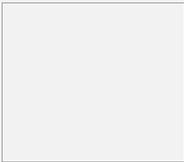
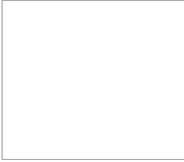
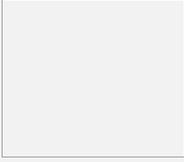
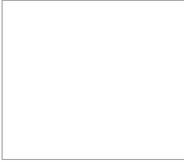


# STEAM Tech Teams

## Glossary of Terms

ID/Type/OLE		Word/Definition/Link
279	TinkerCad	Align
		<p>v. In TinkerCad, one needs to place two or more objects in precise relationship to one another. For example, the designer may want to align the centers of each object or align the outside edges. Action: Enclose objects in a Command Box so both objects are highlighted, Edit-&gt;Align-&gt;click on the axis to be aligned.</p>
		<a href="https://www.youtube.com/watch?v=Ru742pUG_Bc">https://www.youtube.com/watch?v=Ru742pUG_Bc</a>
296	TinkerCad	Bevel
		<p>n. A transitional edge between two surfaces. To create a bevel, form an object with the "transitional characteristics" desired and convert it into a "hole" form using the Inspector Window. Then, group the hole and the solid object. Bevels are also referred to a "chamfers."</p>
		<a href="https://www.youtube.com/watch?v=J-6X6in6Las&amp;t=540s">https://www.youtube.com/watch?v=J-6X6in6Las&amp;t=540s</a>
305	TinkerCad	Caliper
		<p>n. A device used to measure the distance between two sides. Most 3D designers utilize electronic calipers capable of displaying measurements in the metric (i.e. centimeters and millimeters) and Imperial (i.e. inches) systems.</p>
		<a href="https://en.wikipedia.org/wiki/Calipers_-_Digital_caliper">https://en.wikipedia.org/wiki/Calipers_-_Digital_caliper</a>
294	TinkerCad	Chamfer
		<p>n. A transitional edge between two intersecting planar surfaces. To create a chamfer, form an object with the "transitional characteristics" desired and convert it into a "hole" form using the Inspector Window. Then, group the hole and the solid object. Chamfers are also referred to a "bevels."</p>
		<a href="https://www.youtube.com/watch?v=J-6X6in6Las&amp;t=540s">https://www.youtube.com/watch?v=J-6X6in6Las&amp;t=540s</a>
272	TinkerCad	Command Box
		<p>n. A graphical box drawn around an object or group of objects used to designate the objects for some kind of operation. Action: Left-click and drag a box around objects to be highlighted. Verify the objects are highlighted with blue.</p>

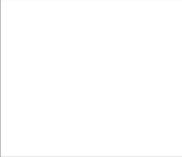
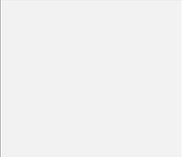
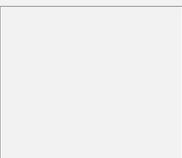
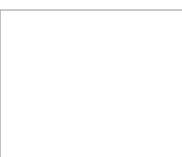
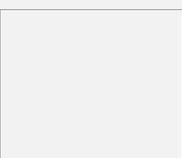
# STEAM Tech Teams

## Glossary of Terms

ID/Type/OLE		Word/Definition/Link
287	TinkerCad	<p data-bbox="526 352 667 384">Copy/Paste</p> <p data-bbox="526 405 1455 684">v. Creating one or more copies of an object. Similarly, one can copy objects from one modelling file to another. One can copy and paste at angles by copying an object, pasting it, rotating the pasted object and copying it repeatedly. The result is copying-pasting at progressive angles. For example, one can add teeth to a gear body in this fashion. Action: Left-click an object-&gt;Ctl-C-&gt;Ctl V. Alternatively, Left-click an object-&gt;Edit-&gt;Copy-&gt;Edit-&gt;Paste. Alternatively, Alt + C-&gt;Alt -Shift + V to paste in place. Alternatively, Edit-&gt;Duplicate-&gt;Pull source and copy parts apart.</p> <p data-bbox="526 699 1133 730"><a href="https://www.youtube.com/watch?v=rwyTzY55vSU">https://www.youtube.com/watch?v=rwyTzY55vSU</a></p>
275	TinkerCad	<p data-bbox="526 768 656 800">Dimension</p> <p data-bbox="526 821 1455 993">v. To change the dimensions of an object or group of objects. Action: Left Click on Object verify it is selected (surrounded by blue). Left click and drag a grip in the appropriate direction. Alternatively, Alt + Left Click &amp; Drag to scale relative to the center point. Alternatively, Shift + Left-Click &amp; drag for 3-direction uniform scaling.</p> <p data-bbox="526 1010 1138 1041"><a href="https://www.youtube.com/watch?v=qGSenao6CEk">https://www.youtube.com/watch?v=qGSenao6CEk</a></p>
303	TinkerCad	<p data-bbox="526 1081 651 1113">Download</p> <p data-bbox="526 1134 1455 1234">v. Moving the design file from the Cloud to the user's local computer. Action: Main Menu-&gt;Design-&gt;Download for 3D Printing. Look for the file in the "Downloads" file on your local computer.</p> <p data-bbox="526 1255 971 1287"><a href="#">IDWordDefinitionLinkOLE Object Type</a></p>
288	TinkerCad	<p data-bbox="526 1325 643 1356">Duplicate</p> <p data-bbox="526 1377 1398 1444">v. In TinkerCad, called "Smart Duplicate." Action: Left-click object-&gt;Edit-&gt;Duplicate-&gt;Press Arrow Key to Move Cursor-&gt;Edit-.Duplicate.</p> <p data-bbox="526 1503 1133 1535"><a href="https://www.youtube.com/watch?v=rwyTzY55vSU">https://www.youtube.com/watch?v=rwyTzY55vSU</a></p>
293	TinkerCad	<p data-bbox="526 1568 618 1600">Emboss</p> <p data-bbox="526 1621 1455 1688">v. Raising material from an object in the design. To emboss, group the object you want to emboss with the design object.</p> <p data-bbox="526 1747 1117 1778"><a href="https://www.youtube.com/watch?v=i7EyUKfJz3Y">https://www.youtube.com/watch?v=i7EyUKfJz3Y</a></p>

# STEAM Tech Teams

## Glossary of Terms

ID/Type/OLE	Word/Definition/Link
295	TinkerCad
	Engrave
	v. Subtract material from an object in the design. To engrave, group the object you want to engrave with the design object in "hole" form. Any object can be converted from a solid object to a "hole" object in the Inspector Window.
	<a href="https://www.youtube.com/watch?v=i7EyUKfJz3Y">https://www.youtube.com/watch?v=i7EyUKfJz3Y</a>
302	TinkerCad
	File Name
	v. TinkerCad automatically names every file the users create because the design files are maintained in the Cloud. To change the name assigned by TinkerCad, select Design->Properties->Change and enter the file name you desire. The designer can specify whether the design should be "shared" or should remain "invisible" to the User Community.
	<a href="https://www.youtube.com/watch?v=C1JaslCrWP8">https://www.youtube.com/watch?v=C1JaslCrWP8</a>
297	TinkerCad
	Fillet
	n. A transition between two intersecting planar surfaces where the corner between the two surfaces is filled in. Very similar to a chamfer or bevel, except that the outer surface is convex.
	<a href="https://www.youtube.com/watch?v=iw7Lgttc-iE">https://www.youtube.com/watch?v=iw7Lgttc-iE</a>
286	TinkerCad
	Flip (also, "Mirror")
	v. To create an identical object in a mirror image of the original object. This operation is used to create left-hand and right-hand pairs. Action: Left-click object to highlight it->Select Adjust->Mirror.
	<a href="https://www.youtube.com/watch?v=rgnvNXCh-mw">https://www.youtube.com/watch?v=rgnvNXCh-mw</a>
264	TinkerCad
	Grid Setup
	n. Tool in the lower right-hand corner of the design screen to establish the increments on the workplane grid
269	TinkerCad
	Grips
	n. The "handles" on the outside of an object used to change its size. Left click on the object to view the grips. Action: Alt-Key + Rt Click & Drag to scale relative to the center point; Shift Key + Rt Click to scale uniformly.

# STEAM Tech Teams

## Glossary of Terms

ID/Type/OLE		Word/Definition/Link
282	TinkerCad	<p data-bbox="526 359 1471 386">Group</p> <p data-bbox="526 407 1471 470">v. Combines two or more separate objects into a single object. Action: Shift-Left-Click the objects to highlight them-&gt;Click Group on the tool Bar.</p> <p data-bbox="526 533 1471 560"><a href="https://www.youtube.com/watch?v=m0UQHlbGcF0">https://www.youtube.com/watch?v=m0UQHlbGcF0</a></p>
284	TinkerCad	<p data-bbox="526 604 1471 632">Hole Object</p> <p data-bbox="526 653 1471 821">n. Subtracts from an object the 3-dimensional space occupied by a shape. This operation is used to cut or shell objects. Mathematically, it is a "Boolean Subtraction." Action: Left-click + Drag a shape from the Shape Generator-&gt;Select "Hole" from the Inspector Window-&gt;Move the Hole shape and Solid shape together as appropriate-&gt;Select Group.</p> <p data-bbox="526 842 1471 869"><a href="https://www.youtube.com/watch?v=lxrsHSELHsw">https://www.youtube.com/watch?v=lxrsHSELHsw</a></p>
289	TinkerCad	<p data-bbox="526 913 1471 940">Inspector Window</p> <p data-bbox="526 961 1471 1024">n. A window arising from the selection of a Shape from the Shape Generator Panel which allows conversion (back &amp; forth) from a solid object to a hole.</p> <p data-bbox="526 1087 1471 1115"><a href="https://www.youtube.com/watch?v=lxrsHSELHsw&amp;t=5s">https://www.youtube.com/watch?v=lxrsHSELHsw&amp;t=5s</a></p>
285	TinkerCad	<p data-bbox="526 1159 1471 1186">Mirror (also "Flip")</p> <p data-bbox="526 1207 1471 1312">v. To create an identical object as a mirror image. This operation is used to create left-hand and right-hand pairs. Action: Left-click object to highlight it-&gt;Select Adjust-&gt;Mirror.</p> <p data-bbox="526 1333 1471 1360"><a href="https://www.youtube.com/watch?v=rgnvNXCh-mw">https://www.youtube.com/watch?v=rgnvNXCh-mw</a></p>
273	TinkerCad	<p data-bbox="526 1404 1471 1432">Move</p> <p data-bbox="526 1453 1471 1558">v. To move an object along its plane, highlight it and press one of the arrow keys on the keyboard. To move the object in increments of 10, press the shift and arrow key. Action: press appropriate arrow key, or Shift + Arrow Key.</p> <p data-bbox="526 1579 1471 1606"></p>
301	TinkerCad	<p data-bbox="526 1650 1471 1677">Name File</p> <p data-bbox="526 1705 1471 1873">v. TinkerCad automatically names every file the users create because the design files are maintained in the Cloud. To change the name assigned by TinkerCad, select Design-&gt;Properties-&gt;Change and enter the file name you desire. The designer can specify whether the design should be "shared" or should remain "invisible" to the User Community.</p> <p data-bbox="526 1894 1471 1921"><a href="https://www.youtube.com/watch?v=C1JaslCrWP8">https://www.youtube.com/watch?v=C1JaslCrWP8</a></p>

# STEAM Tech Teams

## Glossary of Terms

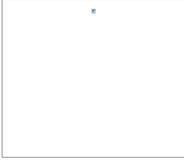
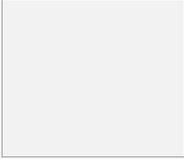
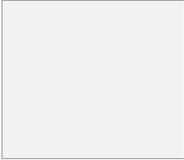
ID/Type/OLE	Word/Definition/Link
278	TinkerCad
	Object
	n. A mathematical representation of a 3-dimensional surface.
	<a href="https://en.wikipedia.org/wiki/3D_modeling">https://en.wikipedia.org/wiki/3D_modeling</a>
261	TinkerCad
	Orbit
	v. Act of moving the orientation from which the designer is viewing a design object. Generally, the same as "Plane Orientation."
304	TinkerCad
	Orthogonal View
	n. The direction from which one can view the workplane or design: Top, Side, Front, Back, Cross-section or mid-section.
	<a href="https://www.youtube.com/watch?v=wa37nrj0pH0">https://www.youtube.com/watch?v=wa37nrj0pH0</a>
306	TinkerCad
	Overhang
	n. In 3D design, that part of a design that has no material under it leaving open the possibility that the portion of the printed model may "droop" due to gravity. Overhangs more than 45 degrees generally need support material to be printed under it which is removed after the print is completed.
	<a href="https://www.youtube.com/watch?v=gfauSm8aXh0">https://www.youtube.com/watch?v=gfauSm8aXh0</a>
263	TinkerCad
	Pan
	v. The act of moving a design object round to see it from various viewpoints. Action: click and hold the object with the right mouse button depressed.
256	TinkerCad
	Plane
	n. the flat, two-dimensional surface on which a design object is placed and manipulated.
	<a href="https://en.wikipedia.org/wiki/Plane_(geometry)">https://en.wikipedia.org/wiki/Plane_(geometry)</a>

# STEAM Tech Teams

## Glossary of Terms

ID/Type/OLE

Word/Definition/Link

260	TinkerCad	Plane Orientation Tool
		<p>n. A tool on the design screen which allows the designer to view an object or design plane from various directions.</p>
267	TinkerCad	Primitive
		<p>n. The basic object forms used in "mesh-based" design programs. For example, a sphere, a cube, a taurus and many more. Also referred to in TinkerCad as "Shape Generators." They can be found in a panel on the right-hand side of the design screen and many more primitives can be found in the Community files.</p> <p><a href="https://www.tinkercad.com/search/?q=Shape+Generators">https://www.tinkercad.com/search/?q=Shape+Generators</a></p>
276	TinkerCad	Rotate
		<p>v. Rotate an object along a plane. Action: Left-click on an object + Left-click + drag a curved gripper. Drag close to the center point of object to snap to 22.5 degree increments. Drag away from the center point to rotate in single degree increments.</p>
281	TinkerCad	Ruler Tool
		<p>n. The Ruler Tool is used to make measurements or change measurements of an object along a particular plane. Action: Left-click Ruler Tool-&gt;Left-click the object on a plane. Use the appropriate gripper to alter a dimension.</p> <p><a href="https://www.youtube.com/watch?v=qUA9VSdG5Oc">https://www.youtube.com/watch?v=qUA9VSdG5Oc</a></p>
274	TinkerCad	Scale
		<p>v. to change the dimensions of an object or group of objects. Action: Left Click on Object verify it is selected (surrounded by blue). Left click and drag a grip in the appropriate direction. Alt + Left Click &amp; Drag to scale relative to the center point. Shift + Left-Click &amp; drag for 3-direction uniform scaling.</p>

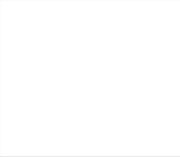
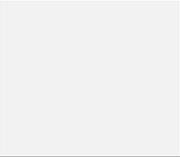
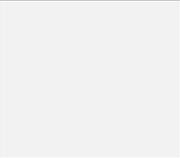
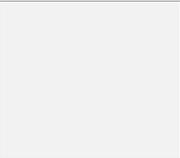
# STEAM Tech Teams

## Glossary of Terms

ID/Type/OLE	Word/Definition/Link
268 TinkerCad	<p data-bbox="524 352 672 382">Shape Panel</p> <p data-bbox="524 405 1455 575">n. Same as "Primitive." The basic object forms used in "mesh-based" design programs. For example, a sphere, a cube, a taurus and many more. Also referred to in TinkerCad as "Shape Generators." They can be found in a panel on the right-hand side of the design screen and many more can be found in the Community files.</p> <p data-bbox="524 596 1135 625"><a href="https://www.youtube.com/watch?v=bbnsAyVhR5s">https://www.youtube.com/watch?v=bbnsAyVhR5s</a></p>
300 TinkerCad	<p data-bbox="524 663 581 693">Shell</p> <p data-bbox="524 716 1463 886">v. The process of "hollowing out" the inside of an object such that the distance between the outer wall and the inner wall is uniform. In general, one creates an object in that shape that needs to be hollowed out, aligns it to the center of the object, converts it to a "hole object," and groups the hole and solid object.</p> <p data-bbox="524 907 1224 936"><a href="https://www.youtube.com/watch?v=xxtONgRdxDY&amp;t=92s">https://www.youtube.com/watch?v=xxtONgRdxDY&amp;t=92s</a></p>
308 TinkerCad	<p data-bbox="524 974 591 1003">Slicer</p> <p data-bbox="524 1026 1430 1123">n. A computer program which converts stereo lithography (stl) files to the layer-by-layer and pixel-by-pixel instructions to a 3D printer for laying down the material to print a design file.</p> <p data-bbox="524 1144 985 1173"><a href="https://en.wikipedia.org/wiki/3DSlicer">https://en.wikipedia.org/wiki/3DSlicer</a></p>
266 TinkerCad	<p data-bbox="524 1224 643 1253">Snap Grid</p> <p data-bbox="524 1276 1422 1407">n. In 3D design, the smallest unit of measure the designer wants the dimensions of an object to "snap to." Tenths of a millimeter (.1 mm) is commonly used for small objects. The "snap grid" can be changed anytime during the design process.</p>
310 TinkerCad	<p data-bbox="524 1495 667 1524">Split Object</p> <p data-bbox="524 1547 1468 1717">v. For various reasons, a designer may choose to split an object that has been designed. This could be necessary to print the design with a flat surface on the build plate to prevent warping, or because the object is too large to be printed in one session, or for other reasons. The YouTube link below describes how an object design can be split.</p> <p data-bbox="524 1738 1143 1768"><a href="https://www.youtube.com/watch?v=1SwSqROgLpY">https://www.youtube.com/watch?v=1SwSqROgLpY</a></p>

# STEAM Tech Teams

## Glossary of Terms

ID/Type/OLE	Word/Definition/Link
307	TinkerCad
	<p data-bbox="526 359 1471 386">Support</p> <p data-bbox="526 407 1471 506">n. Material that is printed below an "overhang" and is removed after the print is completed. Supports are usually added to the print file in the "Slicer" software.</p> <p data-bbox="526 533 1471 564"><a href="https://www.youtube.com/watch?v=gfauSm8aXh0">https://www.youtube.com/watch?v=gfauSm8aXh0</a></p>
292	TinkerCad
	<p data-bbox="526 604 1471 632">SVG File</p> <p data-bbox="526 653 1471 751">n. Text as well as other pictures can be imported into TinkerCad as "svg" files. Basically, anything that can be "Photoshopped," can be incorporated into a model. Jpeg, png and svg files can be used.</p> <p data-bbox="526 779 1471 810"><a href="https://www.youtube.com/watch?v=TgFWj8INx6w">https://www.youtube.com/watch?v=TgFWj8INx6w</a></p>
291	TinkerCad
	<p data-bbox="526 850 1471 877">Text Fonts</p> <p data-bbox="526 898 1471 997">n. Text as well as other pictures can be imported into TinkerCad as "svg" files. Basically, anything that can be "Photoshopped," can be incorporated into a model. Jpeg, png and svg files are also usable.</p> <p data-bbox="526 1024 1471 1056"><a href="https://www.youtube.com/watch?v=TgFWj8INx6w">https://www.youtube.com/watch?v=TgFWj8INx6w</a></p>
290	TinkerCad
	<p data-bbox="526 1096 1471 1123">Text Generator</p> <p data-bbox="526 1144 1471 1243">n. Pre-formed letters and numbers available in the Shape Generator Panel. Letters and numbers can be "holes" or "solid objects." Therefore, text can be embossed or engraved in a design. Jpeg, png and svg files are also usable.</p> <p data-bbox="526 1270 1471 1302"><a href="https://www.youtube.com/watch?v=hfQt0NmeYvU">https://www.youtube.com/watch?v=hfQt0NmeYvU</a></p>
259	TinkerCad
	<p data-bbox="526 1341 1471 1369">TinkerCad LOGO</p> <p data-bbox="526 1390 1471 1451">n. Logo designating the autodesk TinkerCad brand and located on the design screen.</p> <p data-bbox="526 1507 1471 1547"></p>
258	TinkerCad
	<p data-bbox="526 1587 1471 1614">Tool Bar</p> <p data-bbox="526 1635 1471 1734">n. That portion at the top of the design screen and to the right of the TinkerCad logo which displays such design tools as "Design," "Edit," "Help," "Undo," and etc.</p> <p data-bbox="526 1761 1471 1793"></p>

# STEAM Tech Teams

## Glossary of Terms

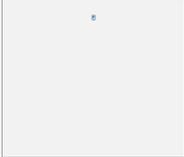
ID/Type/OLE		Word/Definition/Link
283	TinkerCad	<p data-bbox="526 352 634 382">Ungroup</p> <p data-bbox="526 405 1422 470">v. Separates two or more objects that were previously grouped together. Action: Left-click to highlight an object-&gt;Select Ungroup from the Tool Bar.</p> <p data-bbox="526 531 1156 560"><a href="https://www.youtube.com/watch?v=m0UQHlbGcF0">https://www.youtube.com/watch?v=m0UQHlbGcF0</a></p>
265	TinkerCad	<p data-bbox="526 600 784 630">Unit of Measurement</p> <p data-bbox="526 653 1459 785">n. A standard of measurement for the same type and quantity, established by convention. In 3D design, we normally measure in metric units (i.e. millimeters or centimeters) or in English units (i.e. inches or feet). Industry usually uses the metric measurement system.</p> <p data-bbox="526 808 1170 837"><a href="https://en.wikipedia.org/wiki/Units_of_measurement">https://en.wikipedia.org/wiki/Units_of_measurement</a></p>
309	TinkerCad	<p data-bbox="526 873 594 903">Warp</p> <p data-bbox="526 926 1466 1239">n. In the fused demolition modelling (FDM) process, hot material is laid onto a flat build plate, and subsequent layers of hot material are laid on top of the previous layers. The subsequent layers are hotter than the previous layers and, have a greater rate of cooling. Because of the different rates of cooling, the first layers are pulled away from the build plate causing the bottom of the printed object to "warp" or bow upwards from the flat build plate. If this "warping process" is not controlled, the object can be distorted and in the worst case, be pulled away from the build plate before the printing process is completed.</p>
255	TinkerCad	<p data-bbox="526 1325 659 1354">Workplane</p> <p data-bbox="526 1377 1446 1442">n. The flat plane in the design area on which an object resides. There can be multiple work plane in a design project.</p>
280	TinkerCad	<p data-bbox="526 1577 716 1606">Workplane Tool</p> <p data-bbox="526 1629 1446 1724">n. Establishes a plane on which design work is carried out. Action: Left-click Workplane-&gt;Left-click the face of the object where the designer wants the plane.</p> <p data-bbox="526 1747 1127 1776"><a href="https://www.youtube.com/watch?v=VfmziKJ28pY">https://www.youtube.com/watch?v=VfmziKJ28pY</a></p>

# STEAM Tech Teams

## Glossary of Terms

ID/Type/OLE

Word/Definition/Link

257	TinkerCad	Zoom (in/out or +/-)
		v. An action in the design process where an object can be made to grow larger or smaller at scale. Action: Spin the center mouse wheel or click on the "+" or "-" in the upper left hand corner of the Work Plane.  <a href="https://en.wikipedia.org/wiki/Zooming_user_interface">https://en.wikipedia.org/wiki/Zooming_user_interface</a>