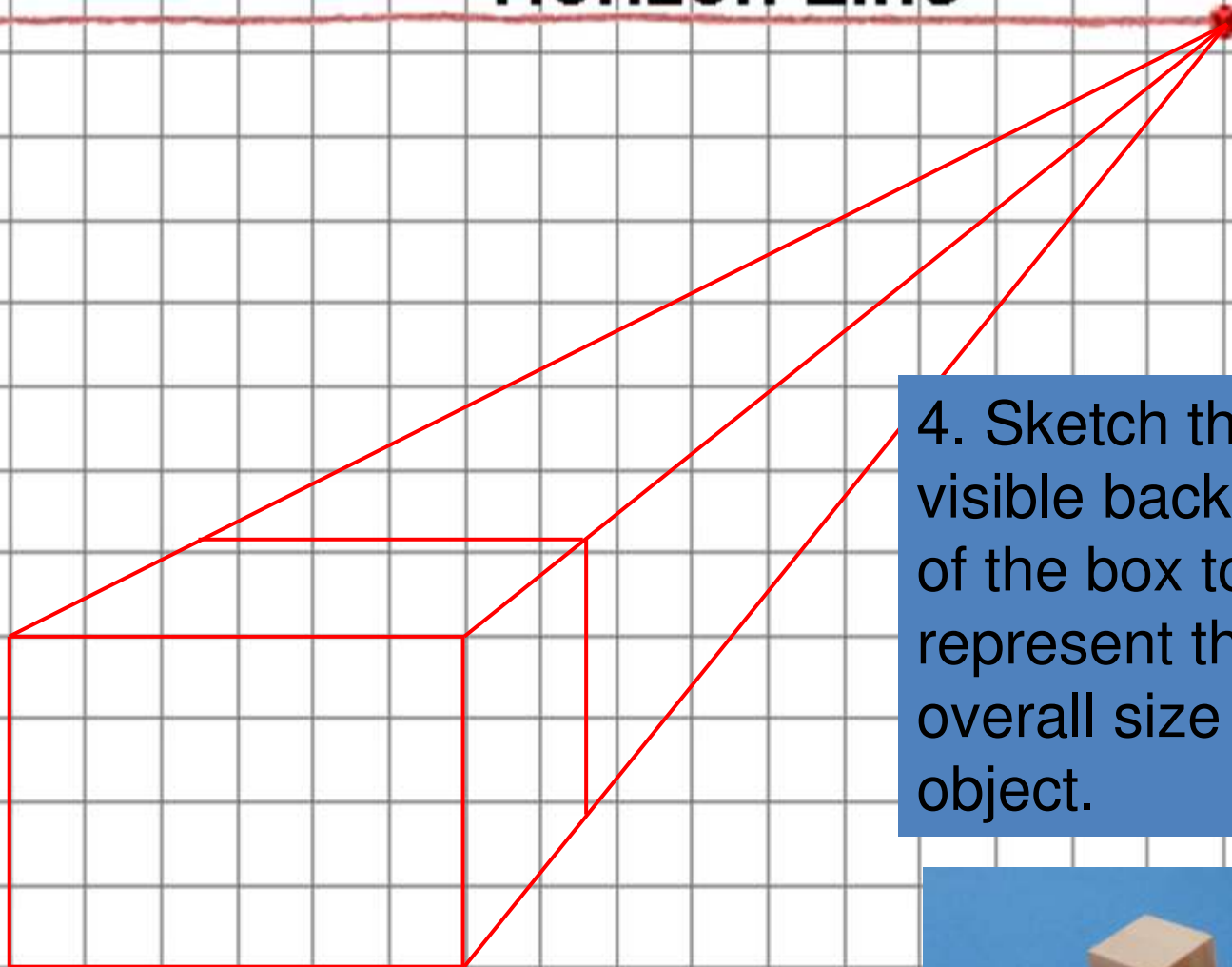
3. Sketch construction lines from the corners of the front face of the box back to the vanishing point.



One-Point Perspective

Horizon Line

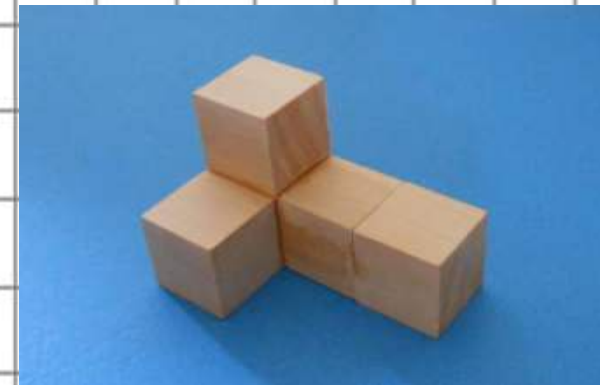
V.P.



4. Sketch the visible back edges of the box to represent the overall size of the object.

Note that you will have to estimate the depth of the object.

A⁺

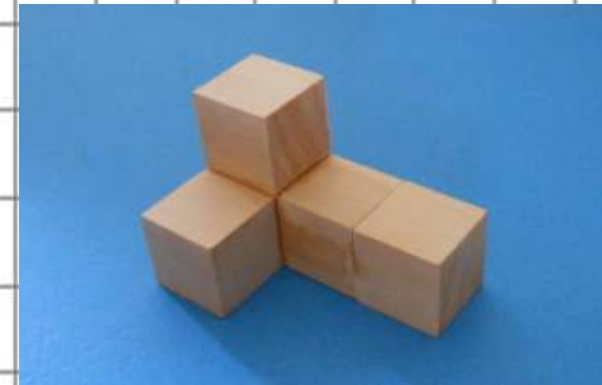
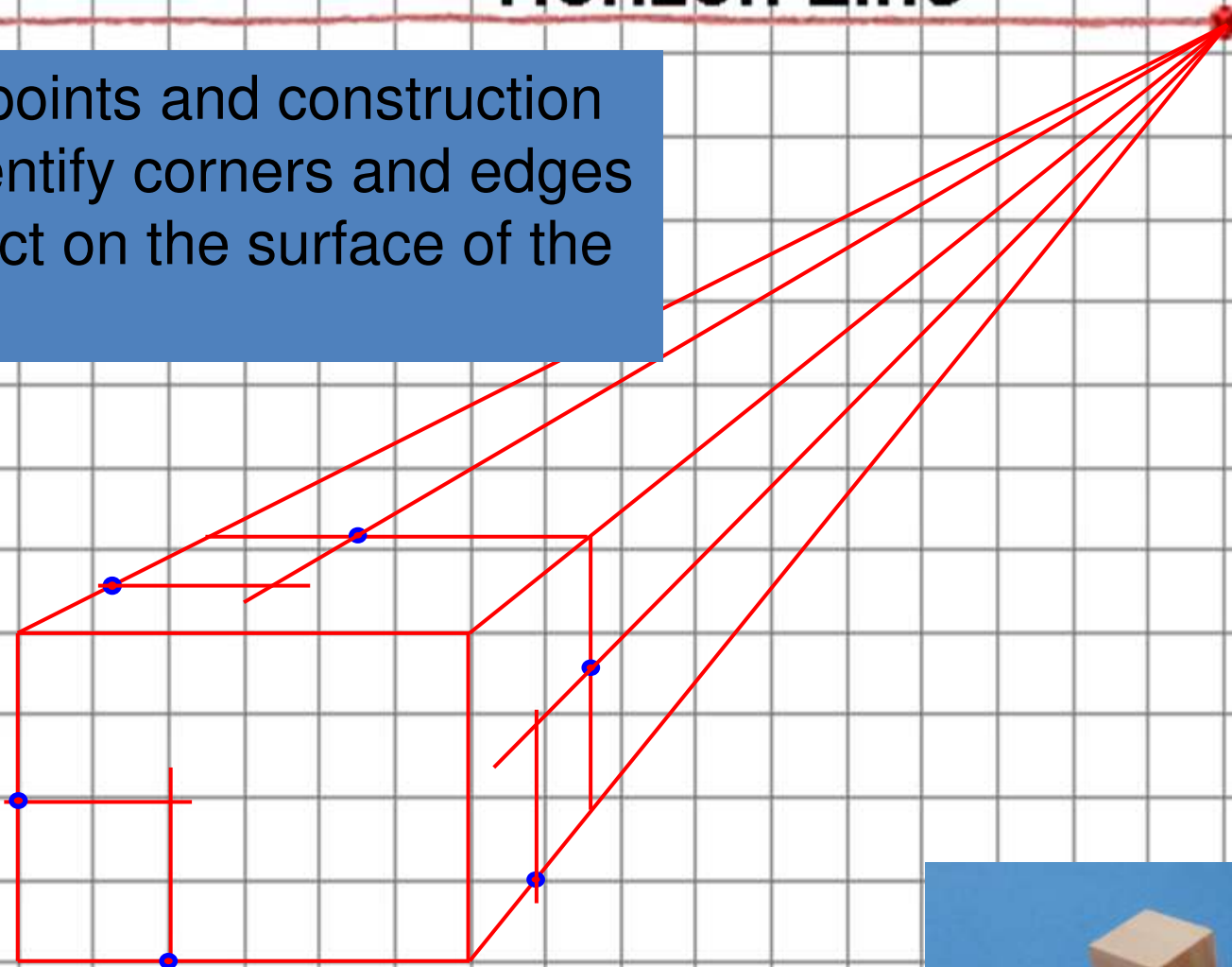


One-Point Perspective

Horizon Line

V.P.

5. Locate points and construction lines to identify corners and edges of the object on the surface of the box.

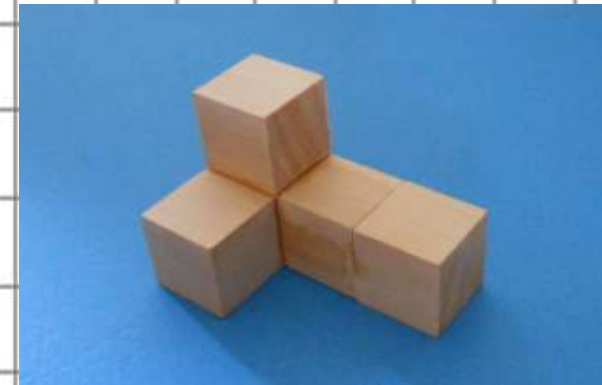
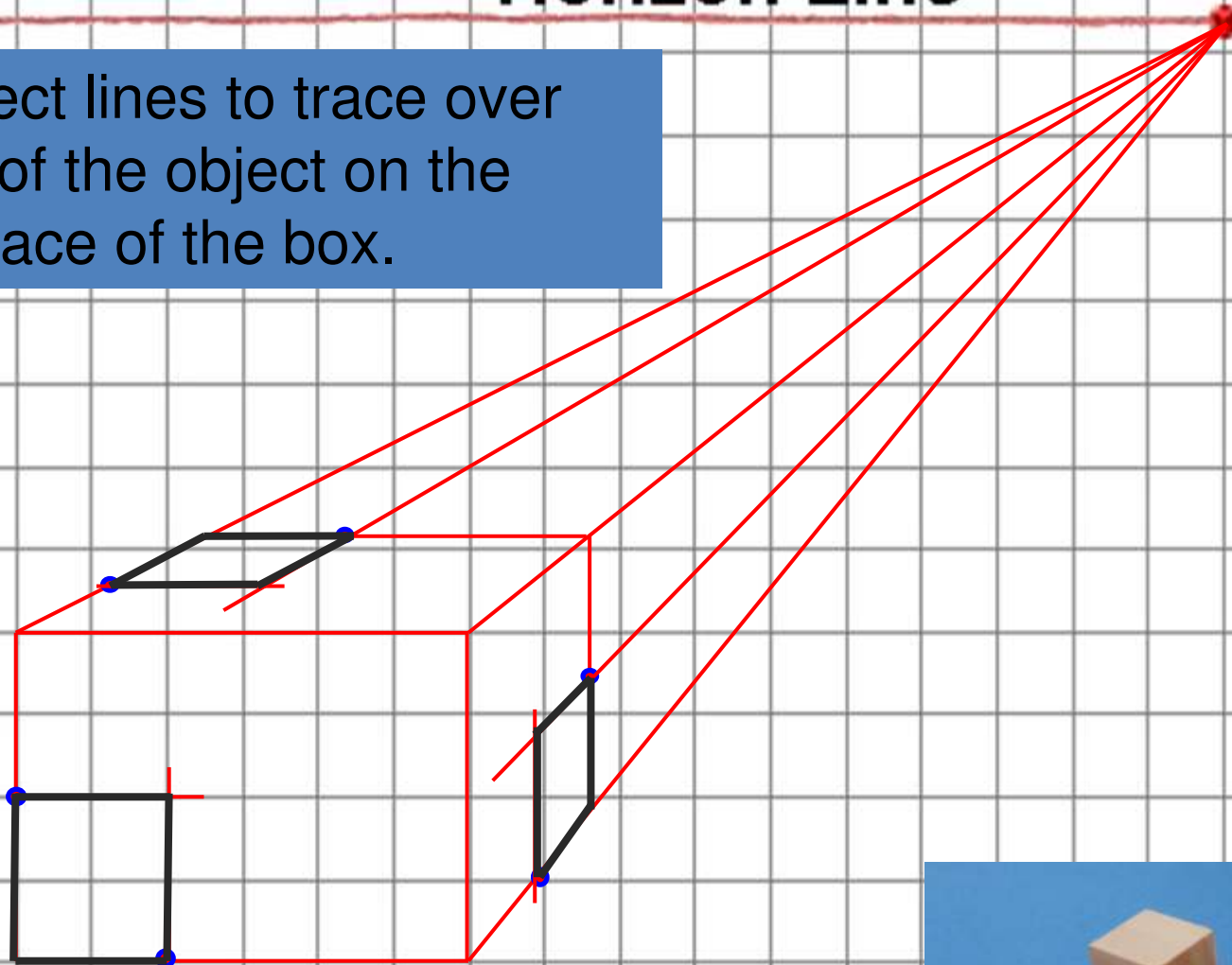


One-Point Perspective

Horizon Line

V.P.

6. Use object lines to trace over the edges of the object on the visible surface of the box.

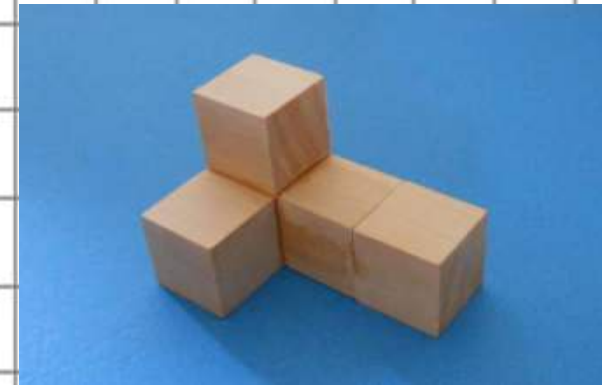
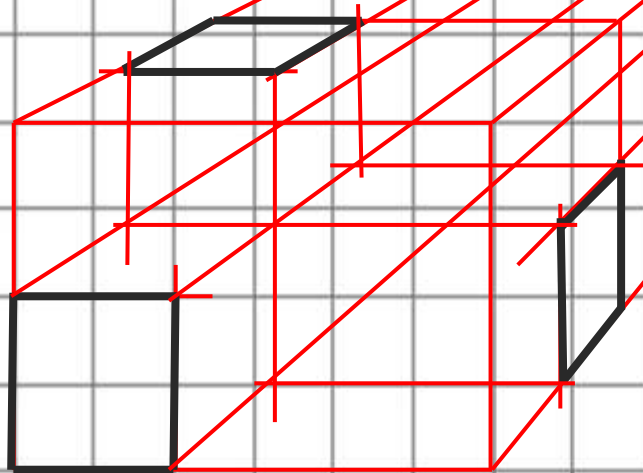


One-Point Perspective

Horizon Line

V.P.

7. Continue to use construction lines to delineate the remaining corners and edges of the object inside the box.

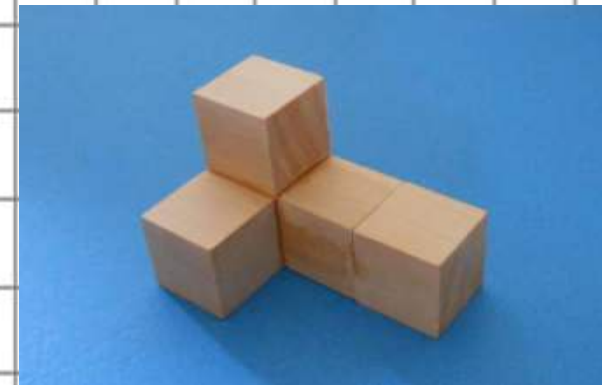
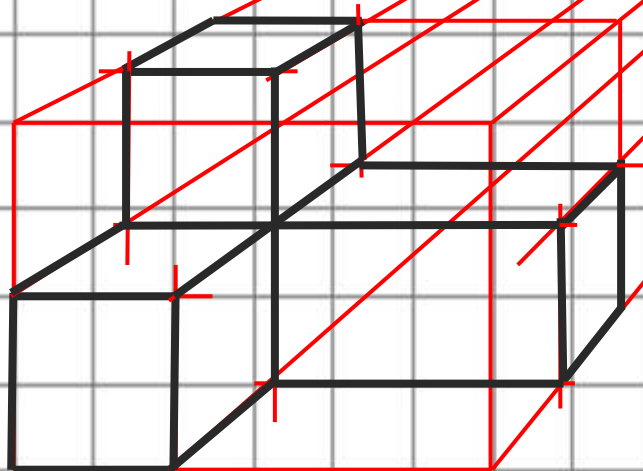


One-Point Perspective

Horizon Line

V.P.

8. Trace over the construction lines with object lines to define the object.



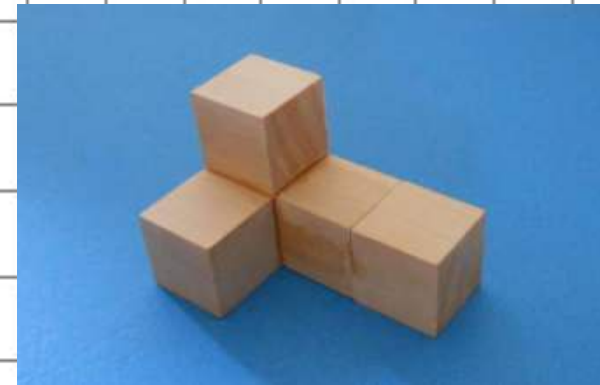
Horizon Line

V.P.

METHOD 2

1. Sketch a horizontal line across the upper portion of the paper to represent the horizon, and identify a vanishing point.

The vanishing point can be placed anywhere along the horizon line.

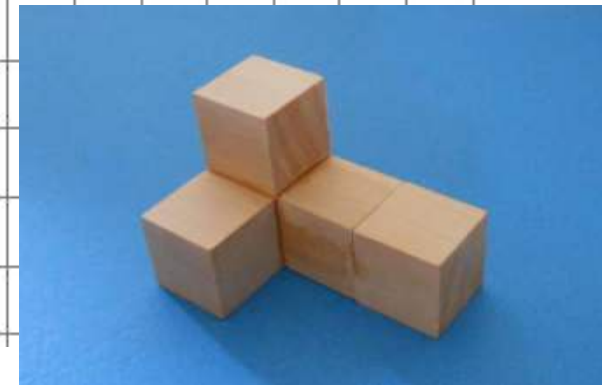


One-Point Perspective

Horizon Line

V.P.

2. Sketch the front most face of the object such that the height lines are vertical and the width lines are horizontal.



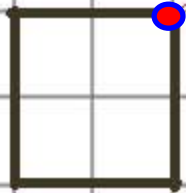
One-Point Perspective

Downloaded from eduresourcza.com

Horizon Line

V.P.

3. Project the corners of the front face back to the vanishing point using construction lines.



A⁺

Downloaded from eduresourcza.com



One-Point Perspective

Downloaded from eduresourcza.com

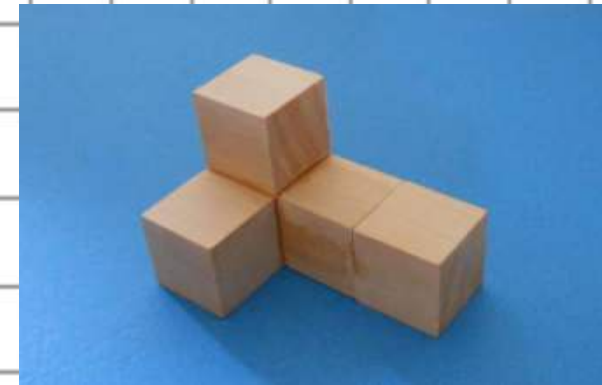
Horizon Line

V.P.

3. Project the corners of the front face back to the vanishing point using construction lines.

A⁺

Downloaded from eduresourcza.com



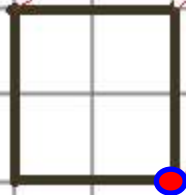
One-Point Perspective

Downloaded from eduresourcza.com

Horizon Line

V.P.

3. Project the corners of the front face back to the vanishing point using construction lines.



A⁺

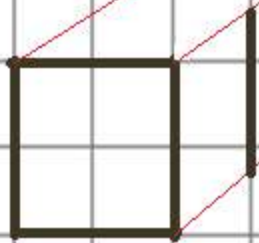
Downloaded from eduresourcza.com



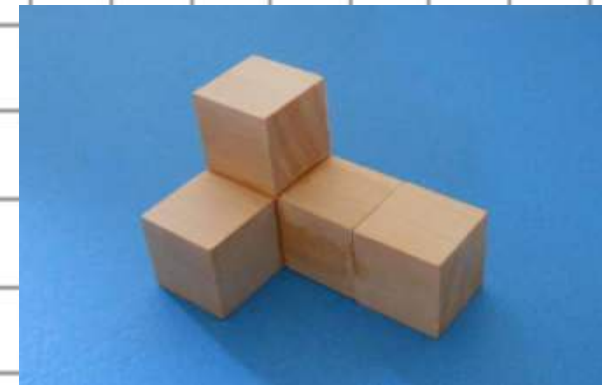
One-Point Perspective

Horizon Line

V.P.



4. Sketch **vertical** object lines to represent the height edges of the object as necessary.

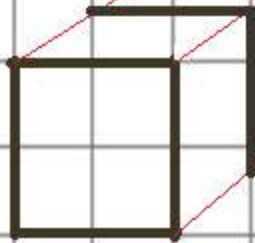


One-Point Perspective

Horizon Line

V.P.

5. Sketch **horizontal** object lines to represent the width edges of the object as necessary.



A⁺

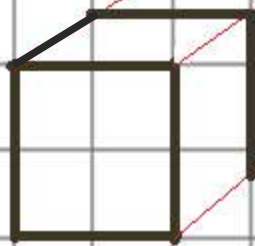


One-Point Perspective

Horizon Line

V.P.

6. Trace over the receding object lines to represent the depth edges of the object as necessary.



A+

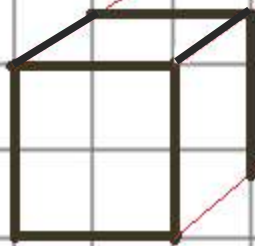


One-Point Perspective

Horizon Line

V.P.

6. Trace over the receding object lines to represent the depth edges of the object as necessary.



A⁺

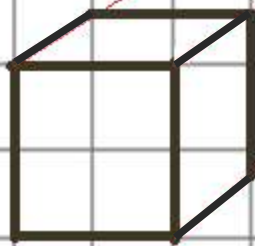


One-Point Perspective

Horizon Line

V.P.

6. Trace over the receding object lines to represent the depth edges of the object as necessary.



A⁺



One-Point Perspective

Horizon Line

V.P.

7. Continue to sketch height and width object lines as vertical and horizontal lines as necessary to define parts of the object.



A+



One-Point Perspective

Horizon Line

V.P.

7. Continue to sketch height and width object lines as vertical and horizontal lines as necessary to define parts of the object.



One-Point Perspective

Horizon Line

V.P.

7. Continue to sketch height and width object lines as vertical and horizontal lines as necessary to define parts of the object.



One-Point Perspective

Downloaded from eduresourcza.com

Horizon Line

V.P.



8. Continue to use construction lines to project object corners back to the vanishing point as necessary.

A⁺

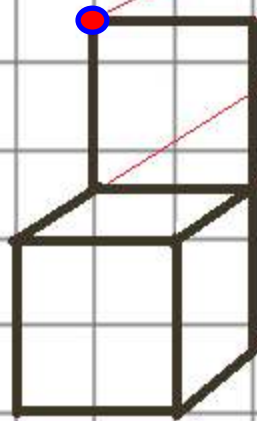
Downloaded from eduresourcza.com



One-Point Perspective

Horizon Line

V.P.



8. Continue to use construction lines to project object corners back to the vanishing point as necessary.

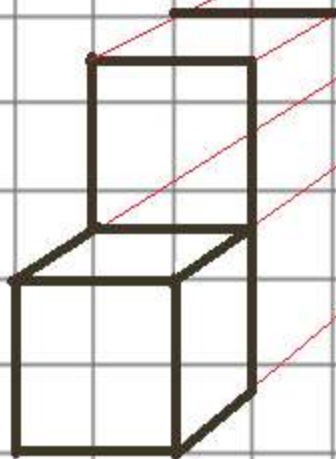


One-Point Perspective

Downloaded from eduresourcza.com

Horizon Line

V.P.



A⁺

Downloaded from eduresourcza.com

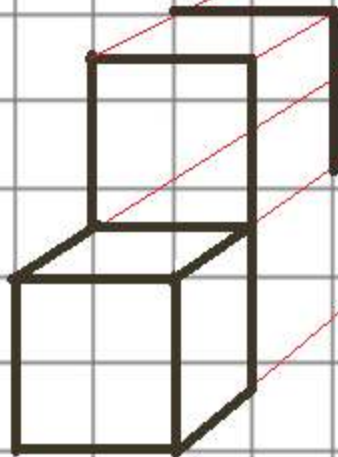


One-Point Perspective

Downloaded from eduresourcza.com

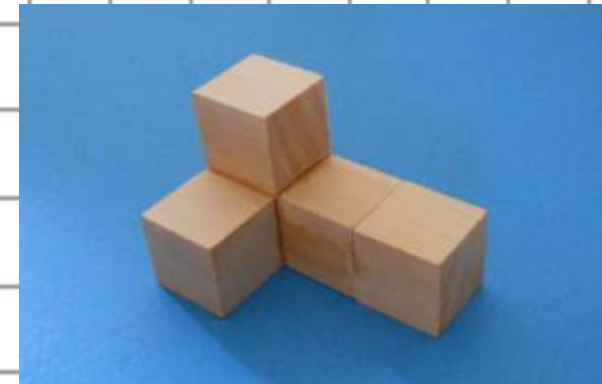
Horizon Line

V.P.



A⁺

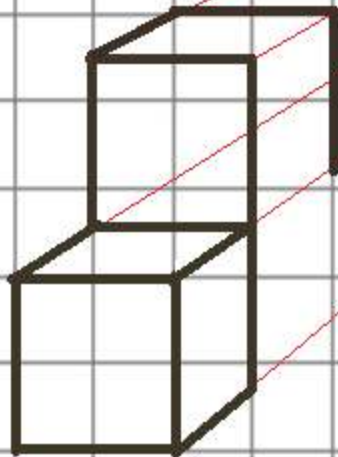
Downloaded from eduresourcza.com



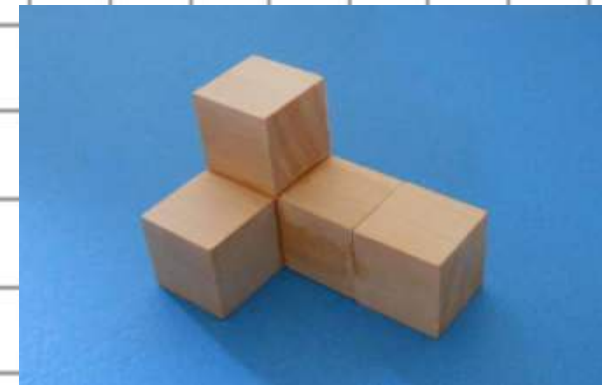
One-Point Perspective

Horizon Line

V.P.



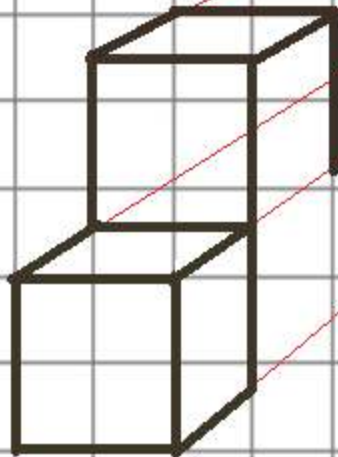
9. Continue to sketch object lines along the construction lines to represent the depth edges as necessary.



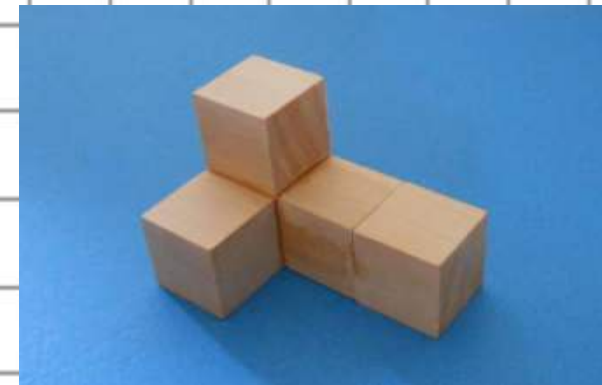
One-Point Perspective

Horizon Line

V.P.



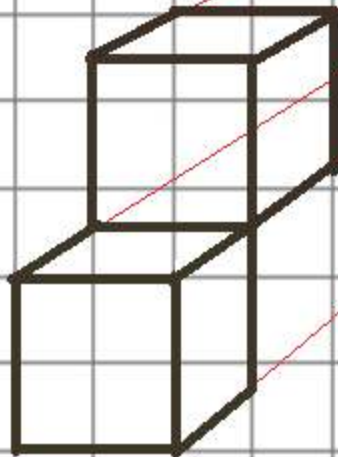
9. Continue to sketch object lines along the construction lines to represent the depth edges as necessary.



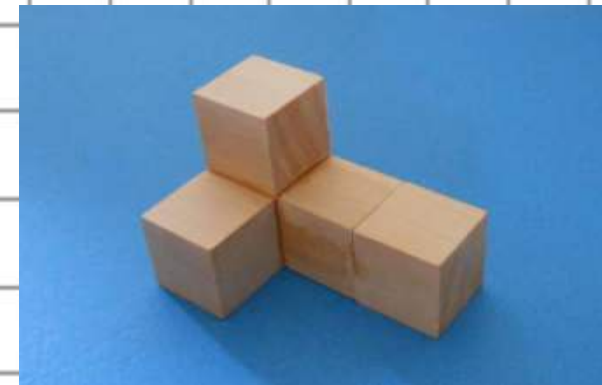
One-Point Perspective

Horizon Line

V.P.



9. Continue to sketch object lines along the construction lines to represent the depth edges as necessary.

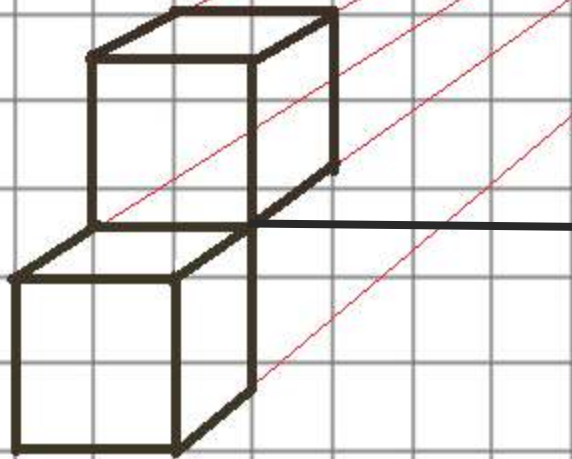


One-Point Perspective

Downloaded from eduresourcza.com

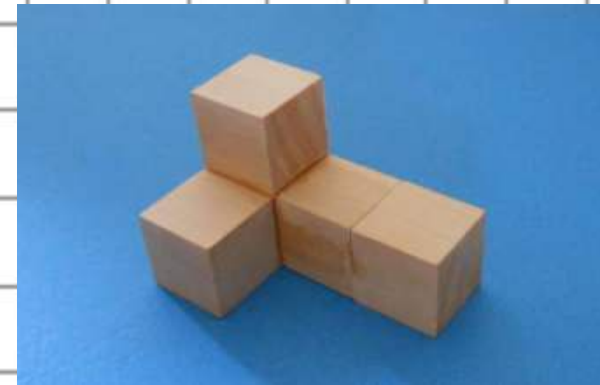
Horizon Line

V.P.



A⁺

Downloaded from eduresourcza.com

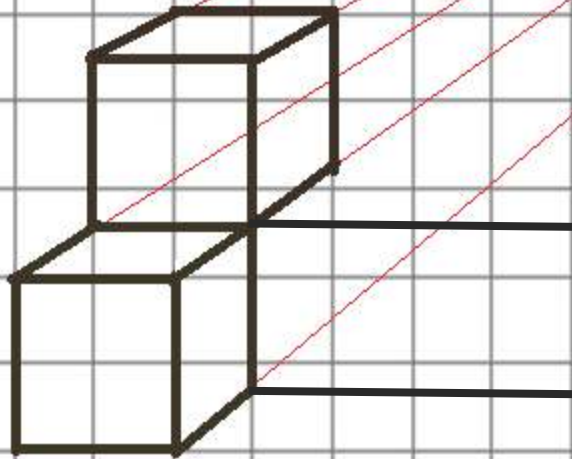


One-Point Perspective

Downloaded from eduresourcza.com

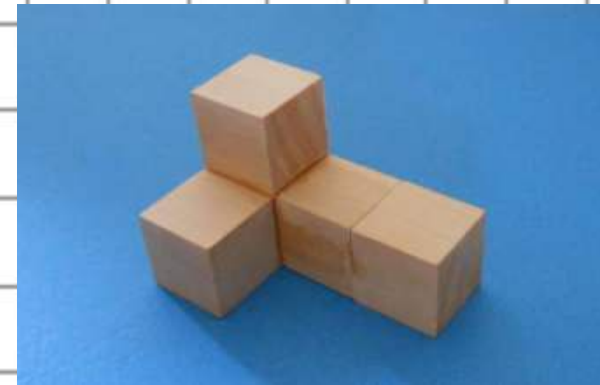
Horizon Line

V.P.



A⁺

Downloaded from eduresourcza.com

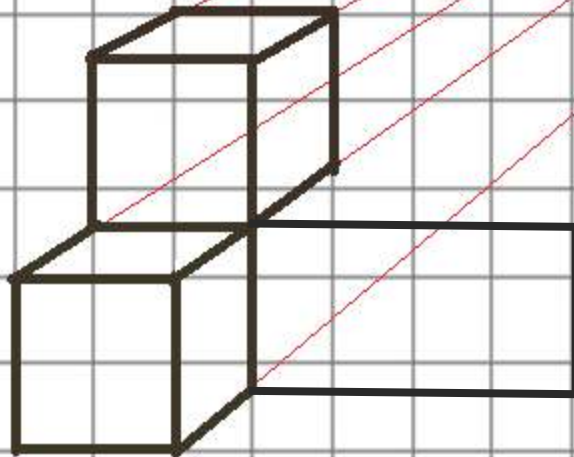


One-Point Perspective

Downloaded from eduresourcza.com

Horizon Line

V.P.



A⁺

Downloaded from eduresourcza.com

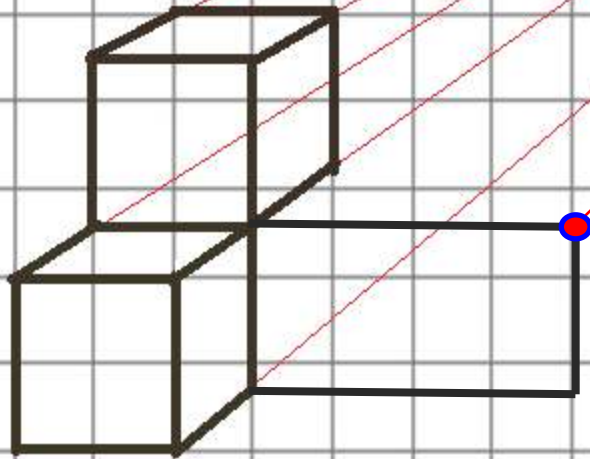


One-Point Perspective

Downloaded from eduresourcza.com

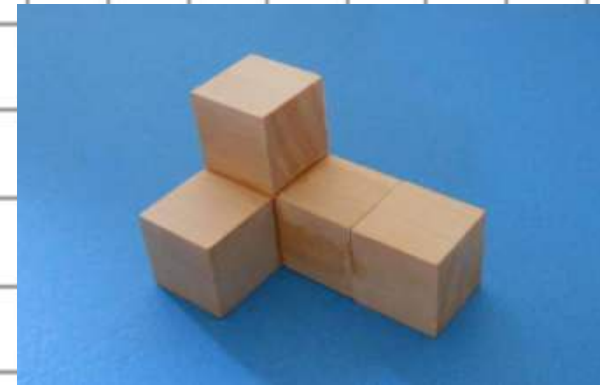
Horizon Line

V.P.



A⁺

Downloaded from eduresourcza.com

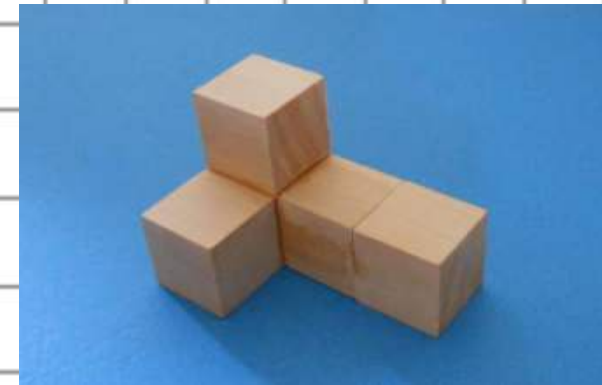
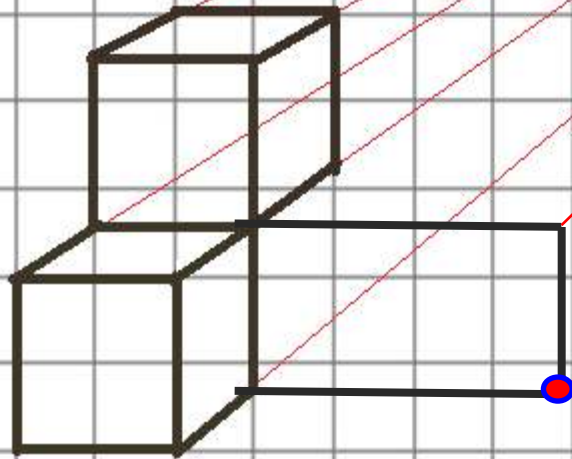


One-Point Perspective

Downloaded from eduresourcza.com

Horizon Line

V.P.



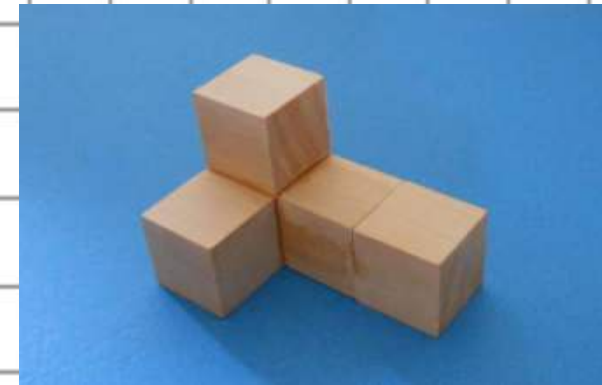
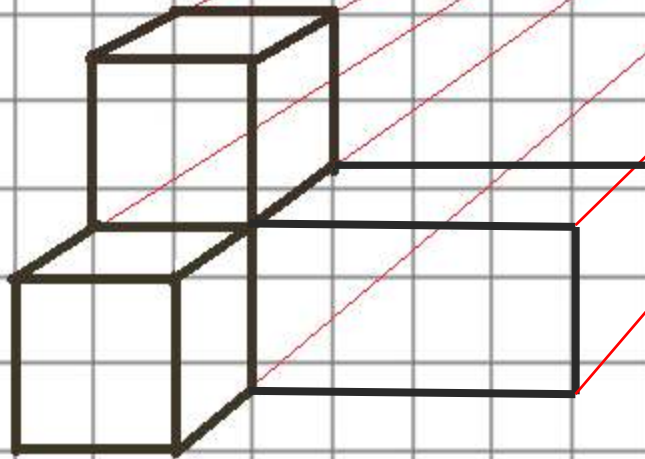
Downloaded from eduresourcza.com

One-Point Perspective

Downloaded from eduresourceza.com

Horizon Line

V.P.



A⁺

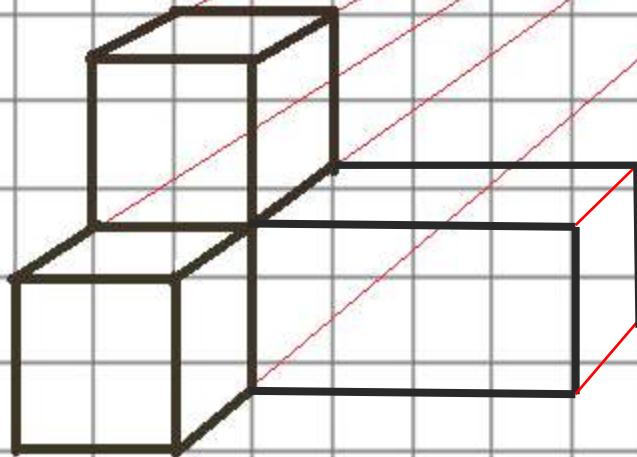
Downloaded from eduresourceza.com

One-Point Perspective

Downloaded from eduresourcza.com

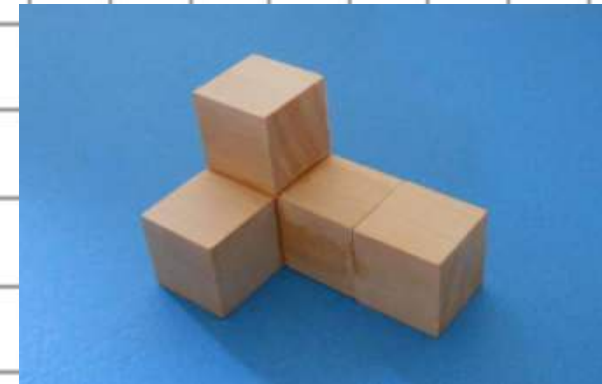
Horizon Line

V.P.



A⁺

Downloaded from eduresourcza.com

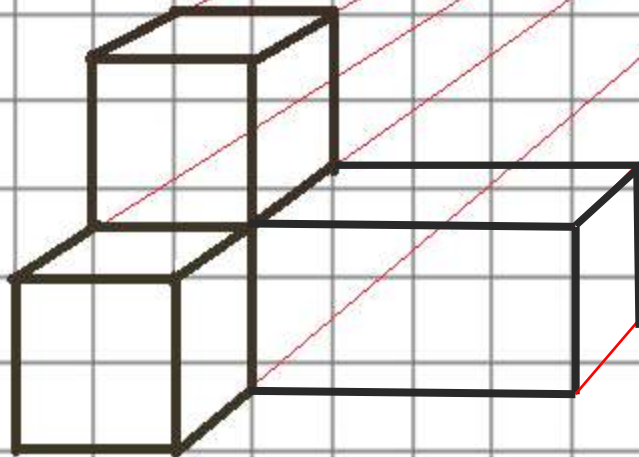


One-Point Perspective

Downloaded from eduresourcza.com

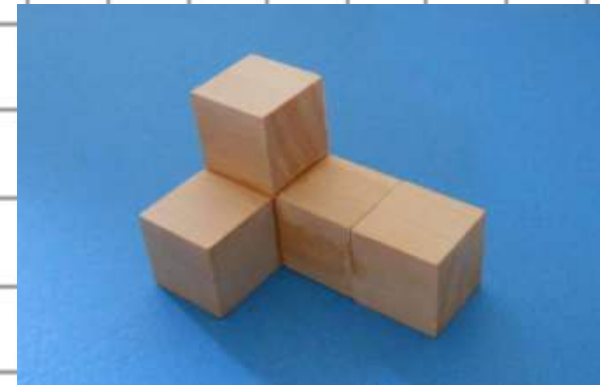
Horizon Line

V.P.



A⁺

Downloaded from eduresourcza.com

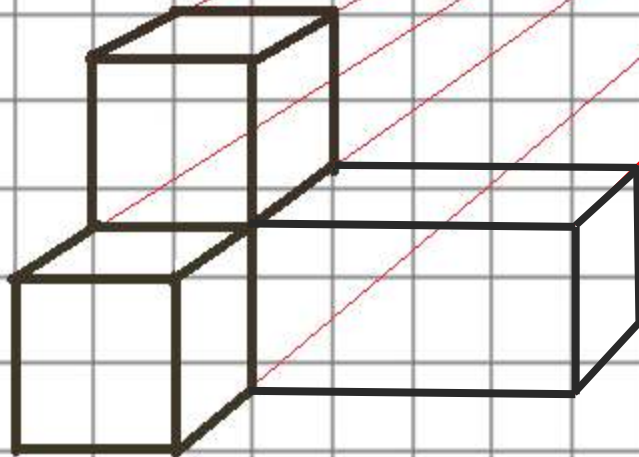


One-Point Perspective

Downloaded from eduresourcza.com

Horizon Line

V.P.



A⁺

Downloaded from eduresourcza.com

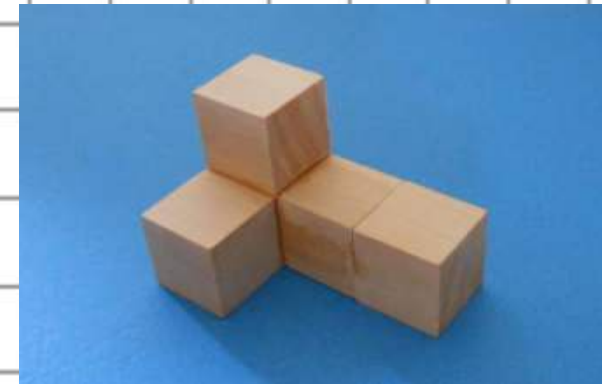
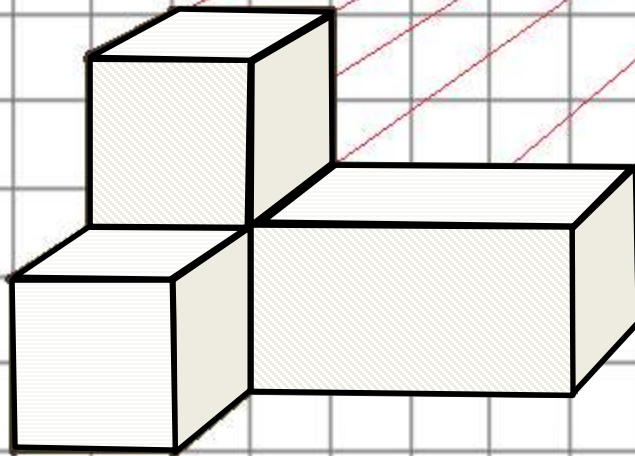


One-Point Perspective

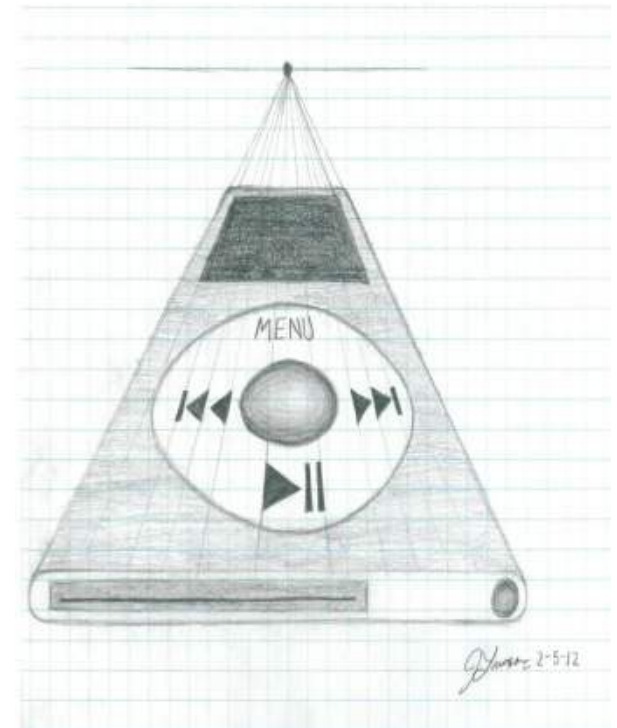
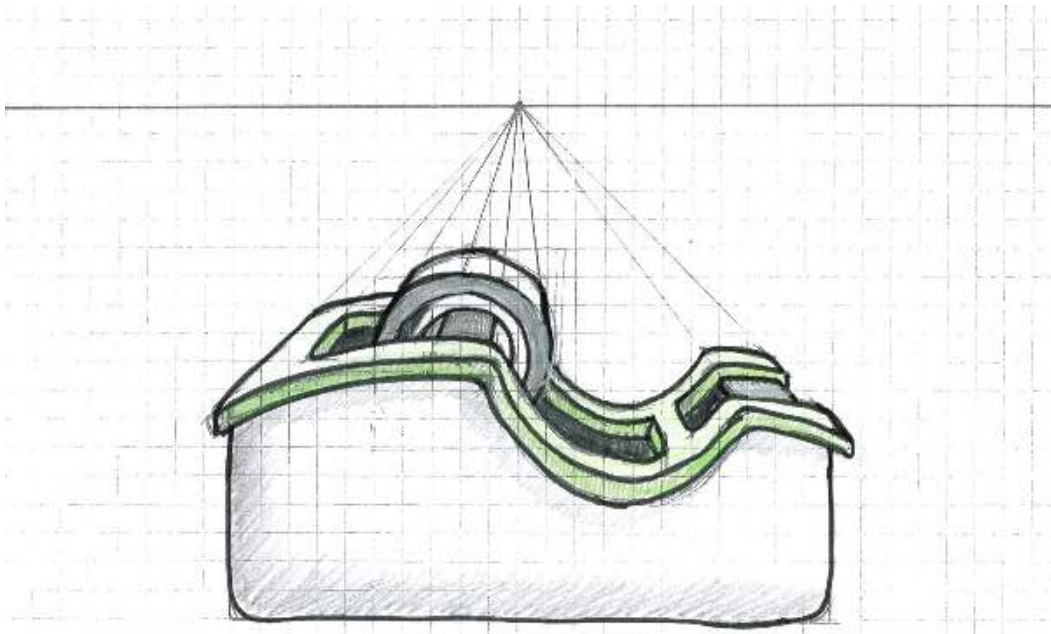
Horizon Line

V.P.

10. You may use tonal shading to enhance the appearance of the perspective sketch and create a more realistic representation.



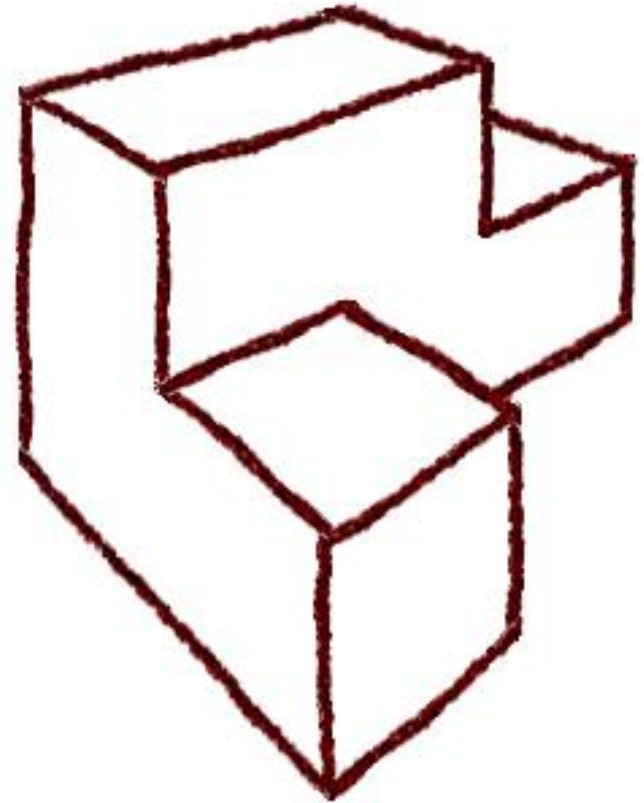
One-Point Perspective Example



Two-Point Perspective

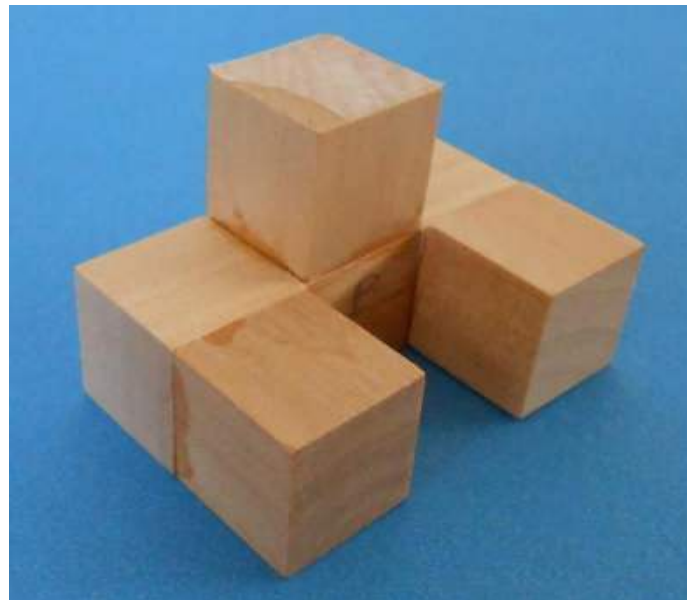
The ***two-point*** perspective is the most common perspective drawing.

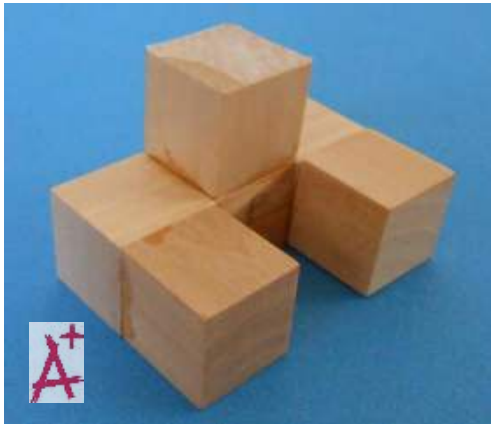
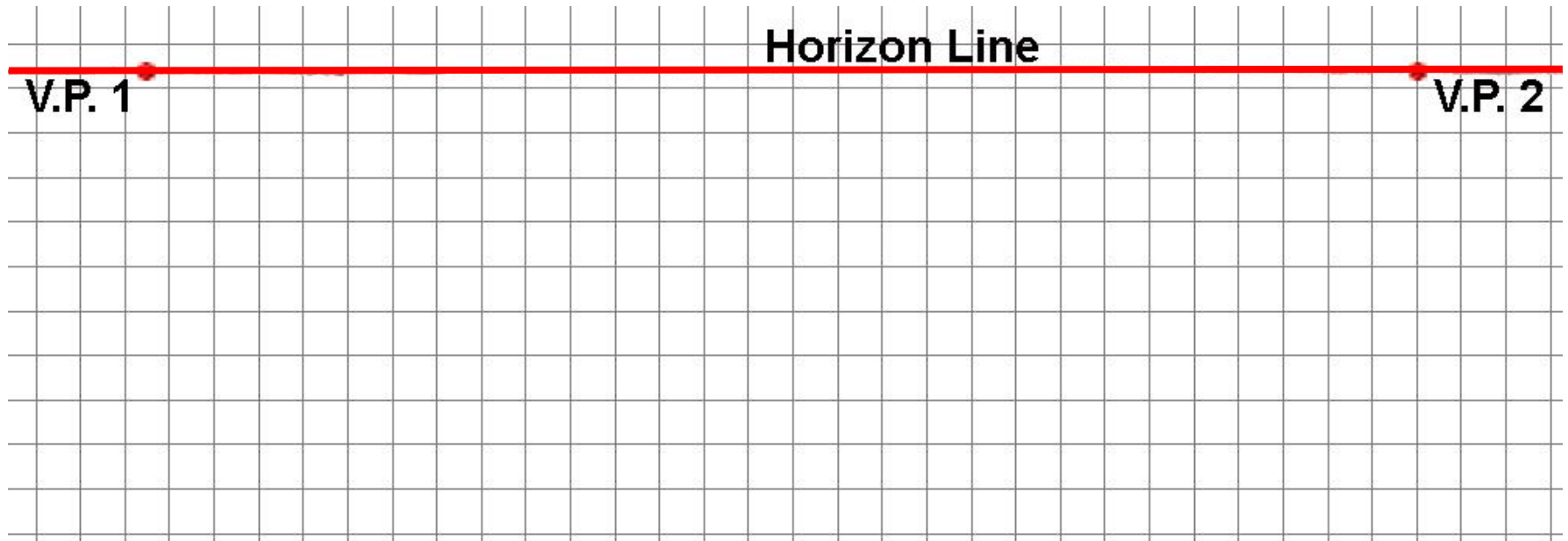
- A step-by-step procedure will be explained for the perspective.



Two-Point Perspective

The following slides show the steps in creating a two-point perspective of the puzzle piece shown below.

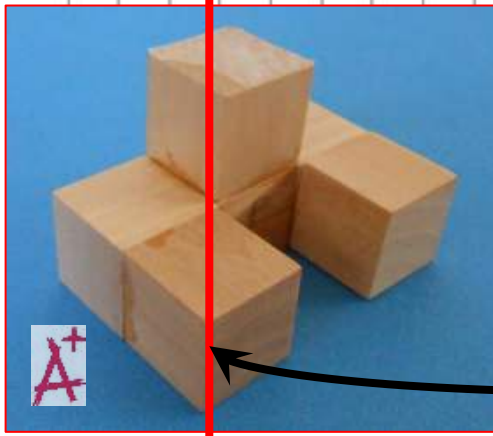




1. Sketch a horizontal line across the upper portion of the paper to represent the horizon, and identify **two** vanishing points.

The vanishing points should can be placed toward each end of the horizon line.

Two-Point Perspective



Front Edge

2. Sketch a vertical construction line to represent the front edge of the object.

The construction line can be drawn below, above, or through the horizon line.



Two-Point Perspective

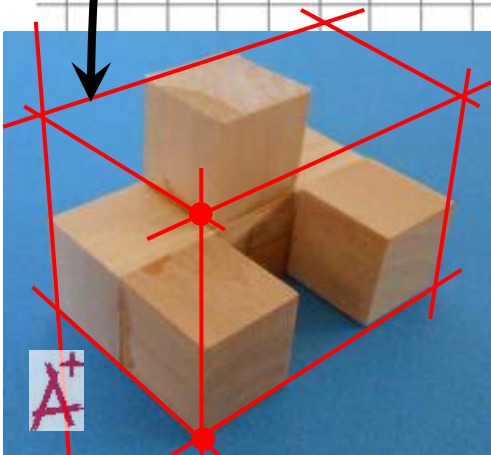
Horizon Line

V.P. 1

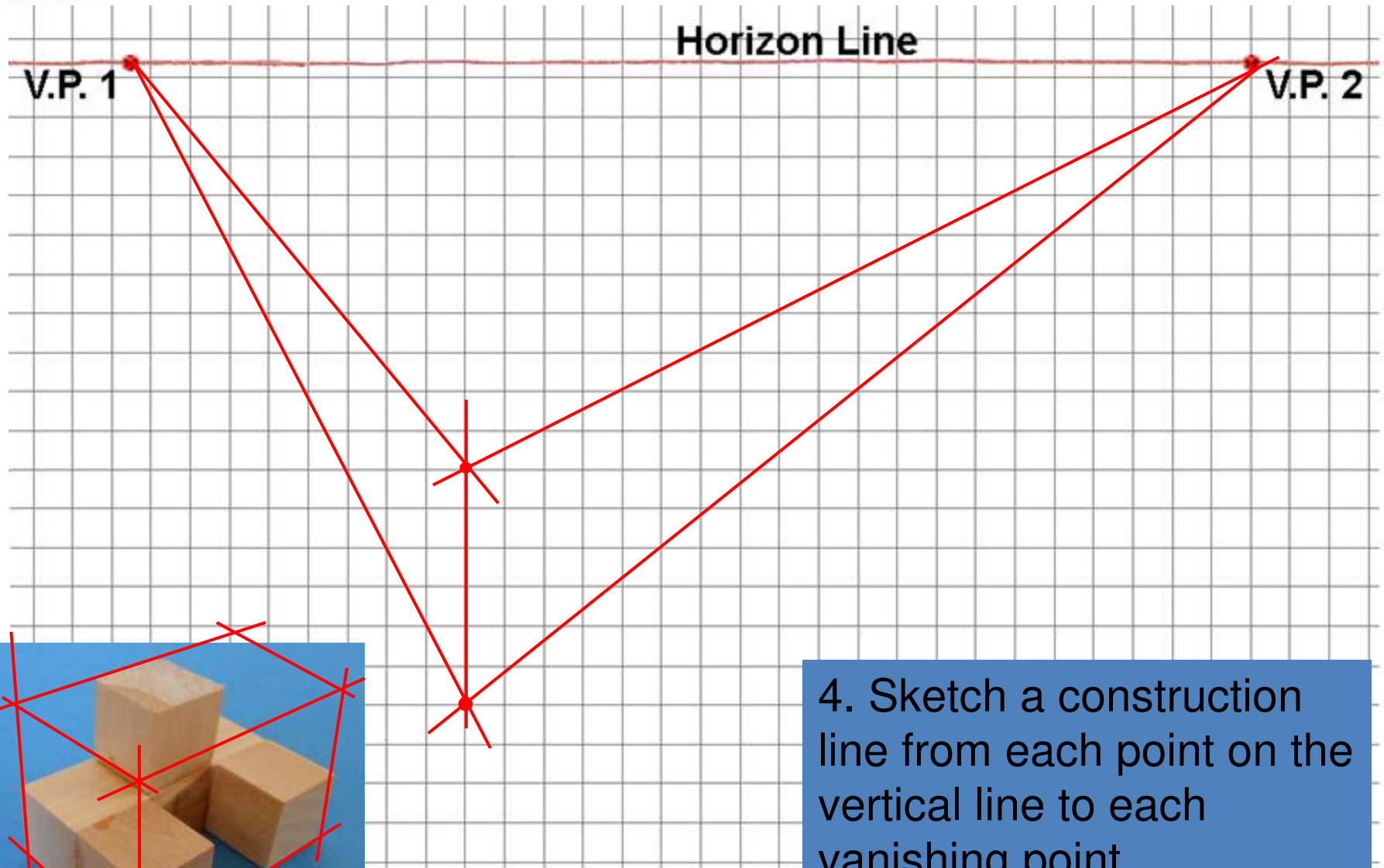
V.P. 2

An imaginary box encloses the entire object

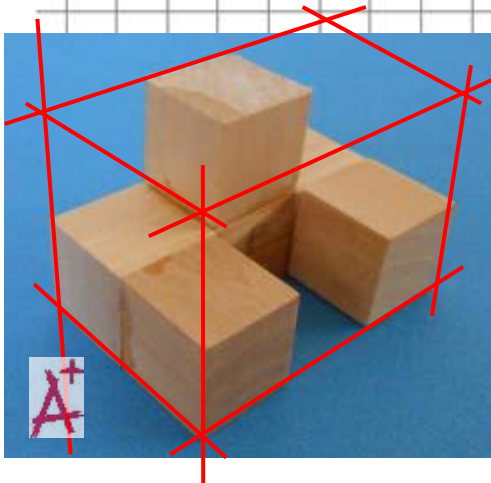
3. Locate two points on the construction line to represent the top and bottom corners of the box within which the object will be sketched.



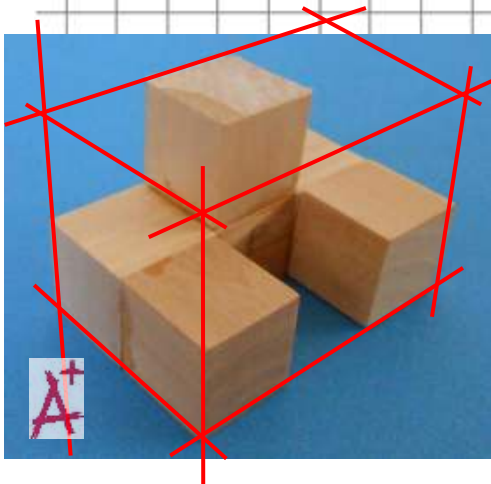
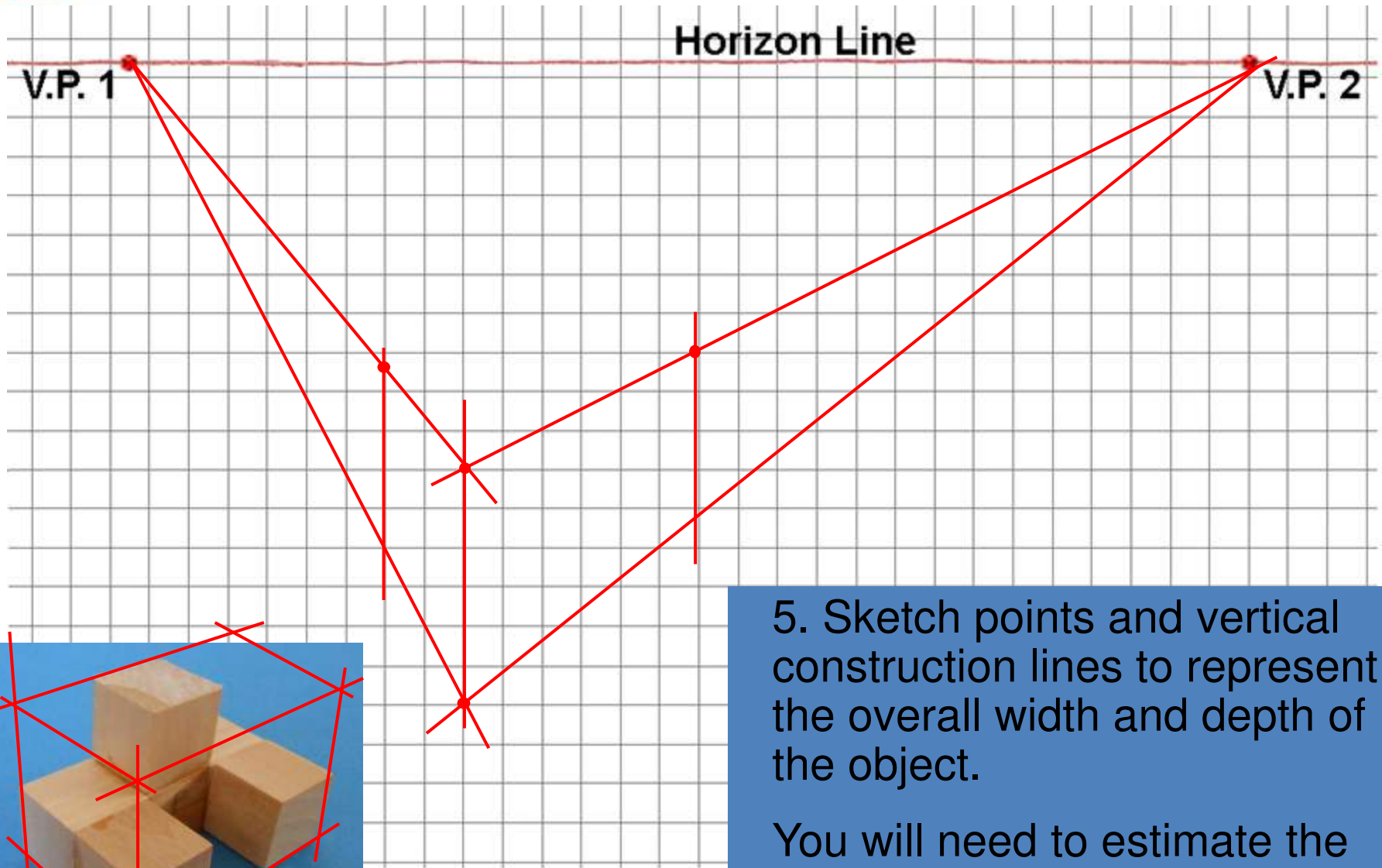
Two-Point Perspective



4. Sketch a construction line from each point on the vertical line to each vanishing point.



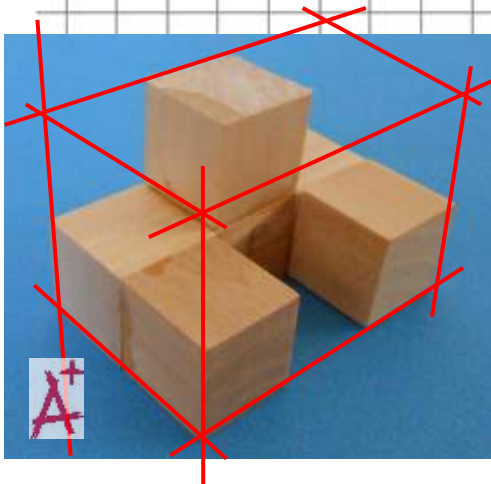
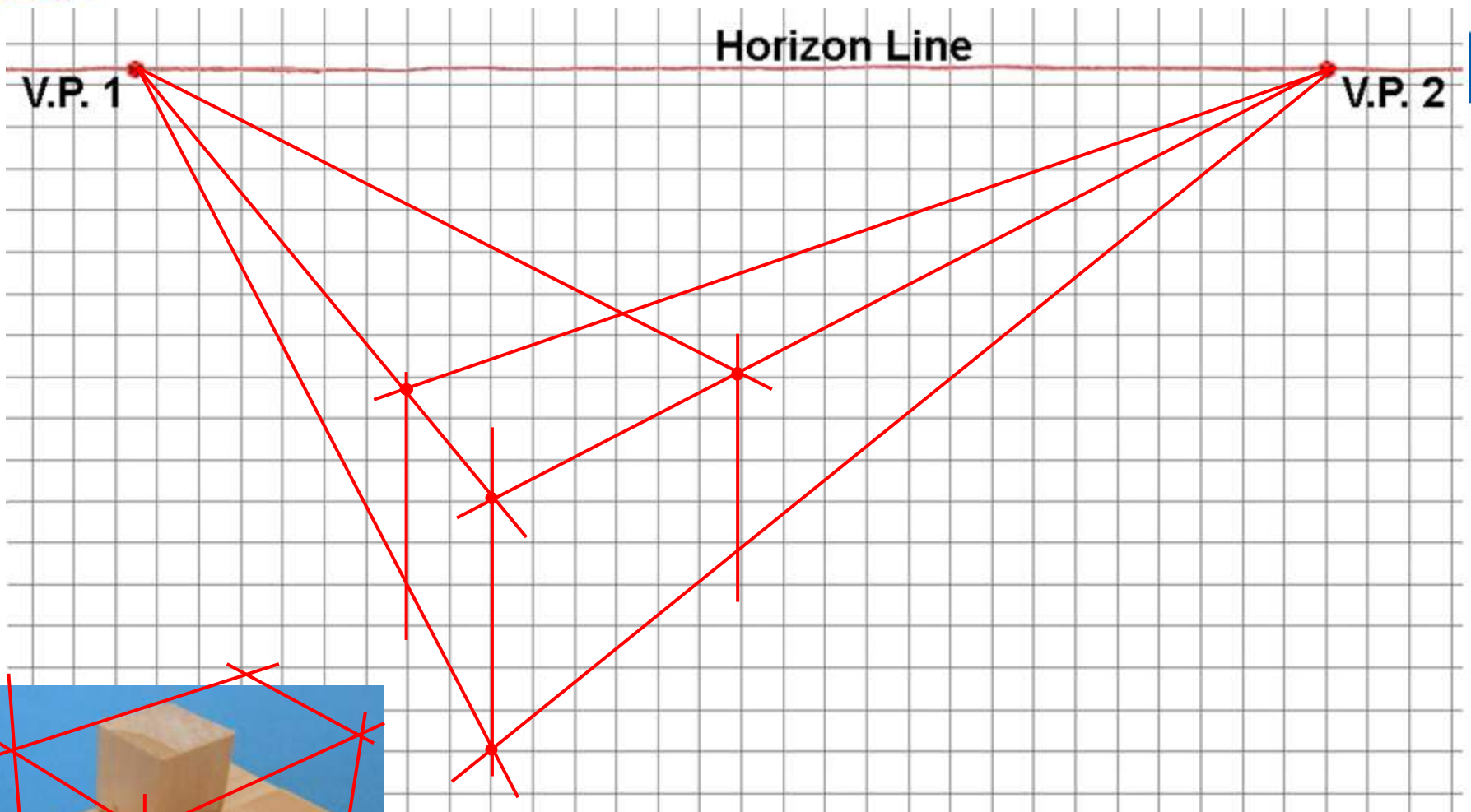
Two-Point Perspective



5. Sketch points and vertical construction lines to represent the overall width and depth of the object.

You will need to estimate the location of these to make the box proportional.

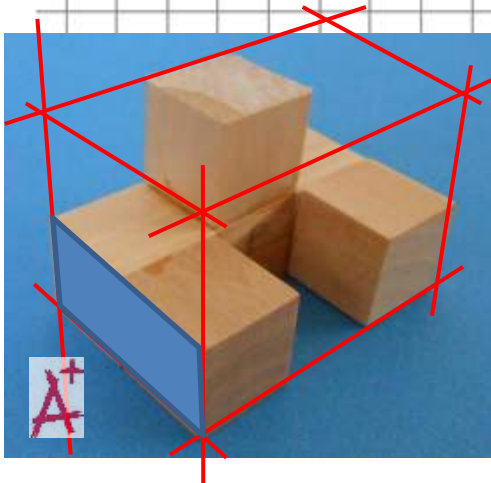
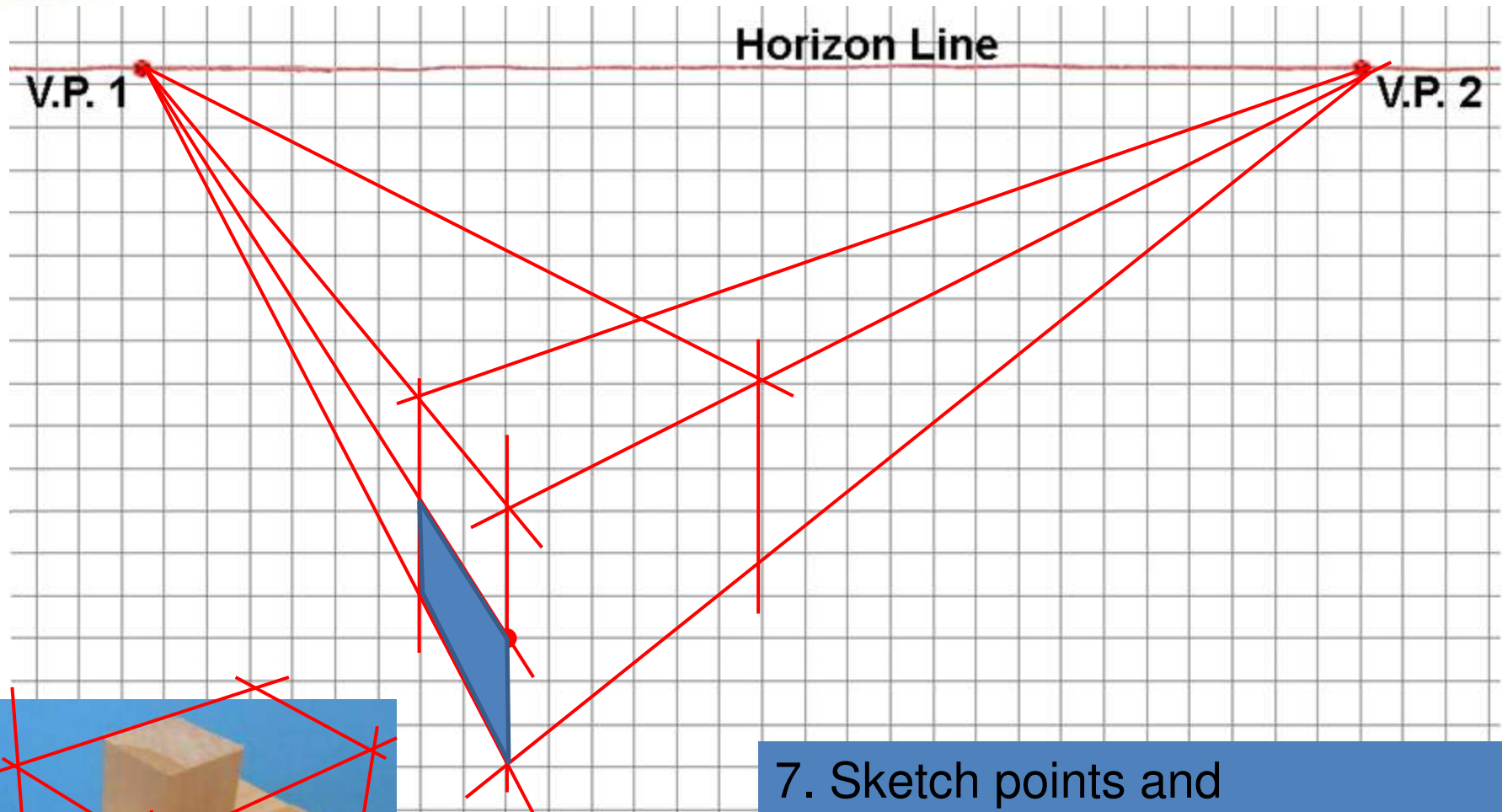
Two-Point Perspective



6. Sketch construction lines to represent the top back edges of the box.



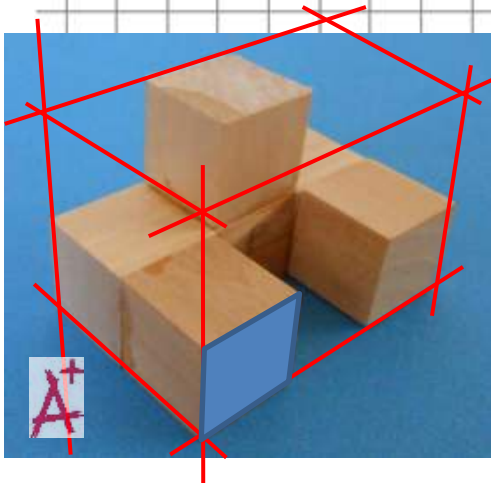
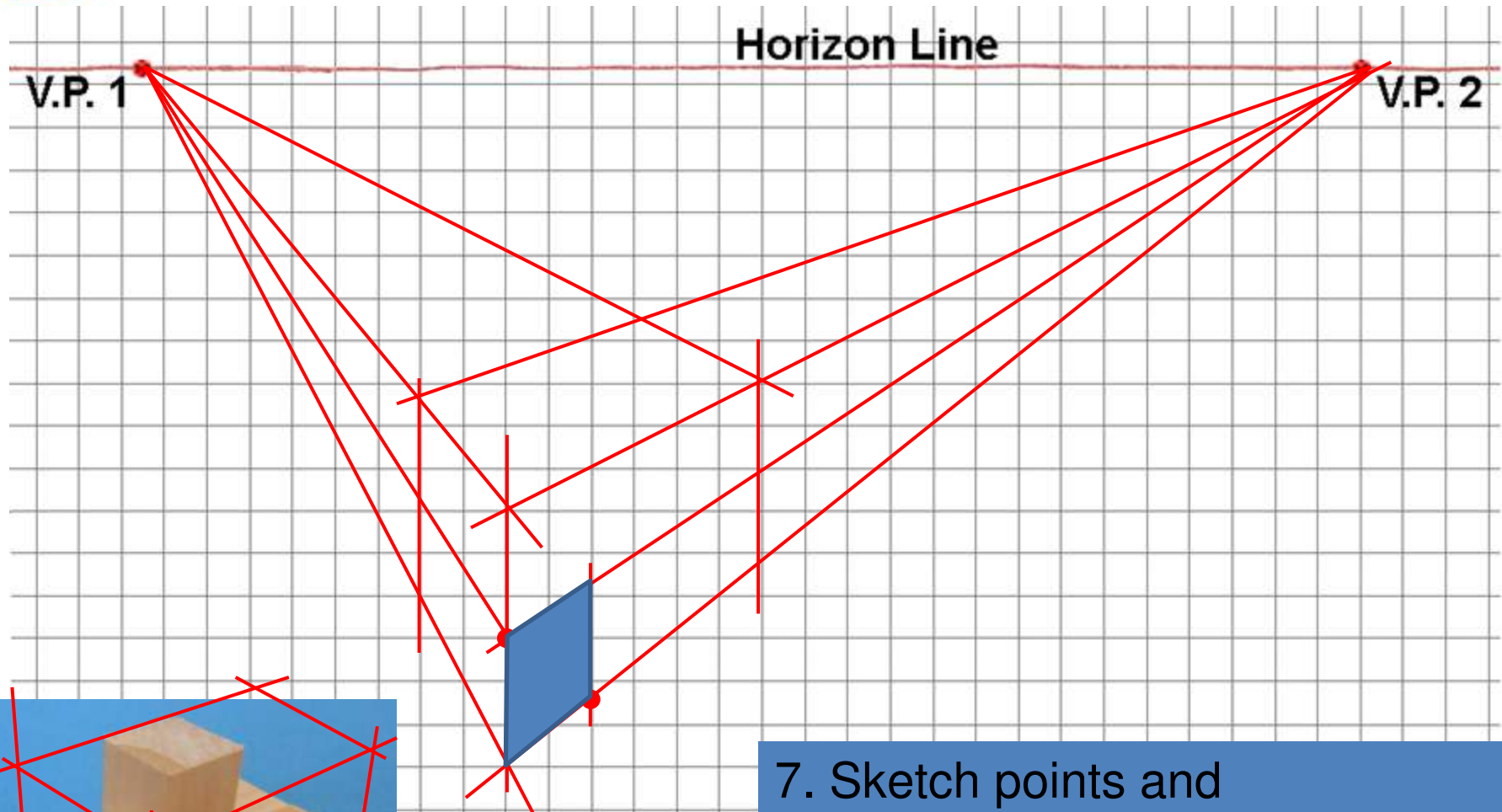
Two-Point Perspective



7. Sketch points and construction lines to identify the edges of the object faces that occur on the visible surfaces of the box.



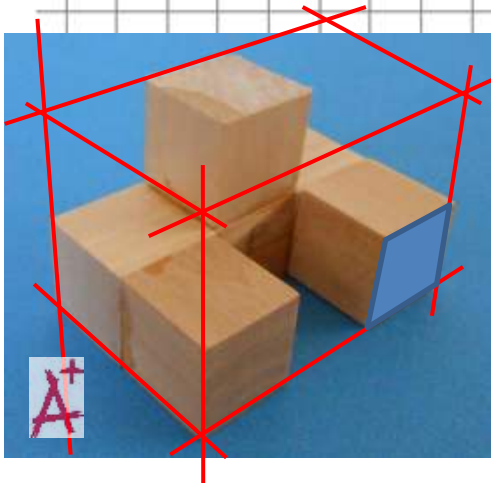
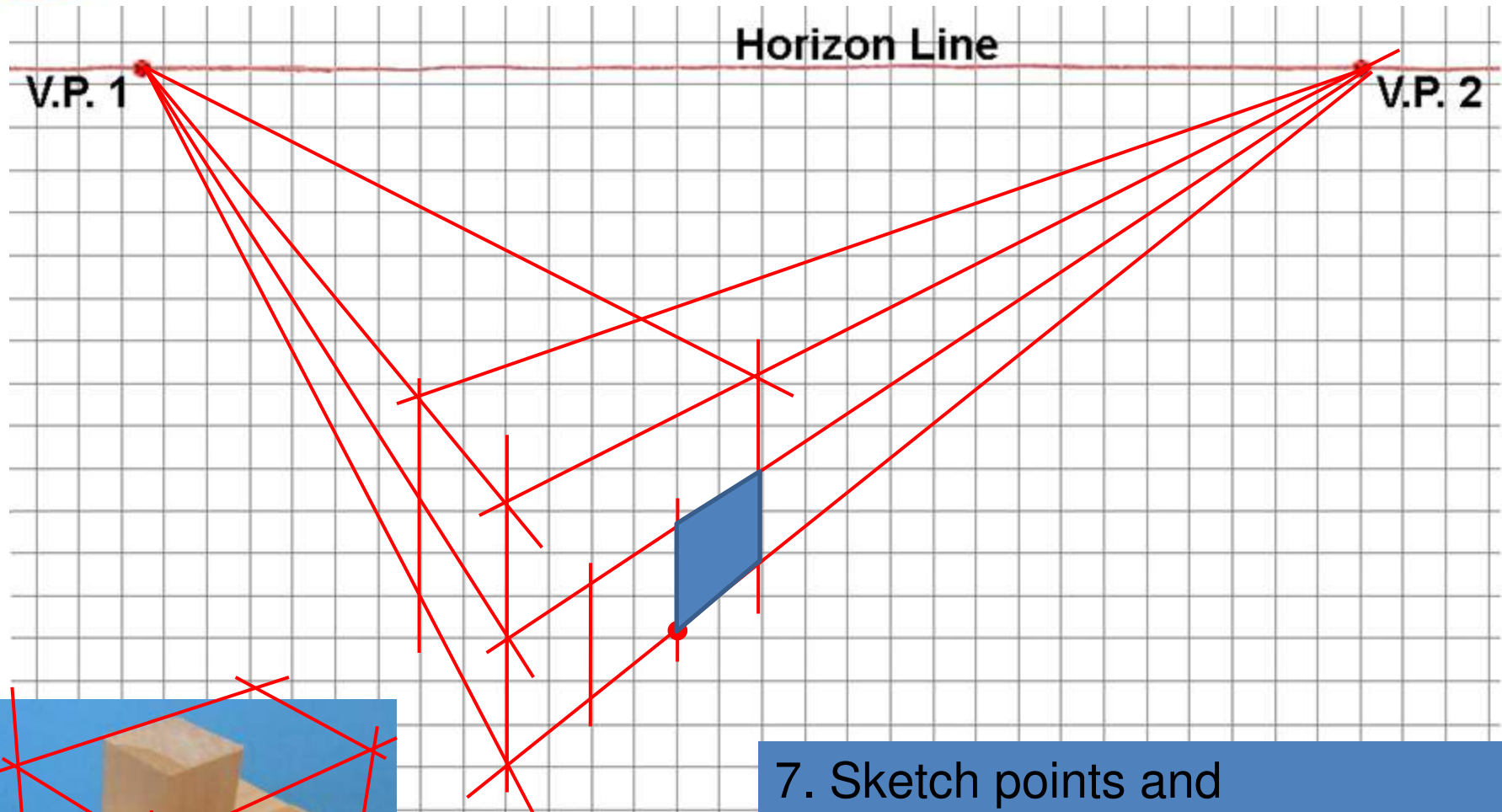
Two-Point Perspective



7. Sketch points and construction lines to identify the edges of the object faces that occur on the visible surfaces of the box.



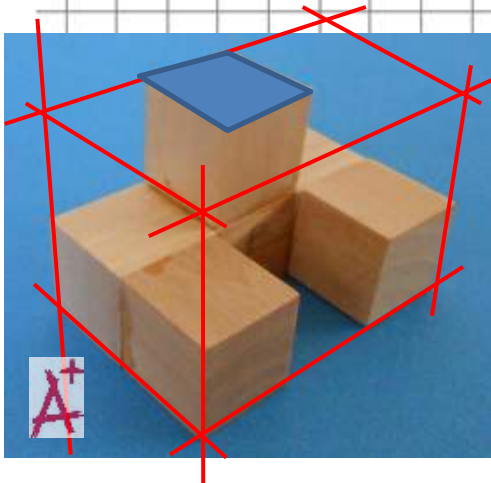
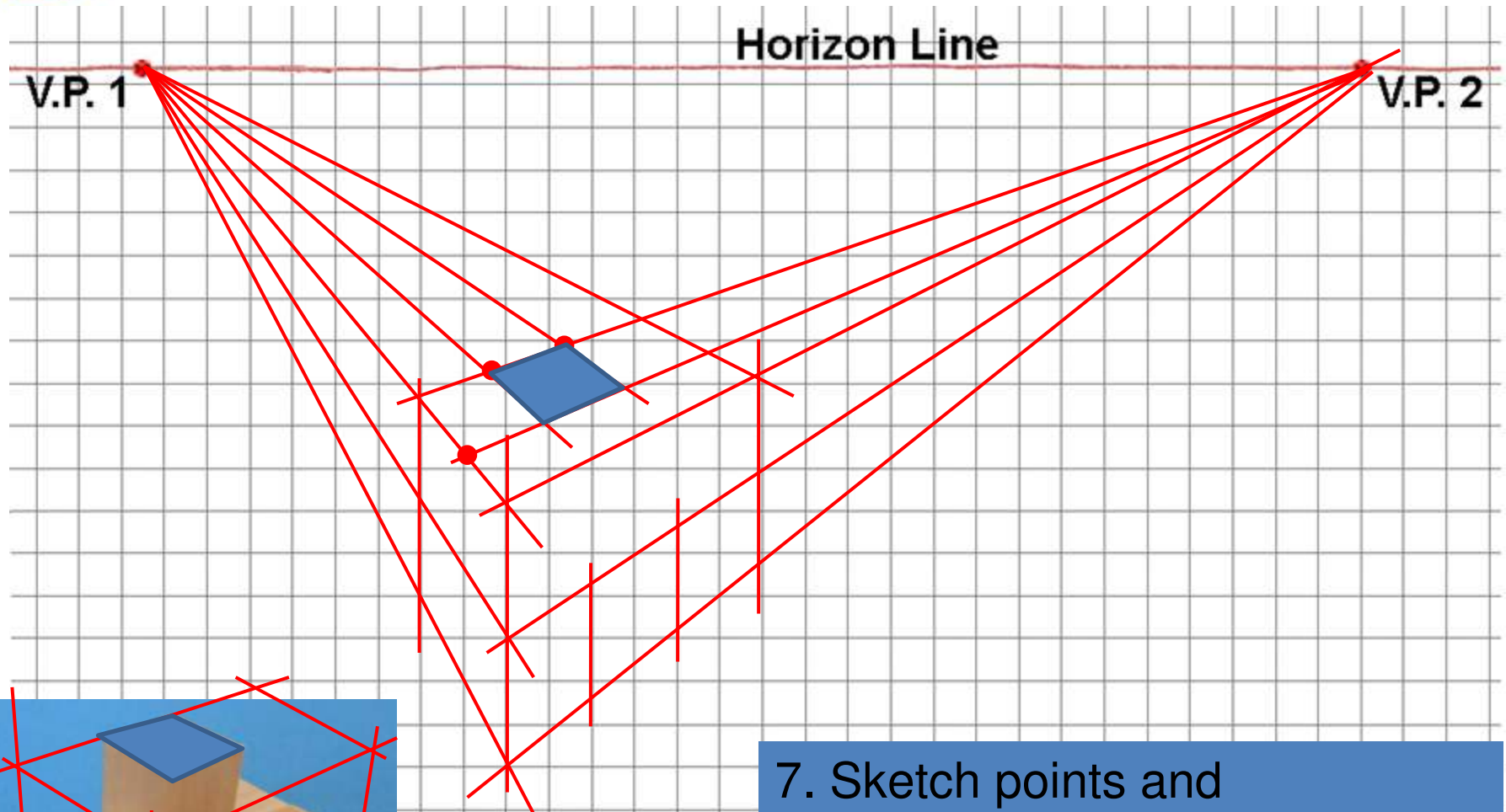
Two-Point Perspective



7. Sketch points and construction lines to identify the edges of the object faces that occur on the visible surfaces of the box.



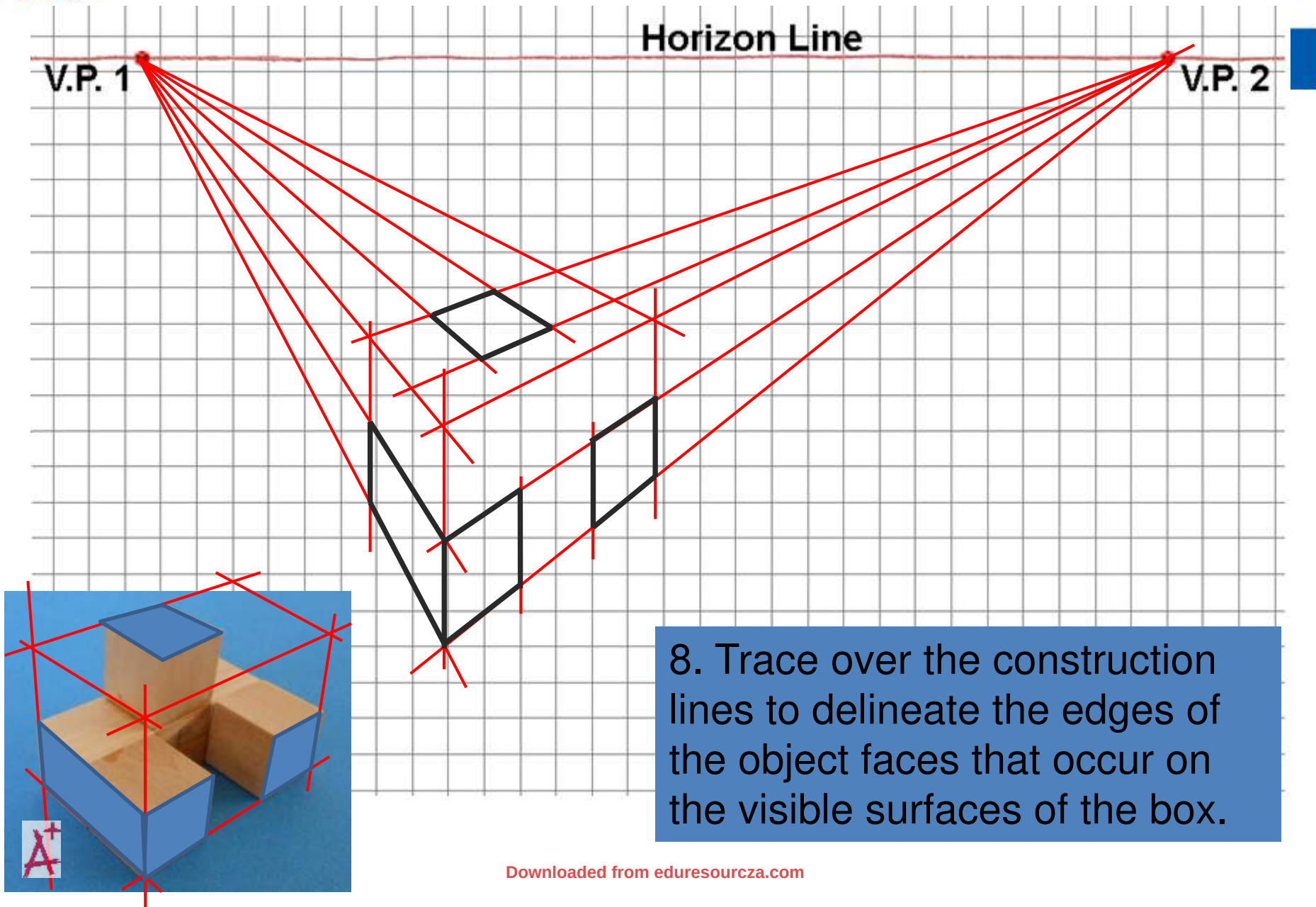
Two-Point Perspective



7. Sketch points and construction lines to identify the edges of the object faces that occur on the visible surfaces of the box.

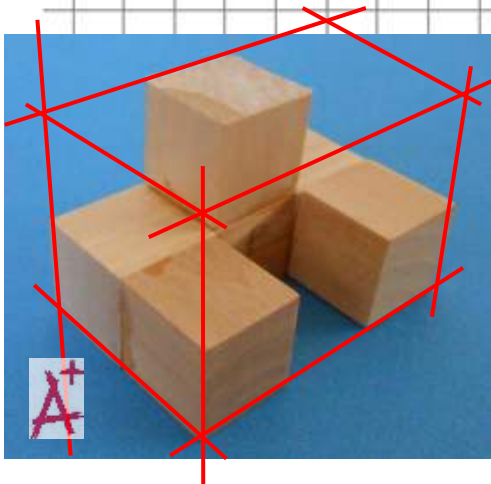
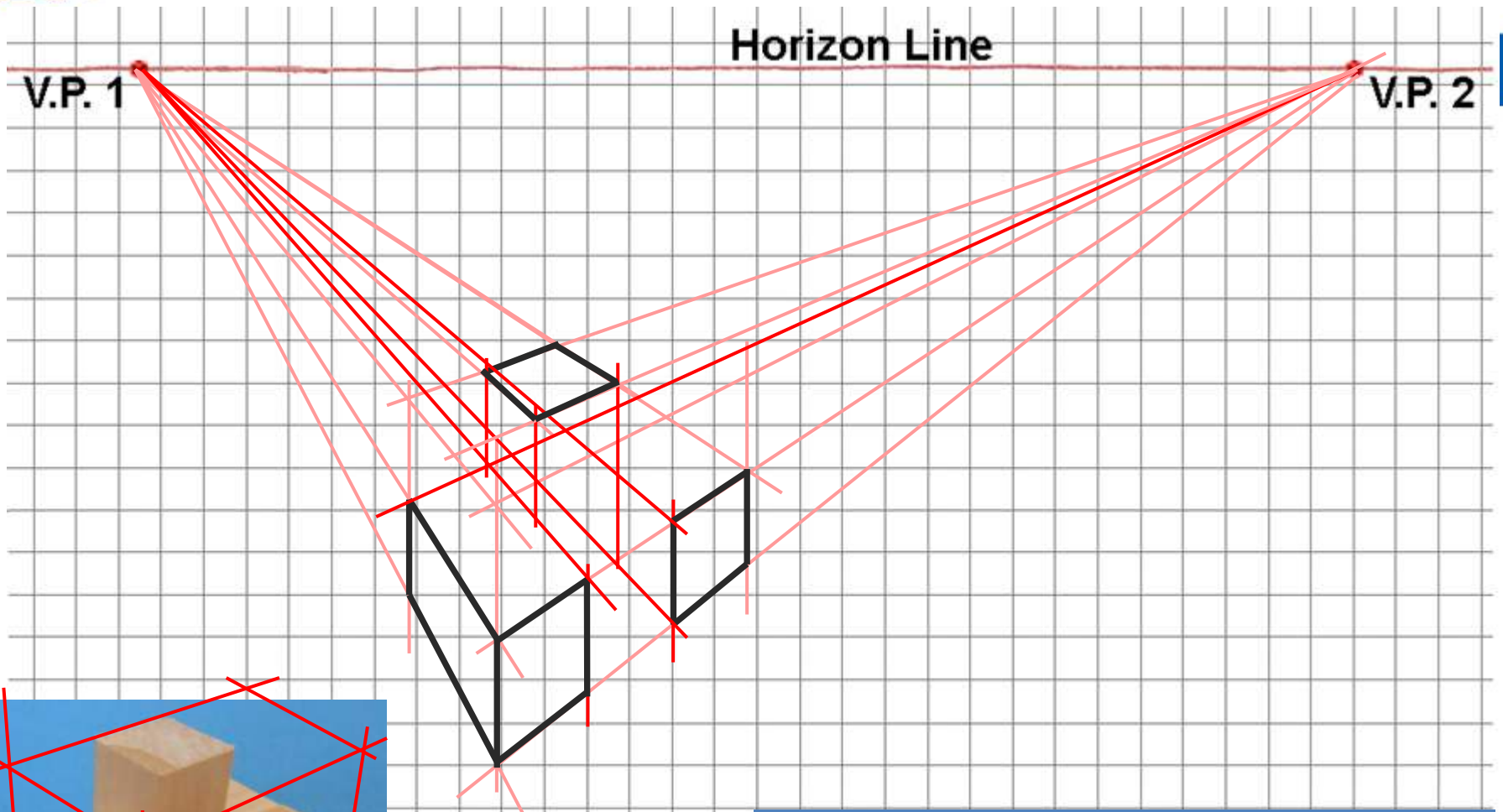


Two-Point Perspective



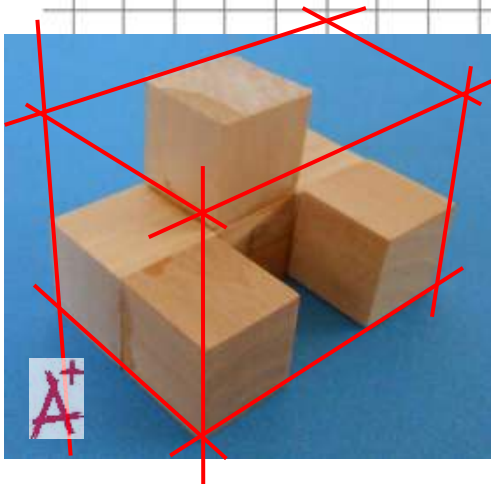
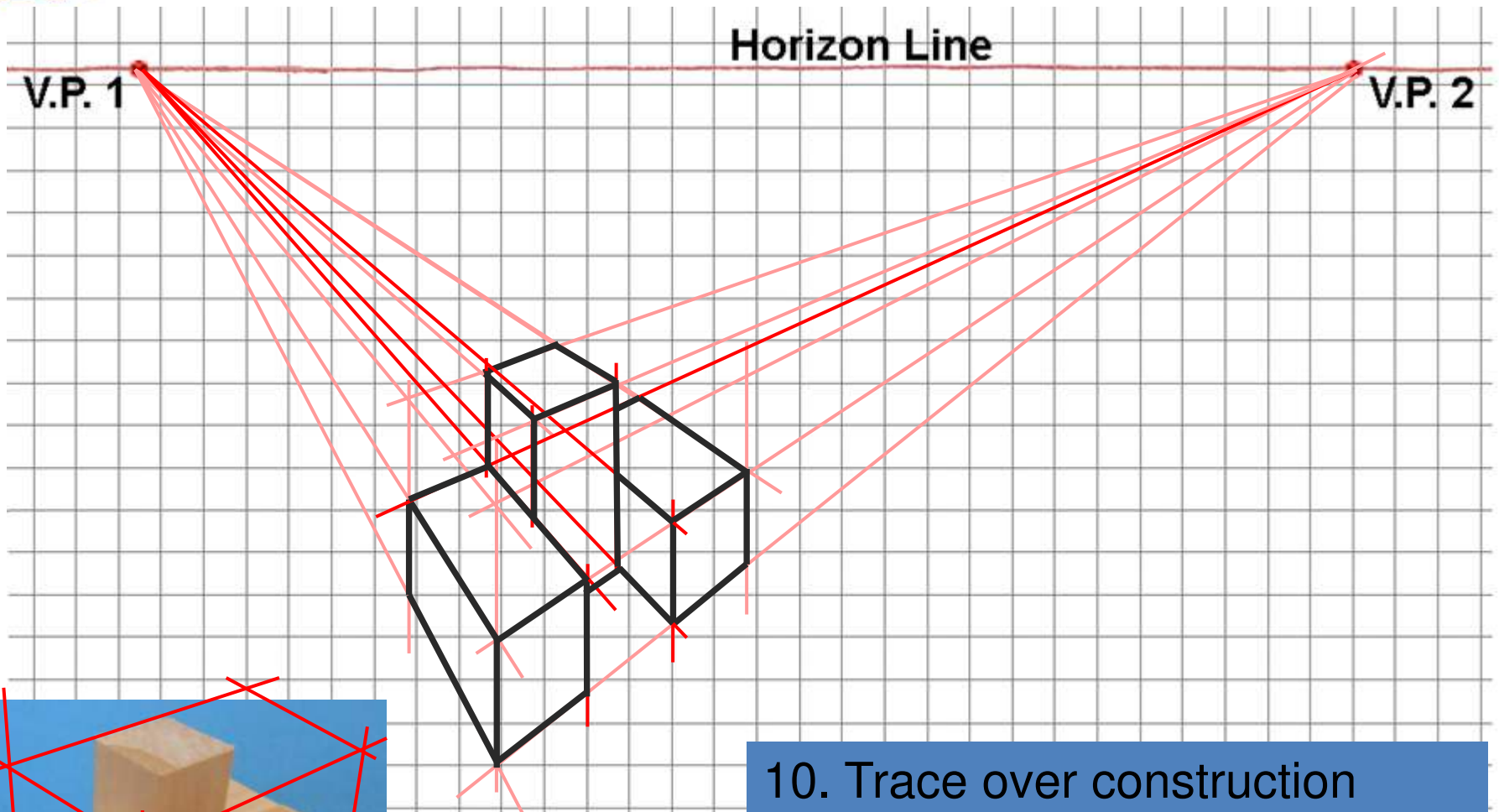
8. Trace over the construction lines to delineate the edges of the object faces that occur on the visible surfaces of the box.

Two-Point Perspective



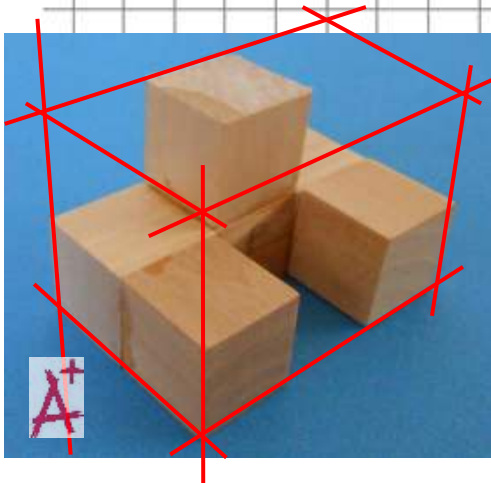
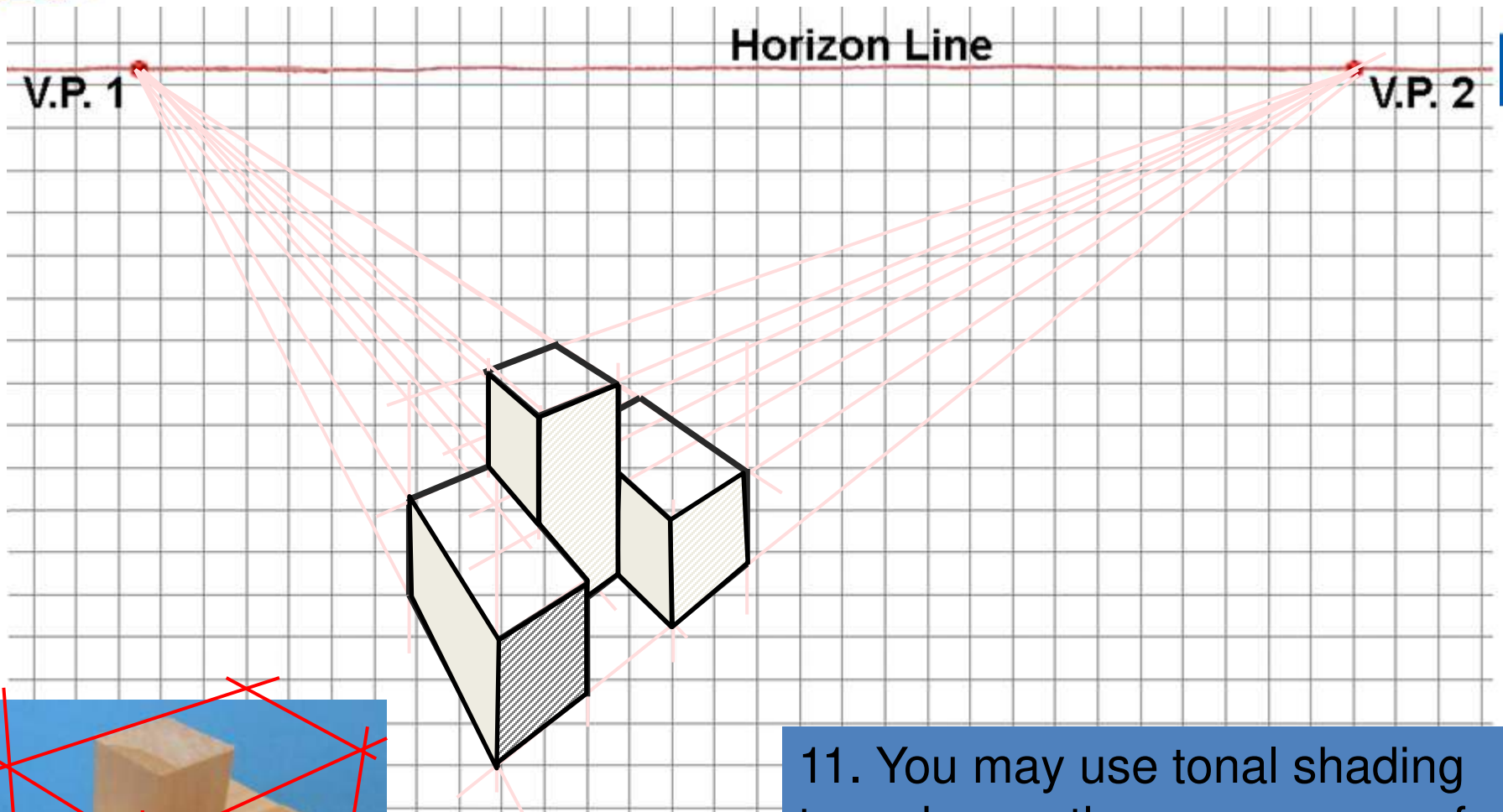
9. Sketch additional construction lines to identify surfaces of the object inside of the box.

Two-Point Perspective



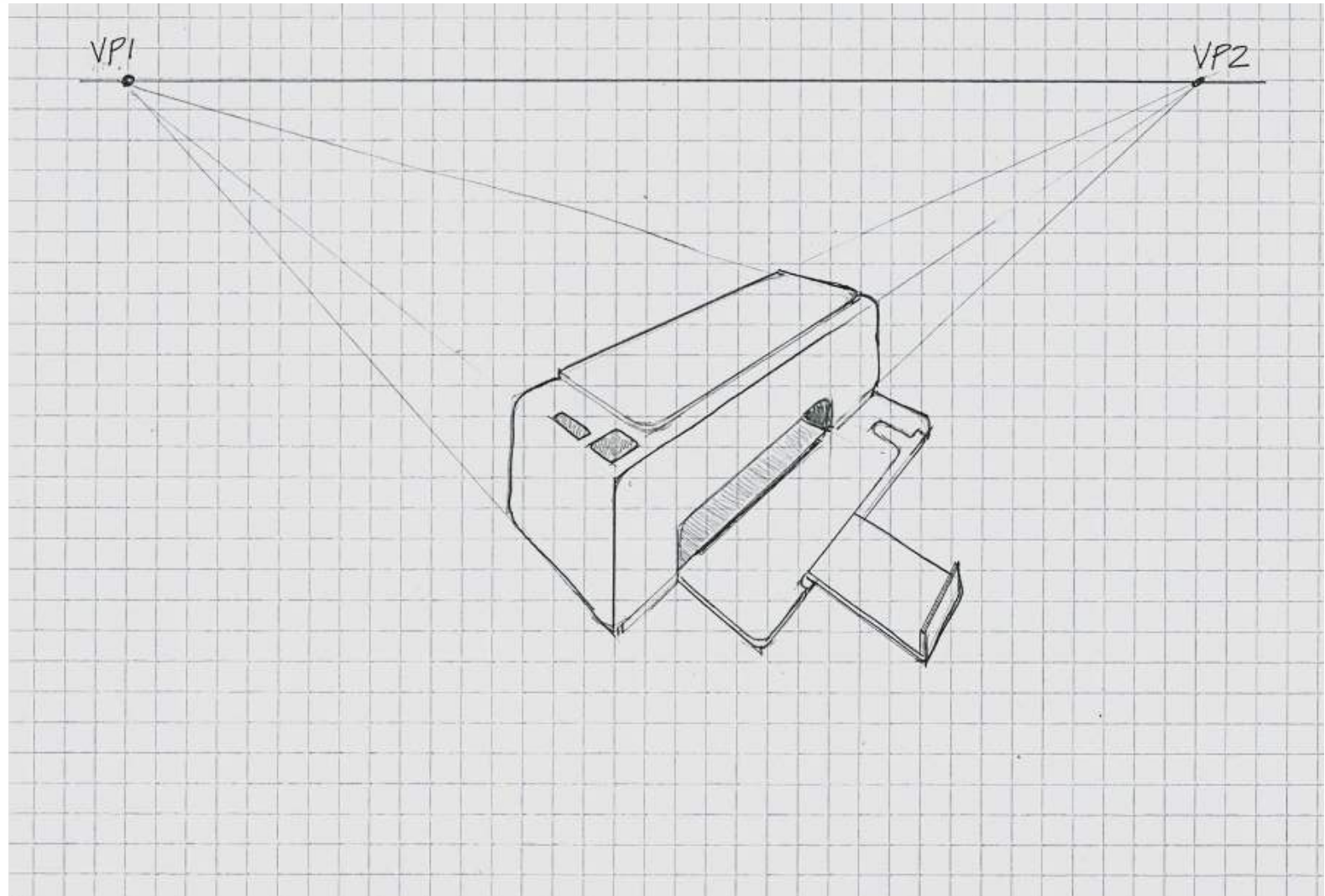
10. Trace over construction lines to delineate the remaining object lines

Two-Point Perspective



11. You may use tonal shading to enhance the appearance of the perspective sketch and create a more realistic representation.

Two-Point Perspective Example



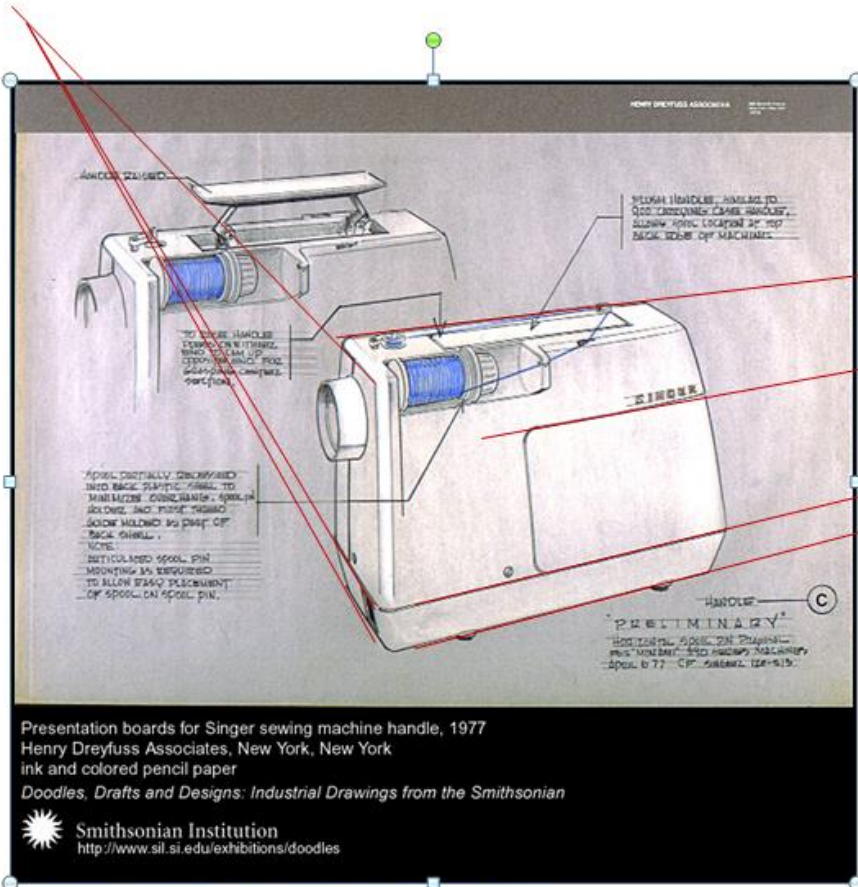


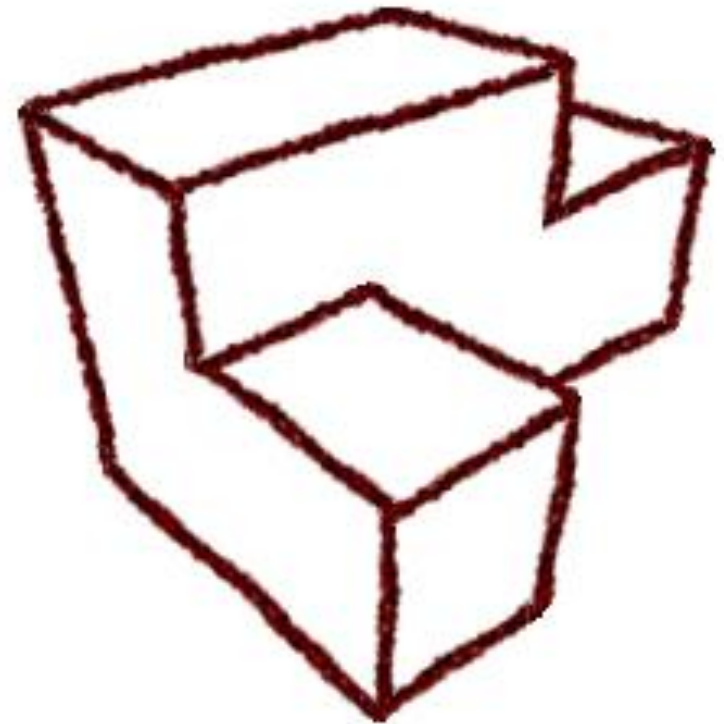
Image courtesy the Smithsonian Institute:

<http://www.sil.si/exhibitions/doodles>

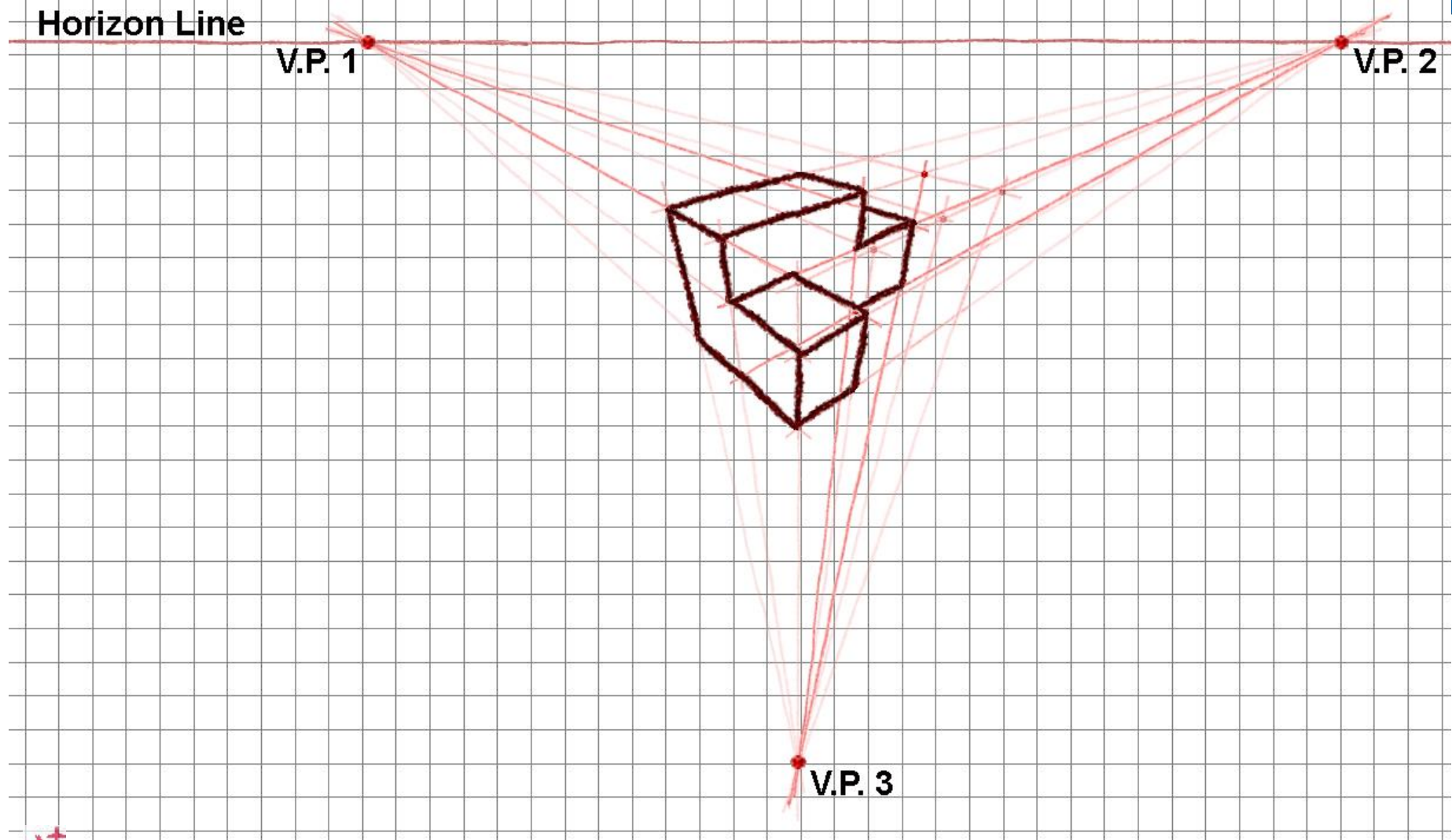
Two-point perspective used in a presentation drawing for a Singer sewing machine handle.

Three-Point Perspective

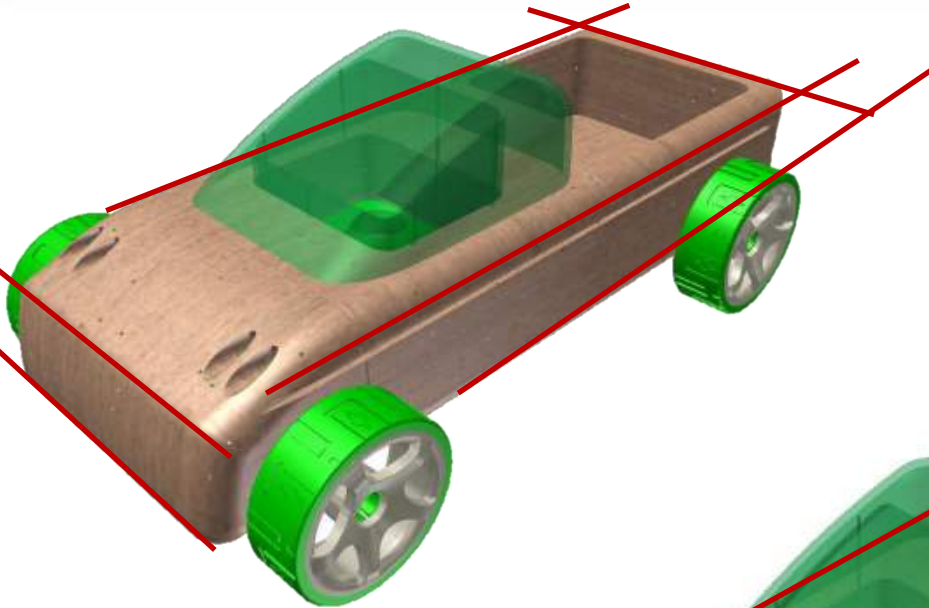
The ***three-point*** perspective gives the viewer either a worm's-eye, or bird's-eye view of an object.



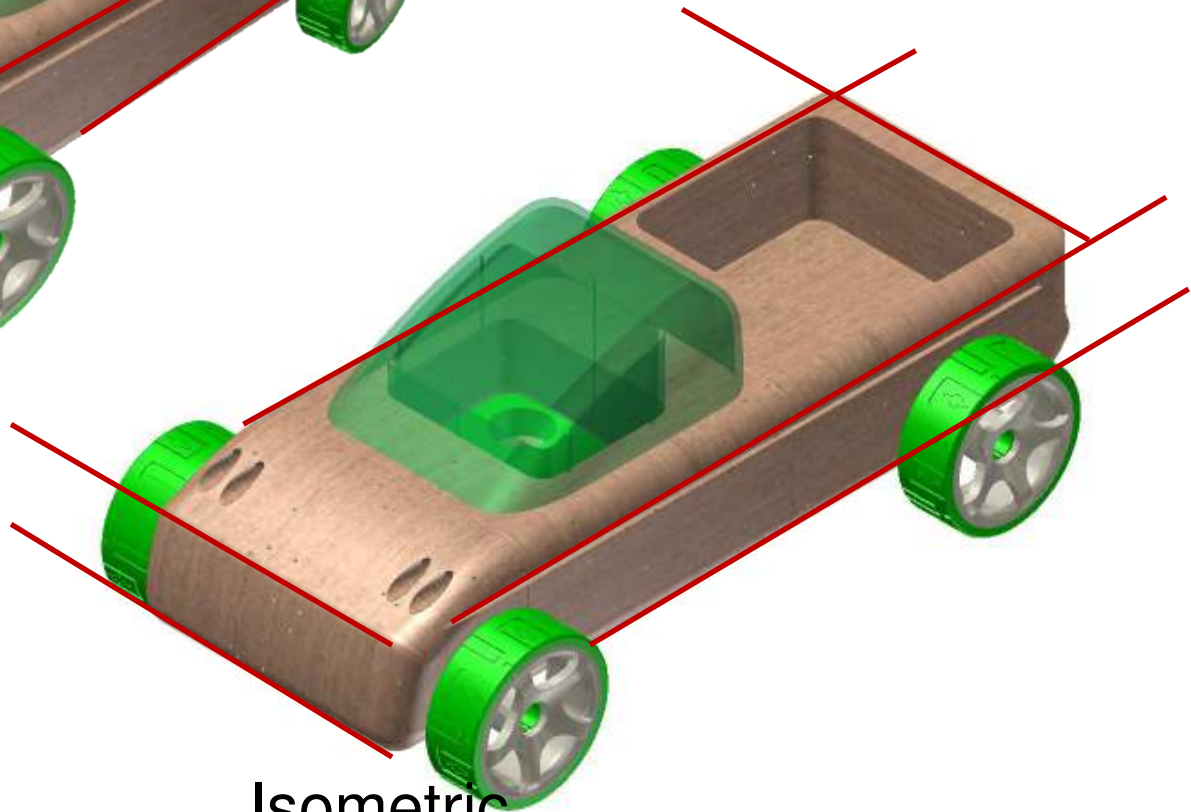
Three-Point Perspective



Perspective versus Isometric



Perspective



Isometric

Acknowledgements & References

1. http://local.ecollege.ie/Content/APPRENTICE/liu/pipefitting/pdf/M5_U2_Standard%20Drawing%20Conventions.pdf
2. ME111 by Dr. Akhilesh Kumar Maurya
3. www.technologystudent.com
4. www.youtube.com
5. www.sciencebuddies/science-fair
6. [www.dbe.gov.org/technology workbooks](http://www.dbe.gov.org/technology_workbooks)
7. <http://www.thutong.doe.gov.za/inclusiveeducation>
8. Tupper, Earl Silas. Patent drawings, 1957. Smithsonian Institute: <http://sil.si.edu.exhibitions/doodles>
9. Wikipedia (2011). *Three-point flexural test*. Retrieved from <http://en.wikipedia.org/wiki/File:Threepoint.jpg>
10. <http://sil.si.edu/exhibitions/doodles>