

Autodesk Tinkercad 3D Design Exam Objectives

Certiport Autodesk Certified User (ACU) Exam Objectives — Version 2025

Target Audience

The Autodesk Tinkercad 3D Design exam is designed for an individual who has foundational 3D design skills. They have approximately 20 hours of direct instruction, and an additional 20-30 hours of hands-on experience with the application. They have shown interest in 3D modeling, 3D fabrication, and transitioning into more advanced tools such as Autodesk Fusion or Revit.

Candidate Description

A successful candidate can navigate Tinkercad's 3D workspace and tools. They can create, modify, and combine shapes to build functional 3D models, while considering design intent and real-world constraints. The candidate understands basic transformations, grouping, and duplication as well as utilize measurement tools to create functional models. They can think critically about the design process, make strategic decisions, and collaborate by sharing and/or remixing projects.

Prerequisites

It is expected that all candidates will have a general understanding of:

- Computer skills: copy/paste, undo, etc.
- Understand basic geometry (shapes, edges, faces, points, planes, etc.)
- Create a new 3D Design and give it an identifiable name
- Understand Creative Commons/copyright within the technical space

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Objective Domain

1. Workspace and Navigation

1.1 Navigate the environment

- 1.1.a Change your viewpoint: Use the View Cube, Pan, Zoom, Orbit, Fit to View, and Home
- 1.1.b Apply views: Orthographic views, Perspective views

1.2 Manipulate object appearance

- 1.2.a Hide and show objects
- 1.2.b Set transparency: Identify the benefit of making an object transparent
- 1.2.c Set color
- 1.2.d Enable Multicolor: e.g., Which of the following scenarios would allow you to apply multicolor?

1.3 Integrate measurement tools

- 1.3.a Choose the appropriate units for your design: Specify the project units; Set the workspace size
- 1.3.b Specify precision values: Set the Snap Grid; Use radial snap
- 1.3.c Use the Ruler: Identify relative and absolute measurements

2. Create

2.1 Select and place the appropriate shapes

- 2.1.a Add primitive shapes
- 2.1.b Use the Shapes Library: Search for a shape; Understand the content of each shape library; Understand shapes that are accurately scaled to represent real world items
- 2.1.c Create and reuse custom shapes: Add your own creations; Understand the benefit of reusing custom shapes
- 2.1.d Identify which location to place a shape: Default workplane; Temporary workplane; Cruise
- 2.1.e Add and edit a scribble

2.2 Modify the properties of a shape

- 2.2.a Understand the difference between a solid and a hole
- 2.2.b Understand what you can or cannot do with a shape when it's locked

2.3 Add and edit a sketch

- 2.3.a Draw lines
- 2.3.b Draw a Bézier curve: Line, smooth, or break
- 2.3.c Add or remove points

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3. Transformations

3.1 Apply a translation

- 3.1.a Align a shape relative to another shape
- 3.1.b Move a shape relative to a workplane (raise, lower, drop)
- 3.1.c Drag a shape along a workplane

3.2 Reorient a shape

- 3.2.a Rotate a shape around an axis
- 3.2.b Mirror a shape around an axis

3.3 Change the size of a shape

- 3.3.a Uniform scaling vs non-uniform scaling
- 3.3.b Use handles: Understand black vs white handles; Understand the impacts of using handles and the shape parameter values
- 3.3.c Modify the size of the shape using text input
- 3.3.d Make real world scaling/dimensional decisions: Tolerance; Size relativity

4. Compound Operations

4.1 Group shapes

- 4.1.a Combine and subtract shapes
- 4.1.b Ungroup: Understand how the order of creating groups affects the design (nesting)

4.2 Duplicate shapes

- 4.2.a Duplicate and Repeat: Patterning; Radial
- 4.2.b Copy, cut, and paste shapes: Within a single design; Across designs

5. Design Process

5.1 Demonstrate an understanding of the design process

- 5.1.a Understand how to make strategic design decisions: Understand different design cycles, iterative, linear, circular, cyclical, trial and error, etc.; Optimize a design for fabrication and functionality; Reduce waste and support materials; Dependencies and constraints; Print tolerance and sequential grouping

5.2 Identify situations for collaboration and sharing designs

- 5.2.a Bring an external design into your project: Understand what designs can be imported into a design and why; Import on external file
- 5.2.b Use notes to share design intent
- 5.2.c Export a project for the desired fabrication: Specify the appropriate file types
- 5.2.d Send the design: Fusion; 3D Communities and Services; Publish to gallery; Understand Creative Common licensing
- 5.2.e Invite a person to design with you
- 5.2.f Remix from an existing project

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