Unit 2 - Designing a Skateboard (Release Date 1/7/2022)

Resources

Resource	Topics	Resource Links
Summary and Pacing Guide	• Unit Goals • Lesson Descriptions • Suggested Pacing	Summary and Pacing Guide
Lecture	• Why CAD?	Lecture Slide Deck
Assessment	• Part Modeling • Basic Assembly	Unit 2 Summative Assessment
Additional Resources	Step-by-step videos	Unit 2 Videos

Lessons

Lesson	Topics	Resource Links	Pacing Guide
2.1 Designing the Deck	Topics • Create your first part! • Design intent • Using 2D sketches to create 3D solids • Workspace units New CAD Skills • Sketching • Dimensions • Constraints • Extrude, mirror, fillet • Hole feature • Material and mass properties	• Teacher Guide • Slide Deck • Student Guide • Onshape Document	2 hours
2.2 Designing the Trucks	Topics • Part Studios • Working with metric and imperial units New CAD Skills • Multi-part Part Studios • Use and Offset tools • Symmetric • Extrude new vs add • Sketch mirror	• Teacher Guide • Slide Deck • Student Guide • Onshape Document	2 hours

2.3 Wheels and Bearings	Topics • Ball bearings • Revolve vs. Extrude New CAD Skills • Revolve • Construction lines • Diameter dimensions	• Teacher Guide • Slide Deck • Student Guide • Onshape Document	1 hour
2.4 Putting It All Together	Topics • Mate Connectors • Degrees of freedom New CAD Skills • Assembly • Using standard content	• Teacher Guide • Slide Deck • Student Guide • Onshape Document	1 hour
2.5 Now Shred! (Extensions)	Topics • Modify the board dimensions (does your design intent stay intact?) • Change the shape of the board and/or wheels • Make the trucks more realistic • Curve the nose and tail of the board • Add text, spokes, treads, or pattern to the wheels • Make real bearings • Add a logo or design • Design a skate park New CAD Skills • Move face • Inserting images into sketches • Text • Surface thicken	• Teacher Guide • Slide Deck • Student Guide • Onshape Document	2-3 hours