



3DXpert™ for SOLIDWORKS®

Working Environment

Selection Filters, Selection Tools & Mesh Selection

14,0200,1599,1024(SP2)

In this exercise, we will learn the basics of **Selection Filters**, **Selection Tools** & **Mesh Selection**.

All stages of work are involving many choices of selecting. The selection is a combination of the **Selection Filters** and the **Selection Tools**.

Understanding the filters' condition and user controlling selection tools is essential for understanding the software and for comfortable and flowing work.

Since **3DXpert** can work on a regular cad model as well as **Mesh** model, there are some tools regarding **Mesh Selection**.

To learn this tools we need to follow few steps (guided):

- Open the downloaded **3DXpert-Exercise-Selection_Tools_V1.elt** from the Initial screen.
- Use **Selection Filters**, **Selection Tools** & **Mesh Selection**.

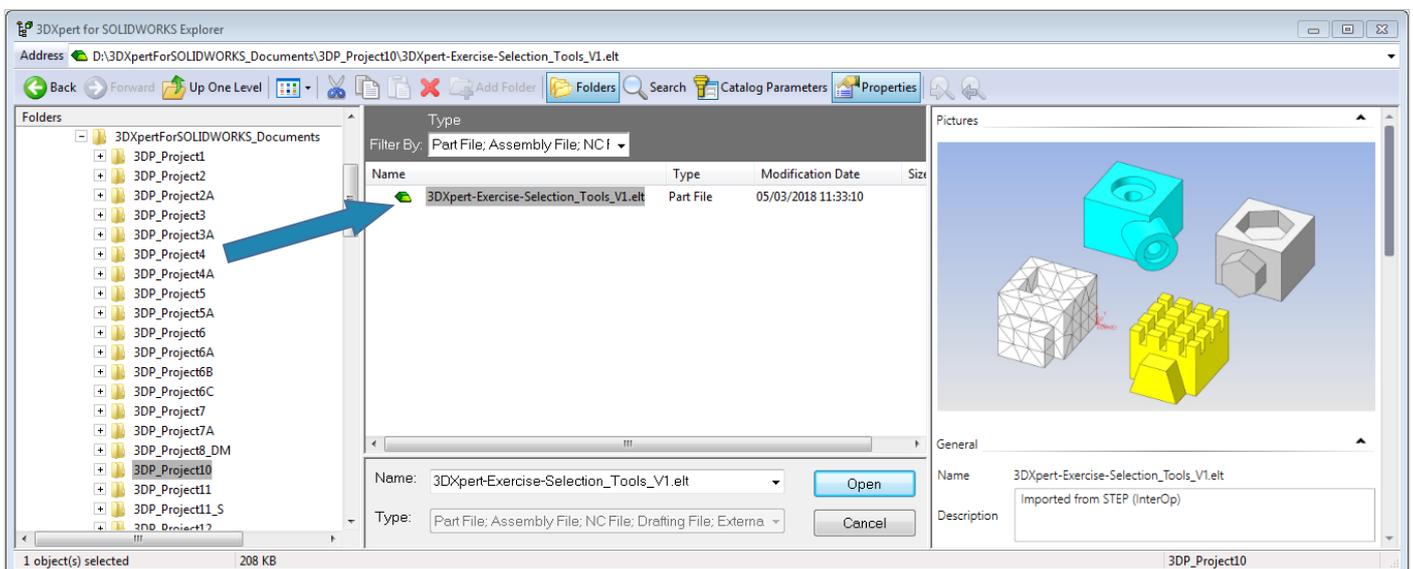
<p style="font-size: 2em; margin: 0;">!</p> <p style="margin: 0;">Notice/ Remember</p>		Left mouse button name is " <i>pick</i> "
		Middle mouse button name is " <i>Exit</i> "
		Right mouse button name is " <i>Click</i> "

1. From the Initial screen ***pick*** **Open File**.

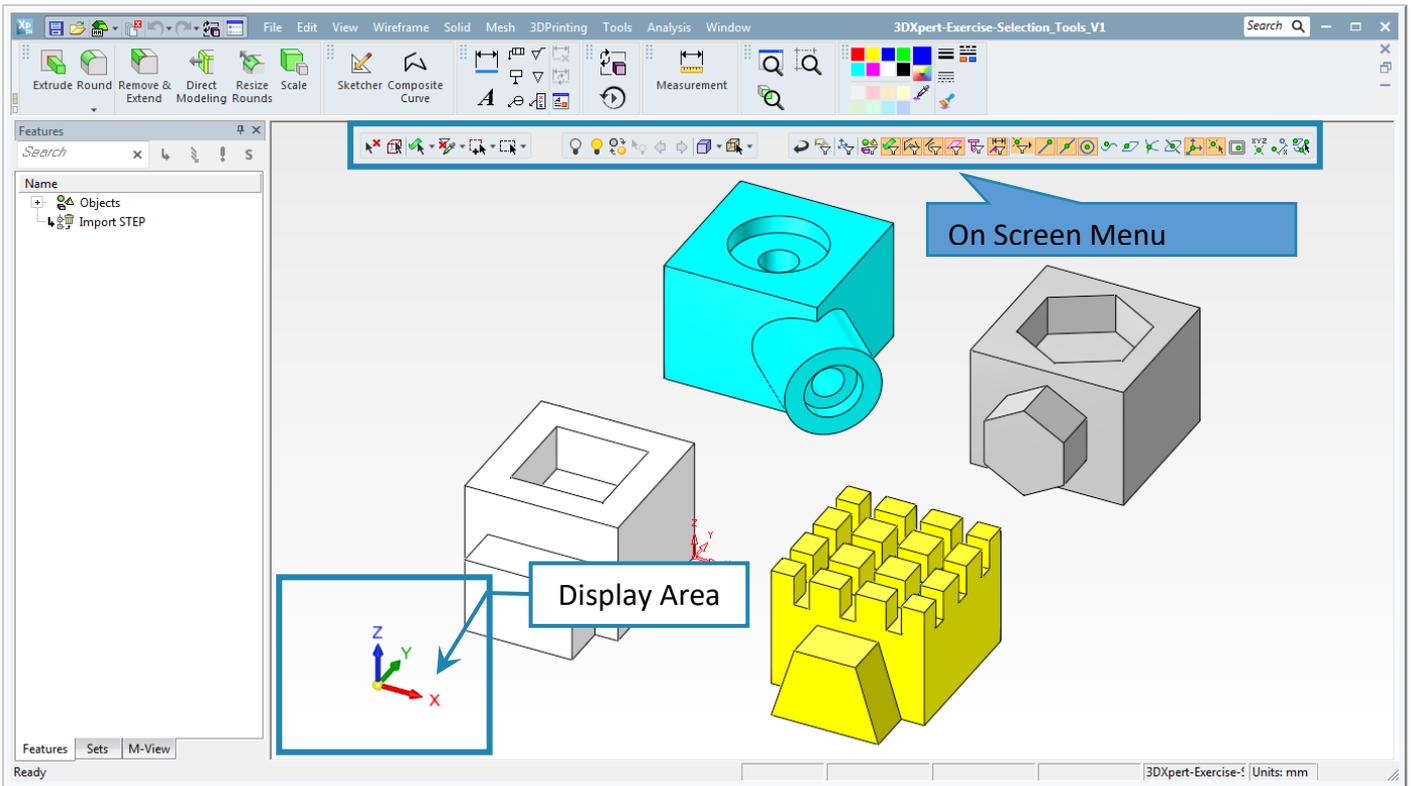


2. This command will open the **3DXpert for SOLIDWORKS Explorer**.

Load file **3DXpert-Exercise-Selection_Tools_V1.elt** from the same folder where the downloaded files exist.



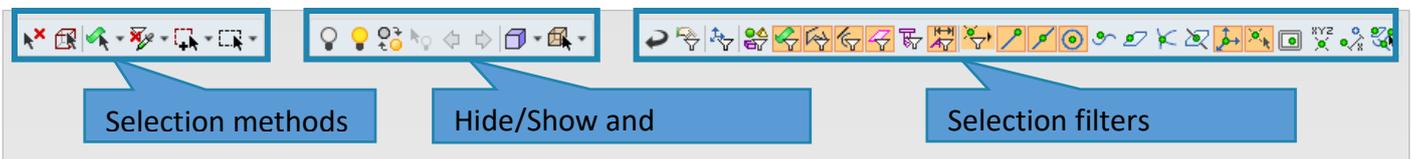
After the file is open, the screen looks like this:



On Screen Menu

At the top of the screen for every working environment, the **On screen Menu** is seen on the top of the graphic region, containing three groups of icons.

The **On Screen Menu** contain three groups of icons:



Selection Methods, from there the **Selection Tools** can be invoked.

Hide/Show and Rendering mode settings (not discussed in this document).

Selection filters, from there it is possible to control their status.

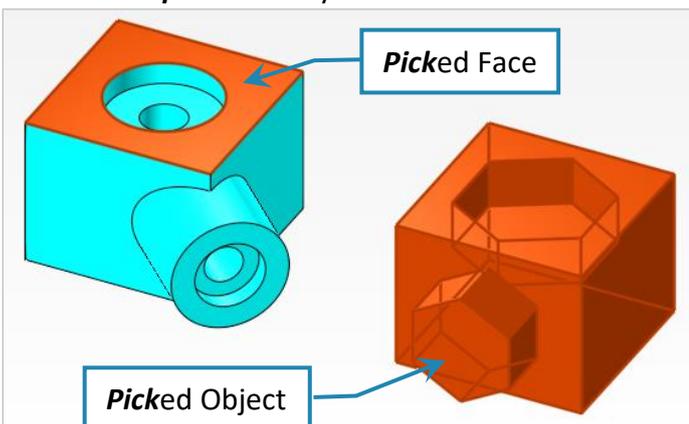
Basic Selection

A basic selection is done by **Pick** (left mouse button).

The second **pick** on any **picked** entity is **Unpick**.

Any selection is according to Selection Filter status.

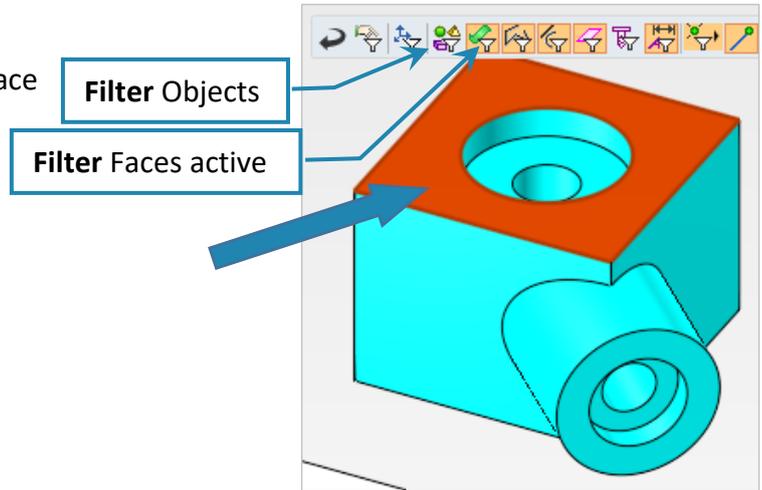
The color of **picked** entity is **Brown**.



3. **Pick** the Cyan object,

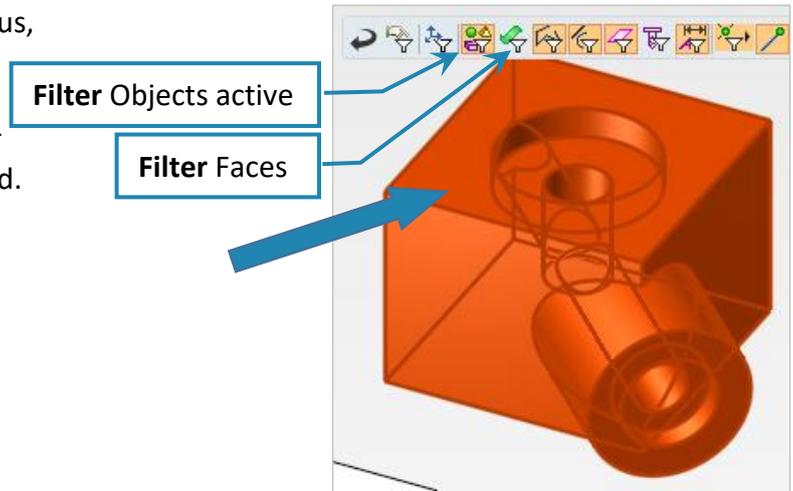
Note that in the current filter status – the filter Face is active - only the upper face was selected.

Pick that face again to **Unpick**.

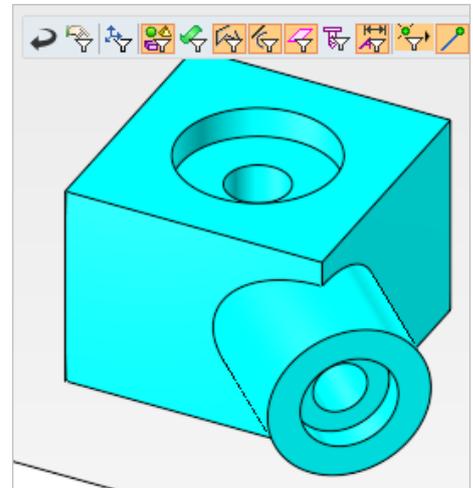
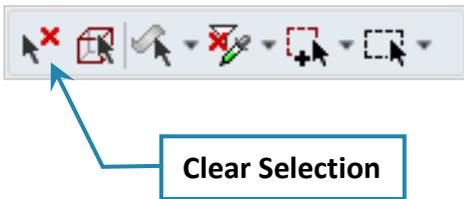


4. **Pick Objects filter** and change the filter status, **Pick** the Cyan object again.

Note that in the current filter status – the filter Object is active – the whole object was selected.



5. **Pick** the **Clear Selection**  command (in the Selection methods) to **Unpick All**.



Selection Filter Status

For each status and for every command, the **Filters** in the **Selection Filter** might have one of three possible relevant working conditions, which are predefined according to the most common usage considerations:

- Relevant and Activated – the icon is available and pressed
- Relevant and Not Activated – the icon is available but not pressed
- Not Relevant – the icon is grey out



The **Selection Filters** status changes from command  to command  automatically by the system. The user can choose to activate or deactivate any of the relevant filters according to any need and to get more functionality from the command.

Selection Filters Table

	Reset	Reset filters to default if needed – Reset will be done on exit command
	Keep Filters	Keeps user changes in filter state until release and reset
	Filter UCS	Open UCS Manger to control the display of multiple UCSs
	Object	Enable/Disable select of Objects
	Face	Enable/Disable select of Faces
	Sketcher & Composite	Enable/Disable select of Sketcher & Composite
	Edges & Curves	Enable/Disable select of Edges & Curves
	Datum	Enable/Disable select of Datum's
	Threads	Enable/Disable select of Threads attribute
	PMI	Enable/Disable select of PMI
	Points menu extension	Open the filter point menu extension
	End point	Enable/Disable select of End point
	Mid point	Enable/Disable select of Mid point
	Center point	Enable/Disable select of Center point
	Close to curve point	Enable/Disable select of Close to curve point
	Close to face point	Enable/Disable select of Close to face point
	Intersection point	Enable/Disable select of Intersection point
	Pierce point	Enable/Disable select of Pierce point
	UCS point	Enable/Disable select of UCS point
	Point	Enable/Disable select of Point
	Key in point	Enable/Disable select of Key in point
	Screen point	Enable/Disable select of point on screen
	Delta from point	Enable/Disable adding Delta to any other selected point
	Multiple points	Enable/Disable select of multiple kinds of points

NOTE:

The Delta from point filter is a combined point whose XYZ values are measured from any other selected point.

The delta interface window opens after picking any other point.

6. Activate Filter Faces again.

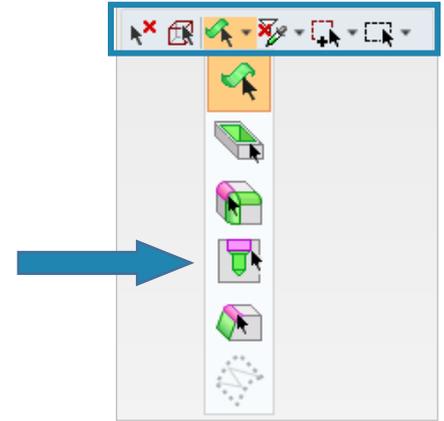
From the **Selection Methods** group, change the selection mode to **Hole Selection**.

Note, that **Hole selection** is not relevant while filter object is active.

The **Selection Methods** show now that Hole recognition is active.



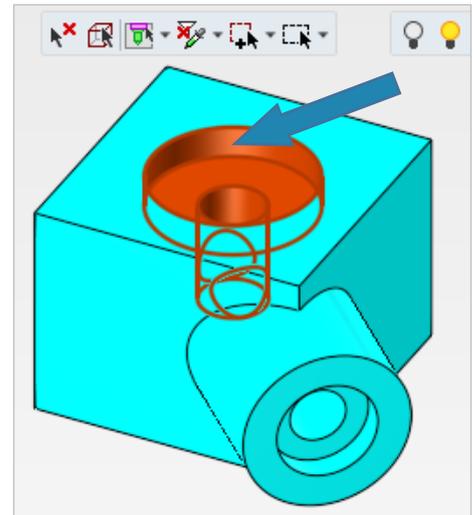
Hole recognition



7. **Pick** the cylinder face at the top of the Cyan object.

Note that all of the Hole faces were picked in a single **pick** including the interior surfaces that are difficult to reach.

Keep the selection.



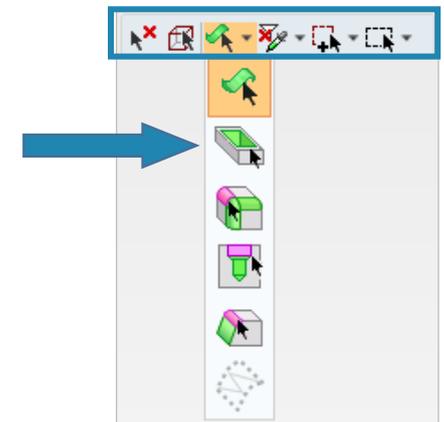
8. From the **Selection Methods** group, change the selection mode to **Pocket Selection**.

Note that **Hole selection** is not relevant while filter object is active.

The **Selection Methods** show now that Pocket recognition is active.

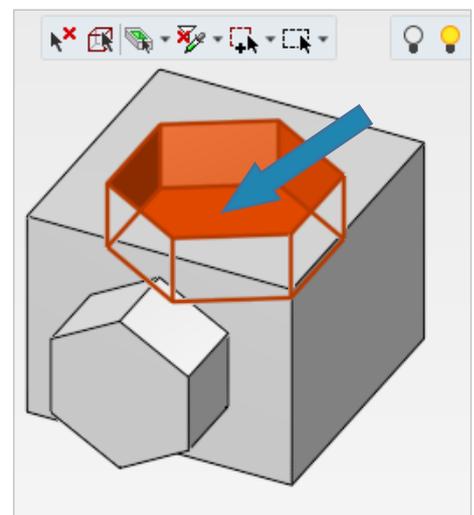


Pocket recognition



9. **Pick** the bottom face of the pocket of the Grey object.

Note that all of the Pocket faces were picked in a single **pick** including the interior surfaces that are difficult to reach.



Selection Methods

Selection Methods is a group of drop down menus which from there the **Selection Tools** can be invoked.



	Clear Selection – Unselect all <i>picked</i> entities
	Select All – Select all entities (according to selection filter status) – can be done by <Ctrl>+<A>

It is possible to change the selection and to use advanced selection tools like **Select By Shape**:

	<p>Select by Polygon – draw polygon built from points.</p> <p>Select by Lasso – draw a shape by free hand.</p> <p>Select by Brush – brush entities to be picked.</p> <p>Select by Box (this is the default shape selection).</p>
--	--

In addition, it is possible to define the **Selection Mode**:

	<p>Add mode – <i>pick</i> entities to Add them to selected entities (default).</p> <p>Remove mode – <i>pick</i> entities to Remove them from selected entities.</p> <p>Visible mode – <i>pick</i> only Visible entities.</p>
--	---

In addition, it is possible to define the **Selection Color**:

	<p>Select by Picked Color – select color(s) to be picked.</p> <p>Select by Unpicked Color – select by the unpicked color(s).</p> <p>Select by Picked Color OFF – turn Off selection by colors (default).</p> <p>Select by Color Dialog – opens the filter color selection dialog.</p>
--	---

In addition, it is possible to define **Selection by Feature Recognition**:

	<p>Face selection mode – general mode for any face selection (default).</p> <p>Face selection Pocket mode – select a pocket by picking his bottom face.</p> <p>Face selection Round mode – select a chain of rounds by picking a round face.</p> <p>Face selection Hole mode – select a hole by picking one of his faces.</p> <p>Face selection Smooth mode – select faces that are smooth to each other.</p> <p>Facet selection mode – select facets that are smooth to each other (mesh).</p>
--	---

! Please notice:
It is possible to use any combination of selection methods, as needed

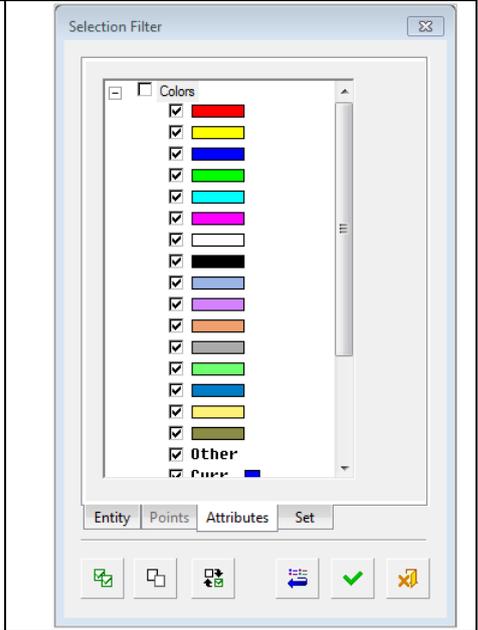
Select by Color Dialog:
Mark colors to be selected.

 Use this mode to select marked colors.

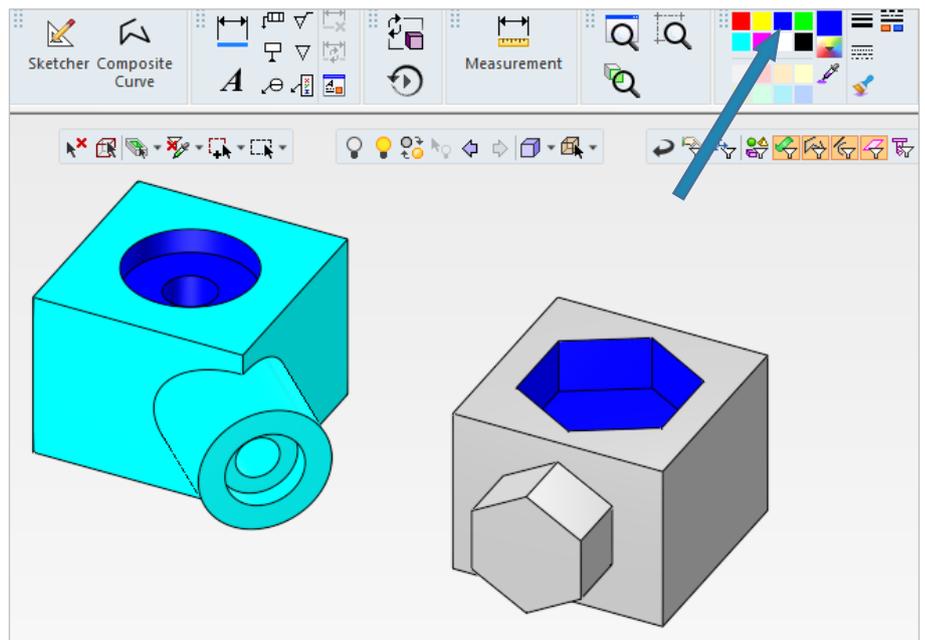
 Use this mode to select Unmarked colors.

 Use this mode to turn Off selection by colors.

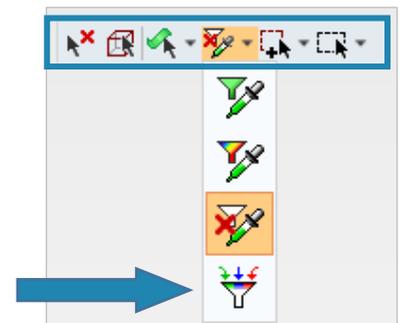
 Use this icon to toggle selection.



10. From the **Color Menu** *pick* the Blue color to change the *picked* faces to Blue.

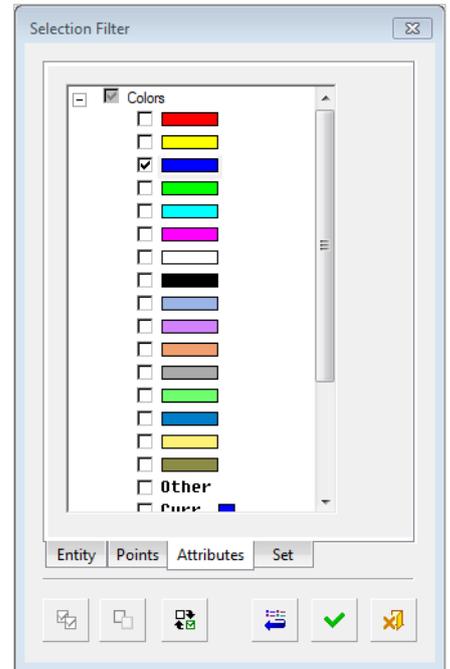


11. From the **Selection Methods** group, open **Select by Color Dialog**.

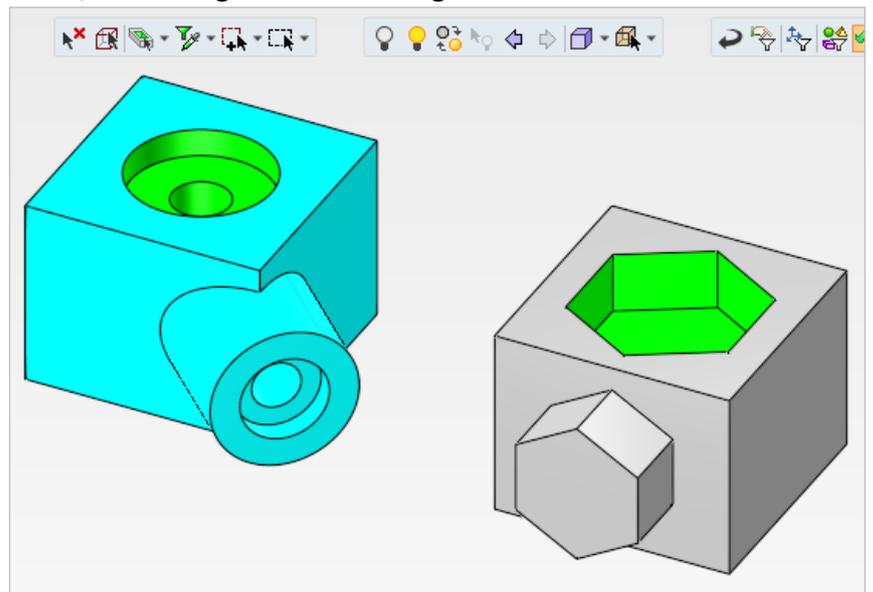


12. Uncheck the Blue color,

Switch the selection using toggle  command so only blue is selected as shown in the picture.



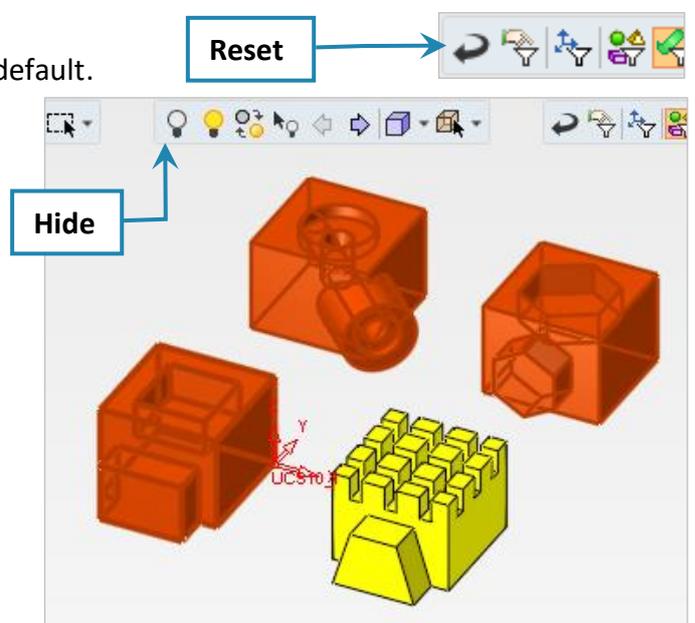
13. **Pick Select All**  to select all blue faces, and change their color to green from the **Color Menu**.



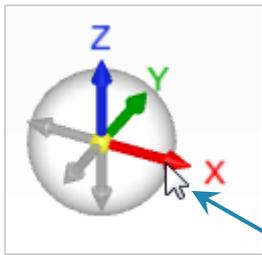
14. **Pick** the **Reset**  command to set all filters to default.

15. **Pick** all object except the yellow – use filter

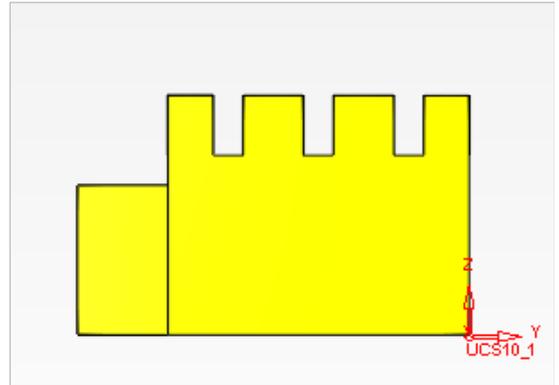
objects – and then **pick** the **Hide**  command to hide them.



16. Turn the display to **Right View**, **Pick** the **X** axis in the Display area.



Pick X axis

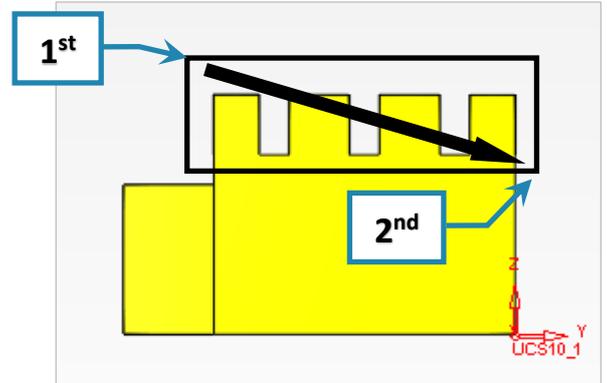


Make sure that **Filter faces** is active and **Select by Box** is active in the **Selection Methods** group.

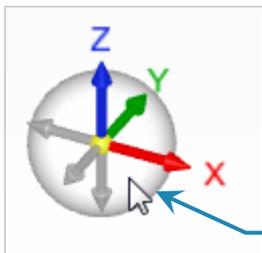


Select by Box

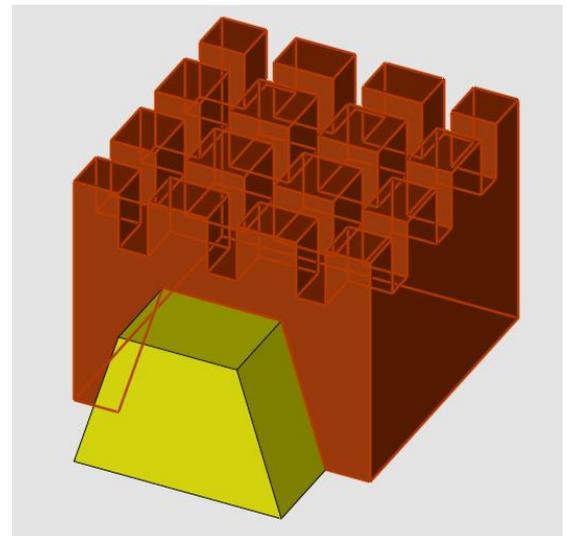
17. **Pick** the 1st point on screen as shown in the picture and drag the mouse to the 2nd point and release (note the order and direction). The box line is solid.



18. Turn the display to **ISO View**, **Pick** the **White Ball** in the Display area.



Pick White Ball

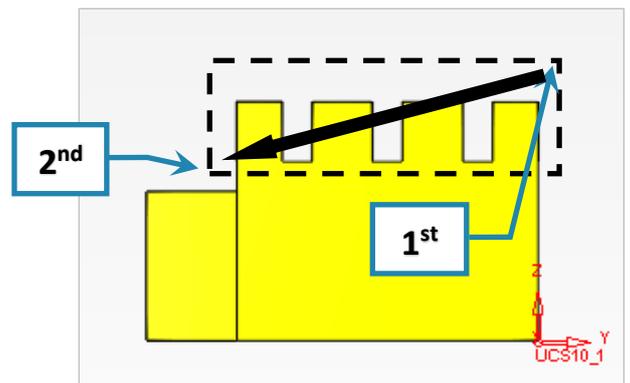


Select by Box:

From **left to right** includes all entities within the box, even partially contained entities.

19. Turn back the display to **Right View**, **Pick** the **X** axis in the Display area.

Pick the 1st point on screen as shown in the picture and drag the mouse to the 2nd point and release (note the order and direction). The box line is dashed.

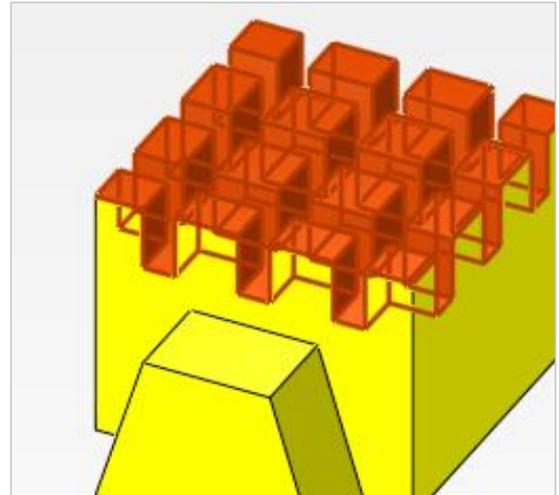


20. Turn back the display to **ISO View**, **Pick** the **White Ball** in the Display area.

Select by Box:

From **Right to Left** includes only fully contained entities.

Pick the **Clear Selection**  command (in the Selection methods) to **Unpick All**.



!	<p><i>Please notice:</i></p> <ol style="list-style-type: none"> 1. Press <Shift> key (on keyboard) and Select by Box (both directions) means Unselect by Box. 2. For all other shapes there is no selection difference in the shape creation direction. 3. Press <Shift> key is also Unselect by shape (no selection difference in the shape creation direction).
---	---

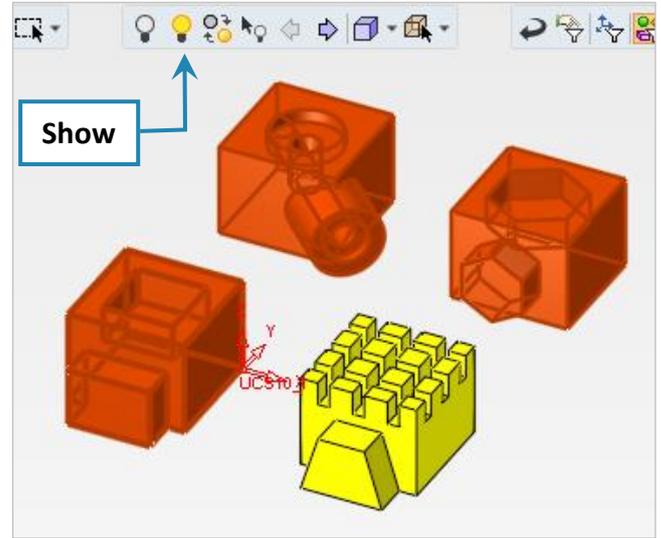
Mouse pointer

To make selection easier and clearer, the user may notice that the shape of the mouse pointer is changing and the entity highlight while hovering above entities according to their type:

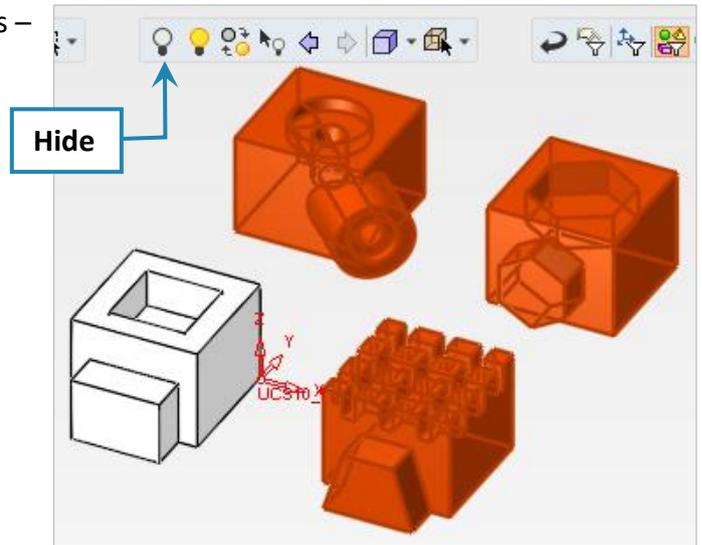
	Pick an edge
	Pick a face
	Pick a spline, line, or any other curve
	Pick a composite curve
	Pick an endpoint of a curve or edge
	Pick the midpoint of a line, circle, arc, or ellipse
	Pick the center point of a circle, arc, or ellipse
	Pick the point that is closest to a picked edge or curve
	Pick the point that is closest to the picked position on a face
	Pick an intersection point
	Pick a piercing point
	Pick a Toolpath point
	Pick a UCS
	Pick a pre-defined point
	Pick a Key In point
	Pick a sketch
	Pick a plane
	Pick an open or closed solid object
	Pick an open or closed Mesh object

21. **Pick** the **Show**  command to see all object hidden.

Pick Select All  to bring them back to display, and then **exit** (middle mouse button) to quit the command.



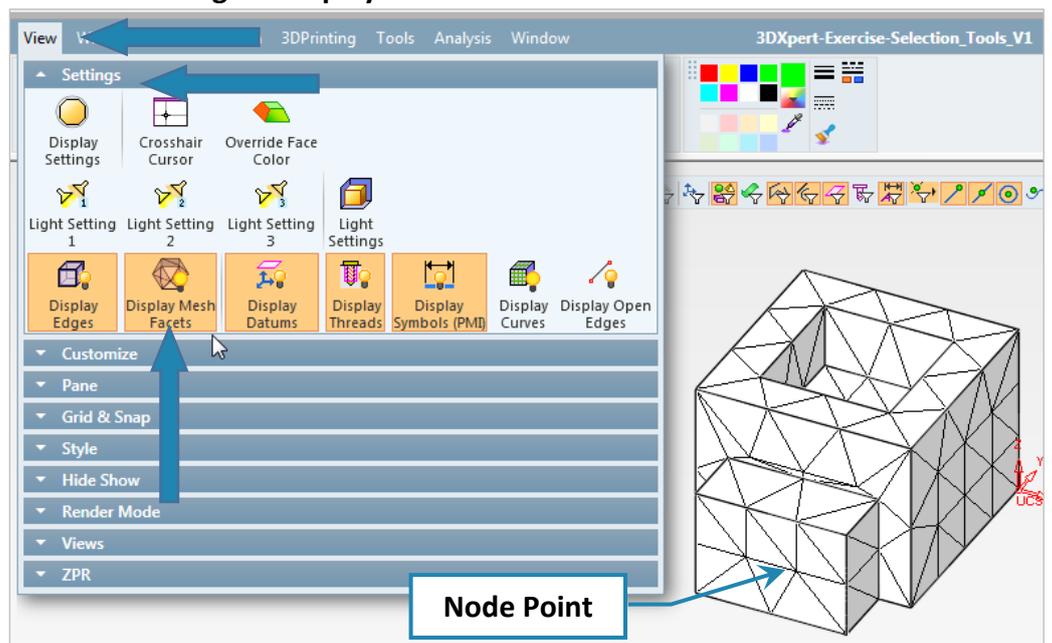
22. **Pick** all object except the white – use filter objects – and then **pick** the **Hide**  command to hide them.



Mesh Object:

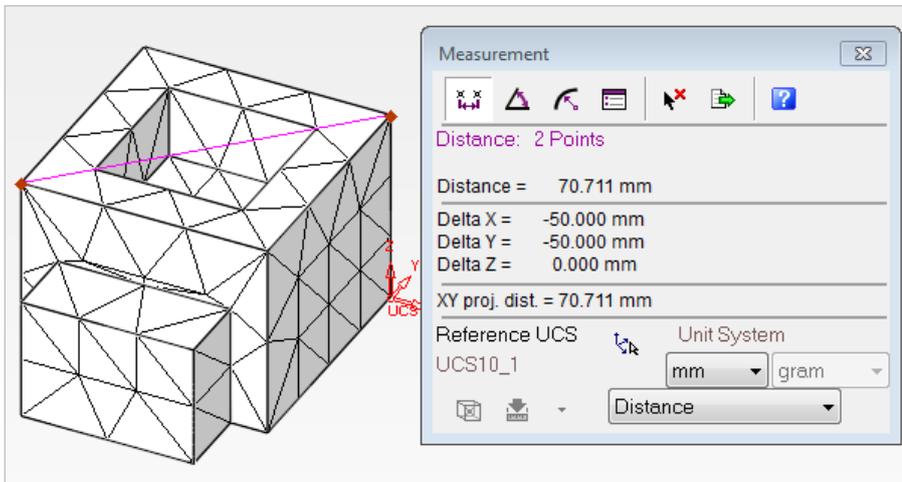
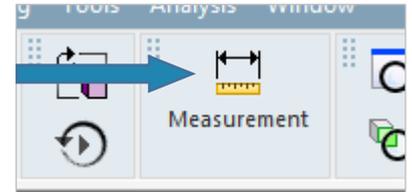
The white object is a Mesh Object.

23. To view the mesh facets **View -> Settings -> Display Mesh Facets**.

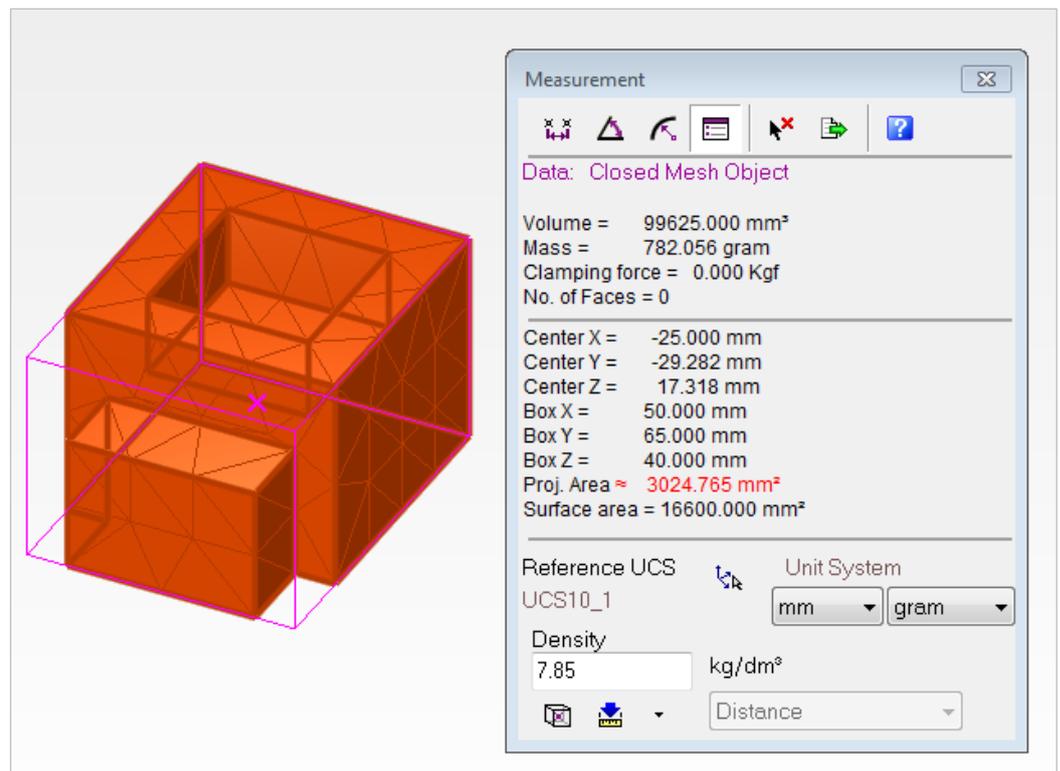


On a model with Mesh, Filter Object can be used to select the object. It is also possible to **pick** a mesh node.

24. From the main Toolbar, invoke Measurement  Command, and *pick* two points to measure the distance.



25. Change to **Data**  in the Measurement toolbar and *pick* the object:



End of Document.