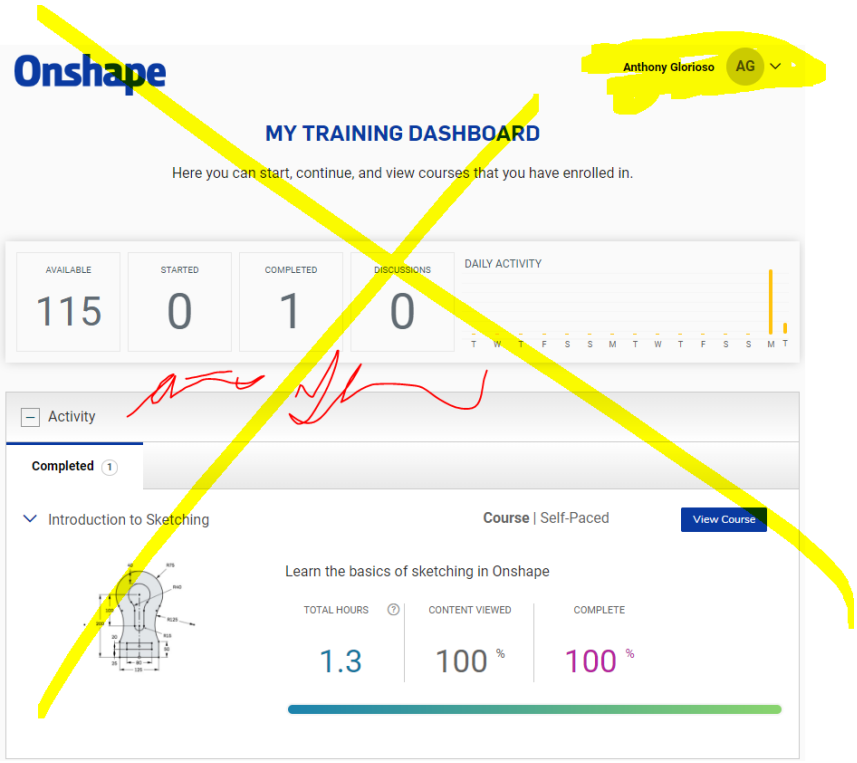
PART1:

Introduction to Sketching

(2-4 DAY ACTIVITY)

1. Start sketching
    a. Starting a sketch
2. Creating sketch entities
    a. Lines and rectangles
    b. Circles and arcs
    c. Construction geometry
    d. Slot
    e. Polygons
3. Sketch constraints
    a. Using constraints in Onshape
    b. Constraints: coincident, horizontal, vertical and equal
    c. Constraints: concentric, tangent, parallel, perpendicular and midpoint
    d. Dimensions
4. Complete a sketch
    a. Exercise: Basic sketching
        i. TAKE A SCREENSHOT OF THE FOLLOWING
            1. YOUR RESPONSE
            2. IF IT WAS CORRECT OR NOT
            3. YOUR WORK
5. Sketch tools
    a. Sketch trim
    b. Extend and split
    c. Additional sketch tools
    d. Sketch points
    e. Sketch text
    f. Use
    g. Exercise: Intermediate sketching
    h. BEGIN SELF-CHECK
        i. TAKE A SCREENSHOT OF THE FOLLOWING
            1. YOUR RESPONSE
            2. IF IT WAS CORRECT OR NOT
            3. YOUR WORK
6. **Once you exit the course this will bring you back to the "My Training Dashboard"**

a. You will see a window that is titled “Activity”. Maximize that window and then select the drop-down window under “Introduction to sketching” take a screenshot of the entire page (with your user name being shown in the top right corner).
b. After taking a screenshot
c. Open that drawing into a Google Drawing and mark a huge “X” over the image, highlight your name and then sign your name over the “X”.
d. **THE “TOTAL HOURS” WILL NOT UPDATE RIGHT AWAY. YOU WILL NEED TO WAIT UNTIL IT UPDATES TO SEE THE FULL “TOTAL HOURS” IT TOOK YOU. PLEASE TO NOT SUBMIT IF IT SAYS “0.0”.**



WHAT AM I SUBMITTING??

- 7 IMAGES ON A GOOGLE DOC ON GOOGLE CLASSROOM
  - **Exercise: Basic sketching**
    - **3 images**

- **Exercise: Intermediate sketching**
  - **3 images**
- **“My Training Dashboard”**
  - **1 image**
  - **ONCE AGAIN, IT THE “TOTAL HOURS” SAYS “0.0” WAIT UNTIL IT UPDATES ITSELF BEFORE SUBMITTING**

Part2:

Part Design Using Part Studios

(4-6 DAY ACTIVITY)

1. What is a Part Studio?
    a. Starting a Part
2. Creating Basic Part Features
    a. Extrude
    b. Appearance
    c. Mass Properties
    d. **Exercise: Extrude**
        i. **TAKE A SCREENSHOT OF THE FOLLOWING**
            1. **YOUR RESPONSE**
            2. **IF IT WAS CORRECT OR NOT**
            3. **YOUR WORK**
    e. Revolve
    f. **Exercise: Revolve**
        i. **TAKE A SCREENSHOT OF THE FOLLOWING**
            1. **YOUR RESPONSE**
            2. **IF IT WAS CORRECT OR NOT**
            3. **YOUR WORK**
    g. Sweep
    h. **Exercise: Sweep**
        i. **TAKE A SCREENSHOT OF THE FOLLOWING**
            1. **YOUR RESPONSE**
            2. **IF IT WAS CORRECT OR NOT**
            3. **YOUR WORK**
    i. Loft
    j. Reference Planes
    k. **Exercise: Loft**
        i. **TAKE A SCREENSHOT OF THE FOLLOWING**
            1. **YOUR RESPONSE**
            2. **IF IT WAS CORRECT OR NOT**
            3. **YOUR WORK**
    l. Previewing Feature Generation
    m. Boolean Options

n. Fillet and Chamfer
o. Hole Feature
p. **Exercise: Coffee Cup**
    i. **TAKE A SCREENSHOT OF THE FOLLOWING**
        1. **YOUR RESPONSE**
        2. **IF IT WAS CORRECT OR NOT**
        3. **YOUR WORK**

3. Creating Patterns and Mirrors in a Part Studio
    a. Pattern Types
    b. Circular Pattern
    c. Linear Pattern
    d. Mirror
4. Creating Draft, Shell, and Rib Features
    a. Draft
    b. **Exercise: Wheel Rim**
        i. **TAKE A SCREENSHOT OF THE FOLLOWING**
            1. **YOUR RESPONSE**
            2. **IF IT WAS CORRECT OR NOT**
            3. **YOUR WORK**

PLEASE STOP AFTER THIS AND DO NOT MOVE ONTO THE REMAINDER OF THE COURSE

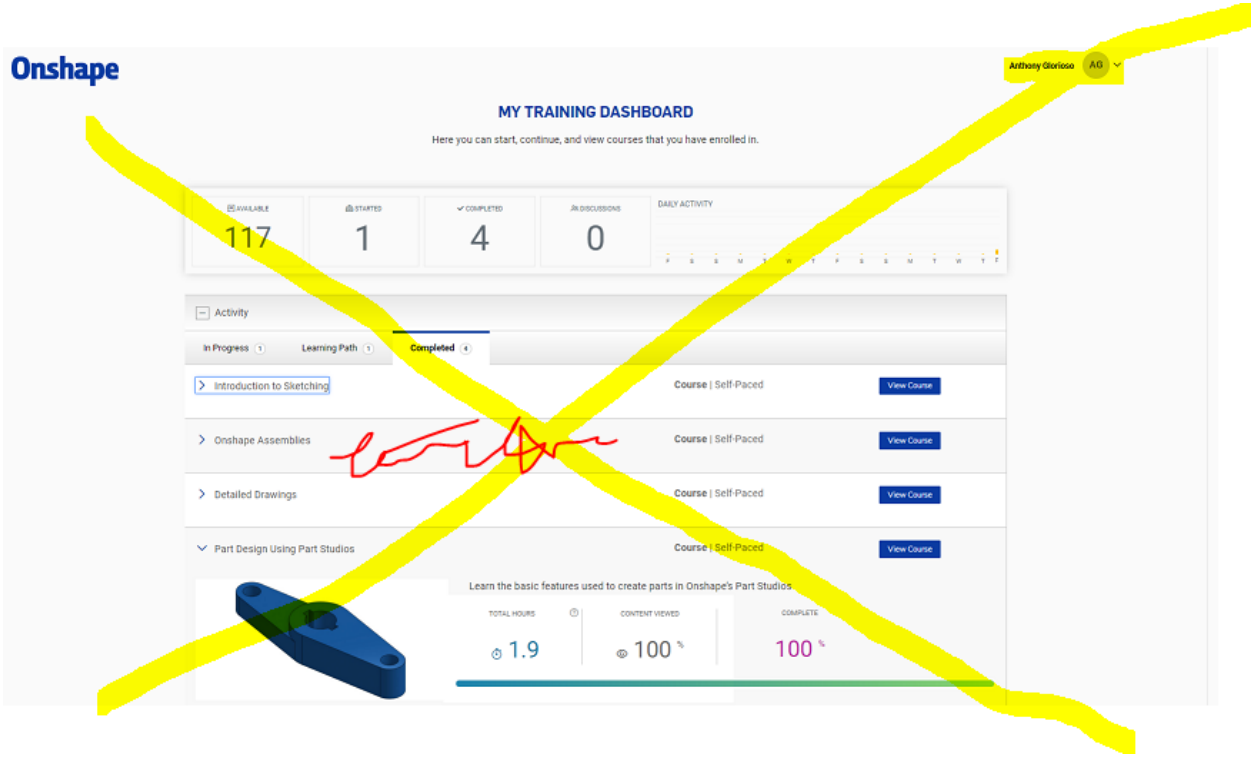
5. Once you exit the course this will bring you back to the "My Training Dashboard"

a. **You will see a window that is titled "Activity". Maximize that window and then select the drop-down window under "Introduction to sketching" take a screenshot of the entire page (with your user name being shown in the top right corner).**

b. **After taking a screenshot**

c. **Open that drawing into a Google Drawing and mark a huge "X" over the image, highlight your name and then sign your name over the "X".**

d. **THE "TOTAL HOURS" WILL NOT UPDATE RIGHT AWAY. YOU WILL NEED TO WAIT UNTIL IT UPDATES TO SEE THE FULL "TOTAL HOURS" IT TOOK YOU. PLEASE TO NOT SUBMIT IF IT SAYS "0.0".**



WHAT AM I SUBMITTING??

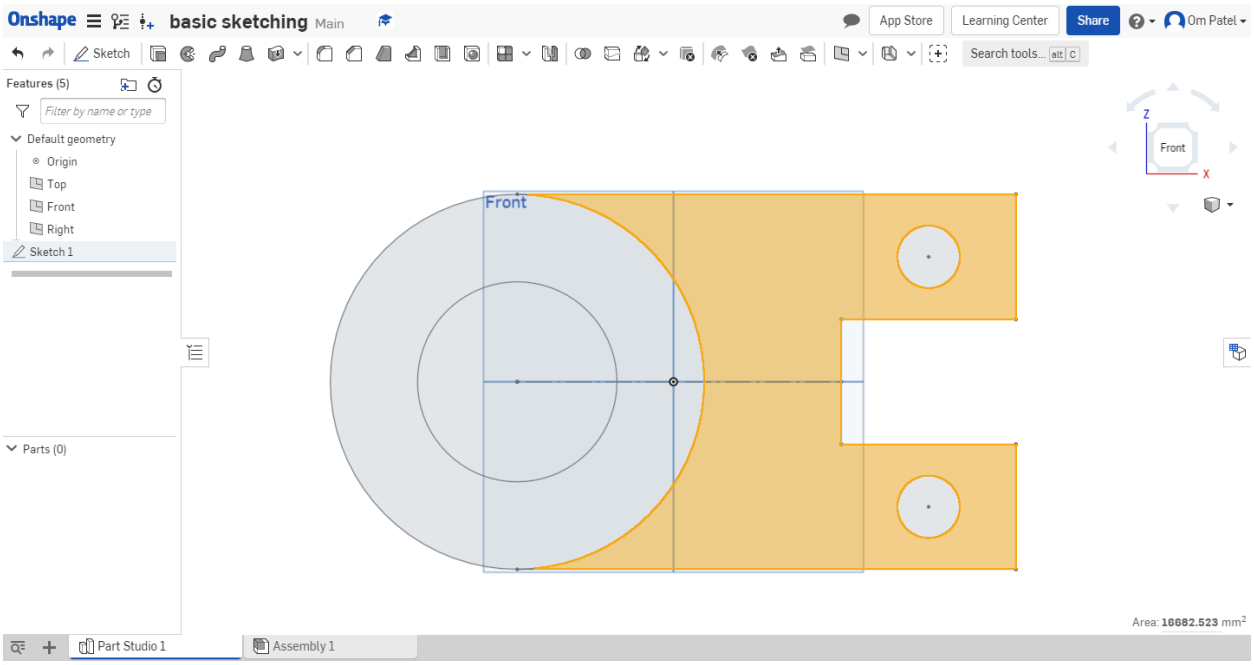
- 19 IMAGES ON A GOOGLE DOC ON GOOGLE CLASSROOM
  - **Exercise: Extrude**

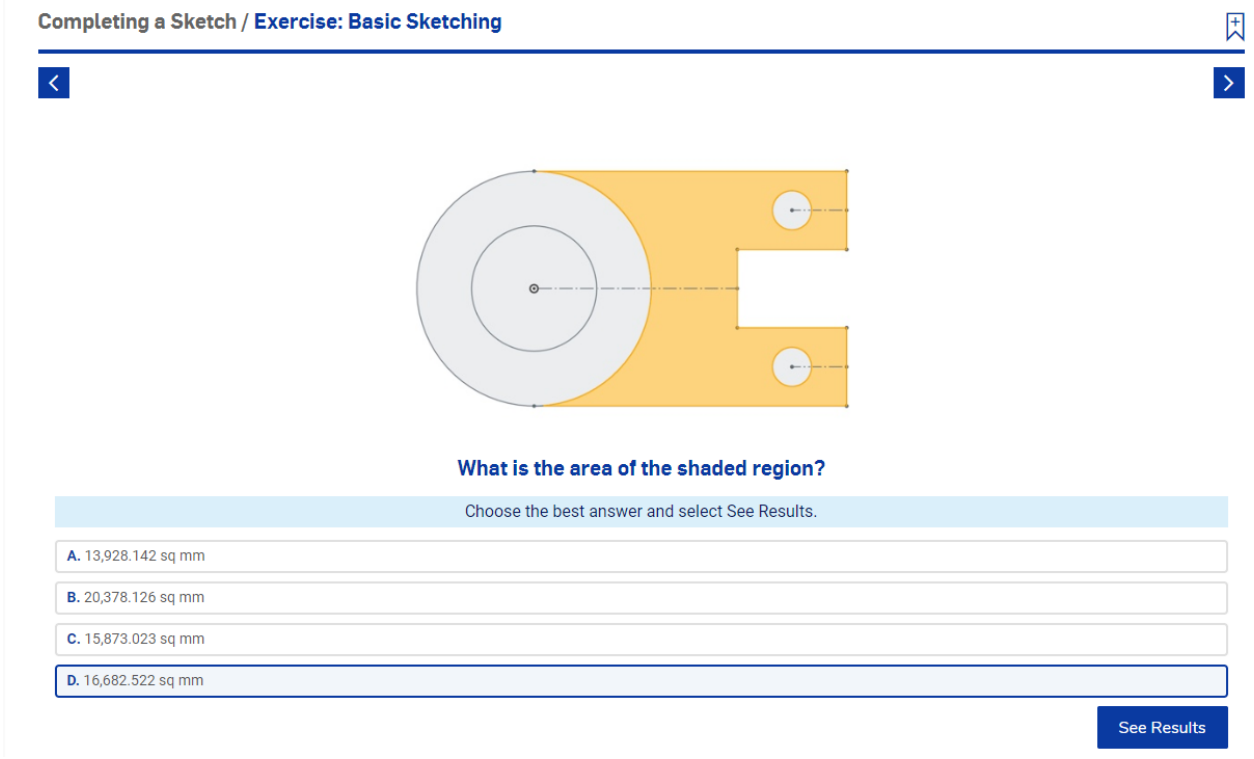
- 3 images
- Exercise: Revolve
  - 3 images
- Exercise: Sweep
  - 3 images
- Exercise: Loft
  - 3 images
- Exercise: Coffee Cup
  - 3 images
- Exercise: Wheel Rim
  - 3 images

- “My Training Dashboard”
  - 1 image
  - ONCE AGAIN, IT THE “TOTAL HOURS” SAYS “0.0” WAIT UNTIL IT UPDATES ITSELF BEFORE SUBMITTING

Example of what you are turning in:

PART1:





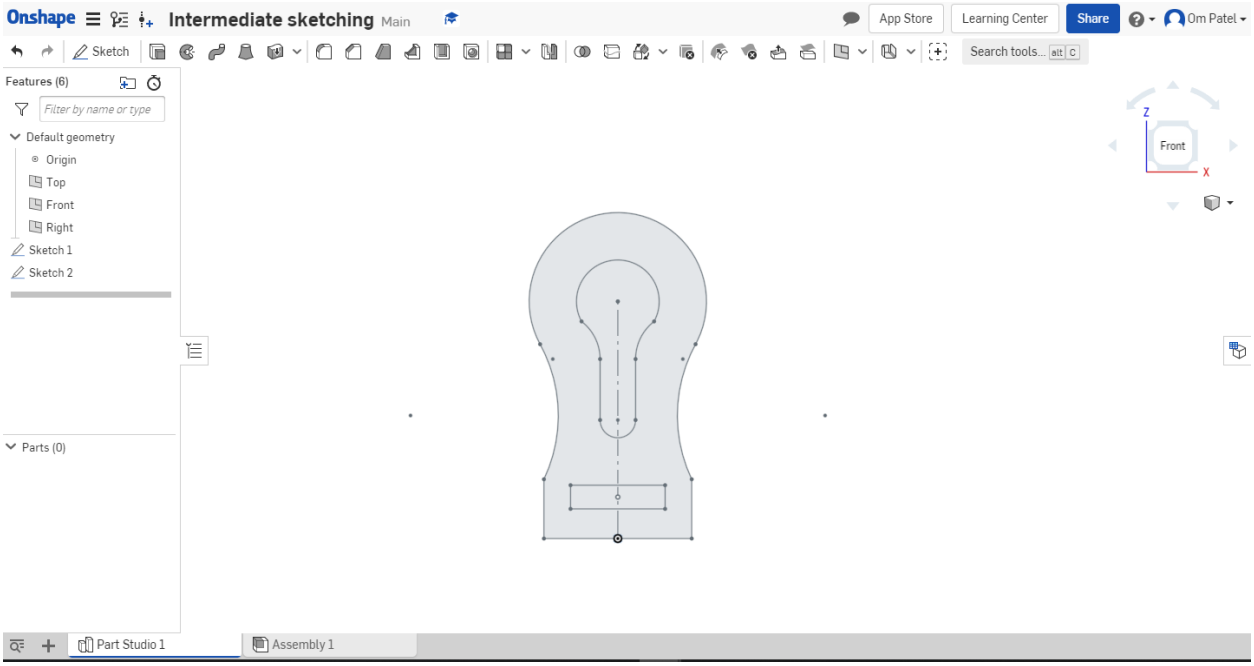
That's correct!

You successfully completed the exercise.

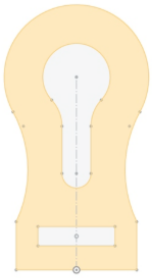
To see how we did it, make a copy of this public document.

Retake Self-Check

Continue to Next Section



Sketch Tools / **Exercise: Intermediate Sketching**



What is the area of the shaded region?

Choose the best answer and select See Results.

- **A.** 32,154.782 sq mm
- **B.** 24,906.823 sq mm
- **C.** 22,358.102 sq mm
- **D.** 15,236.452 sq mm

See Results

Sketch Tools / **Exercise: Intermediate Sketching**

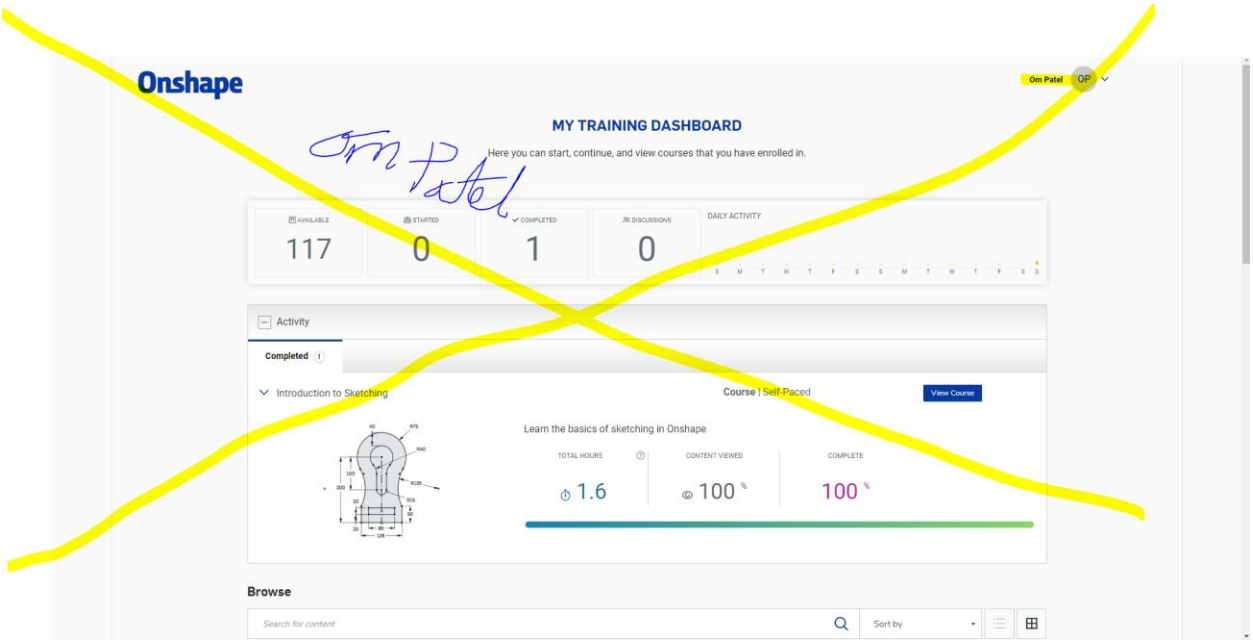
That's correct!

You successfully completed the exercise.

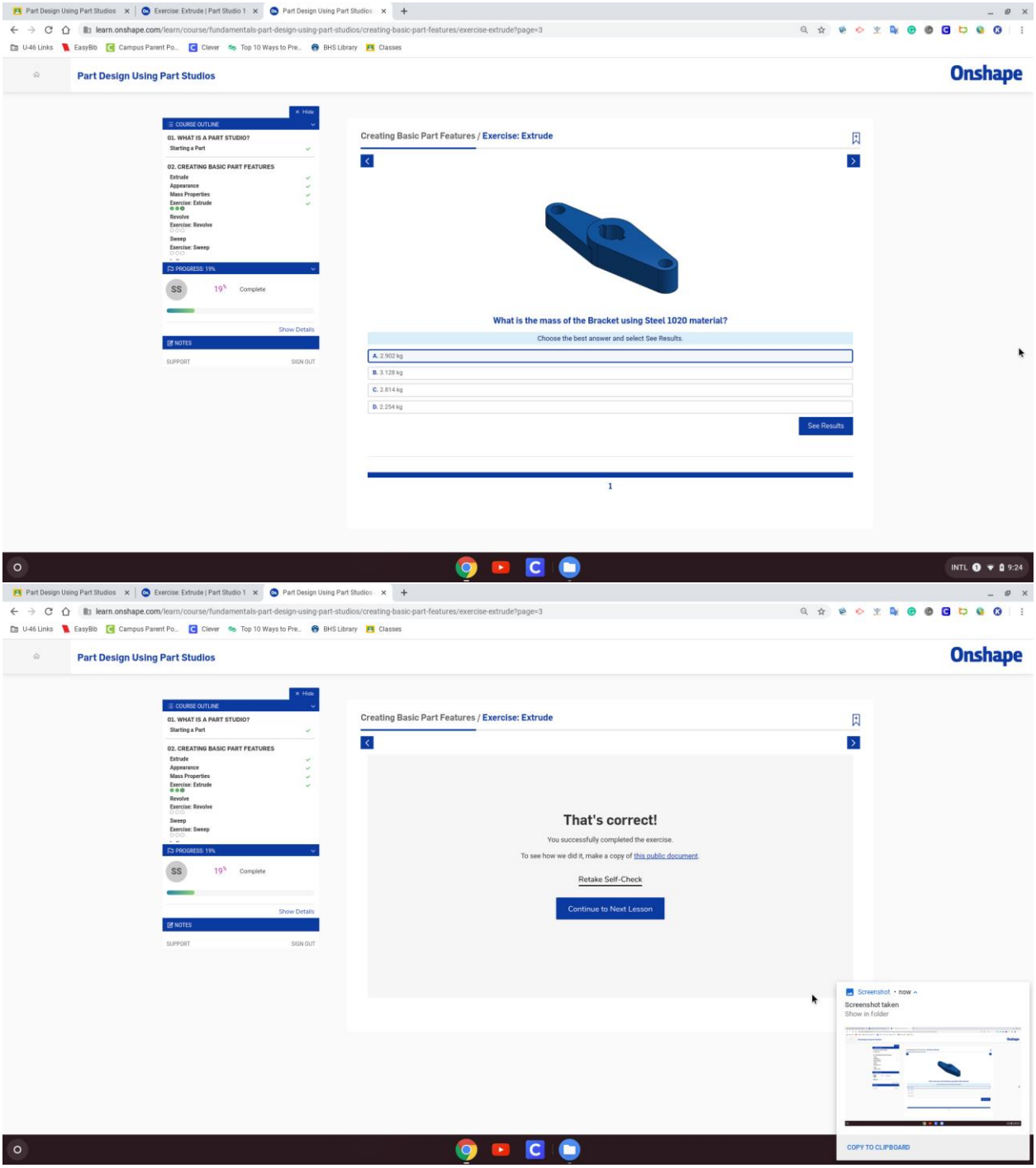
To see how we did it, make a copy of this public document.

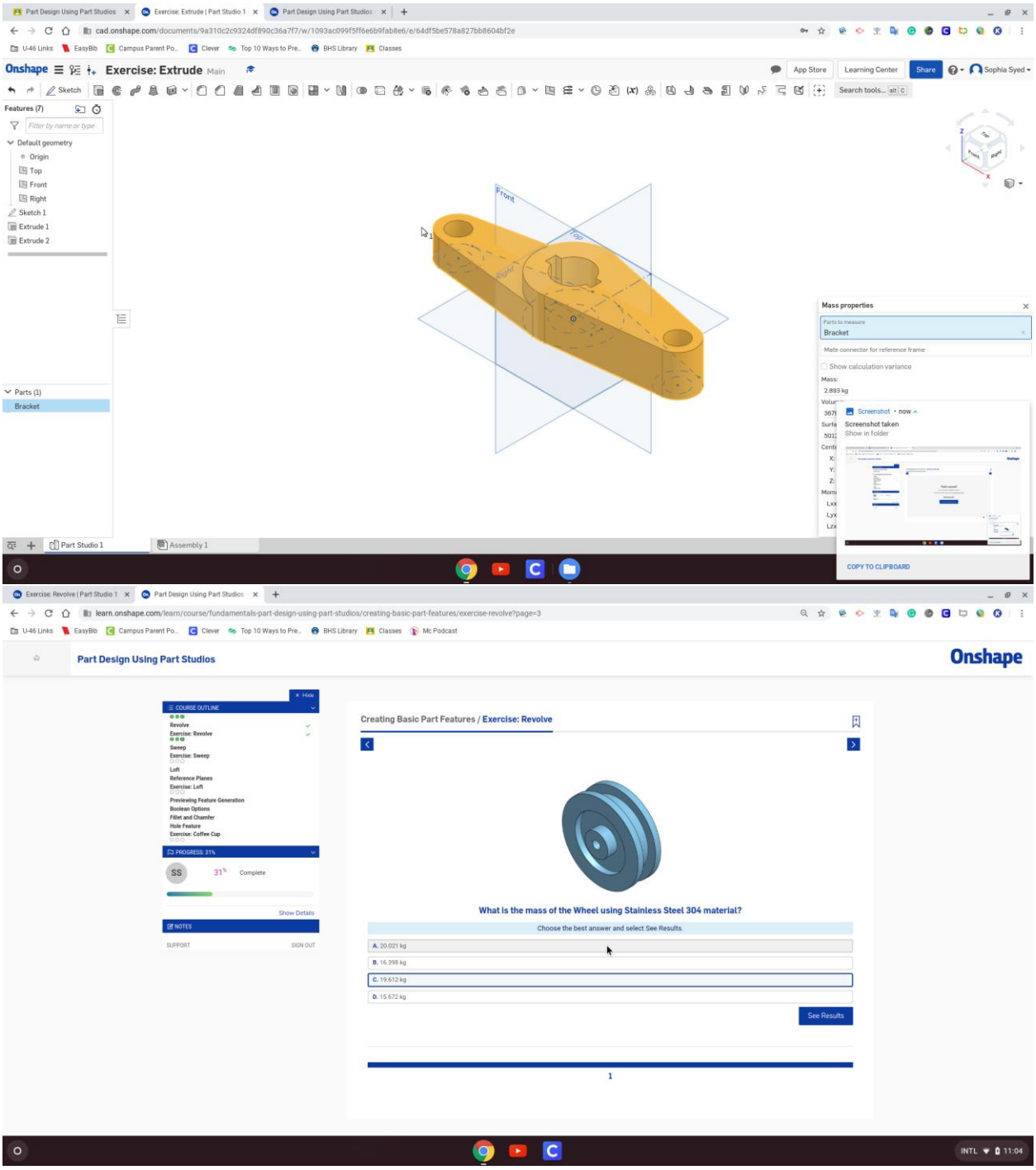
Retake Self-Check

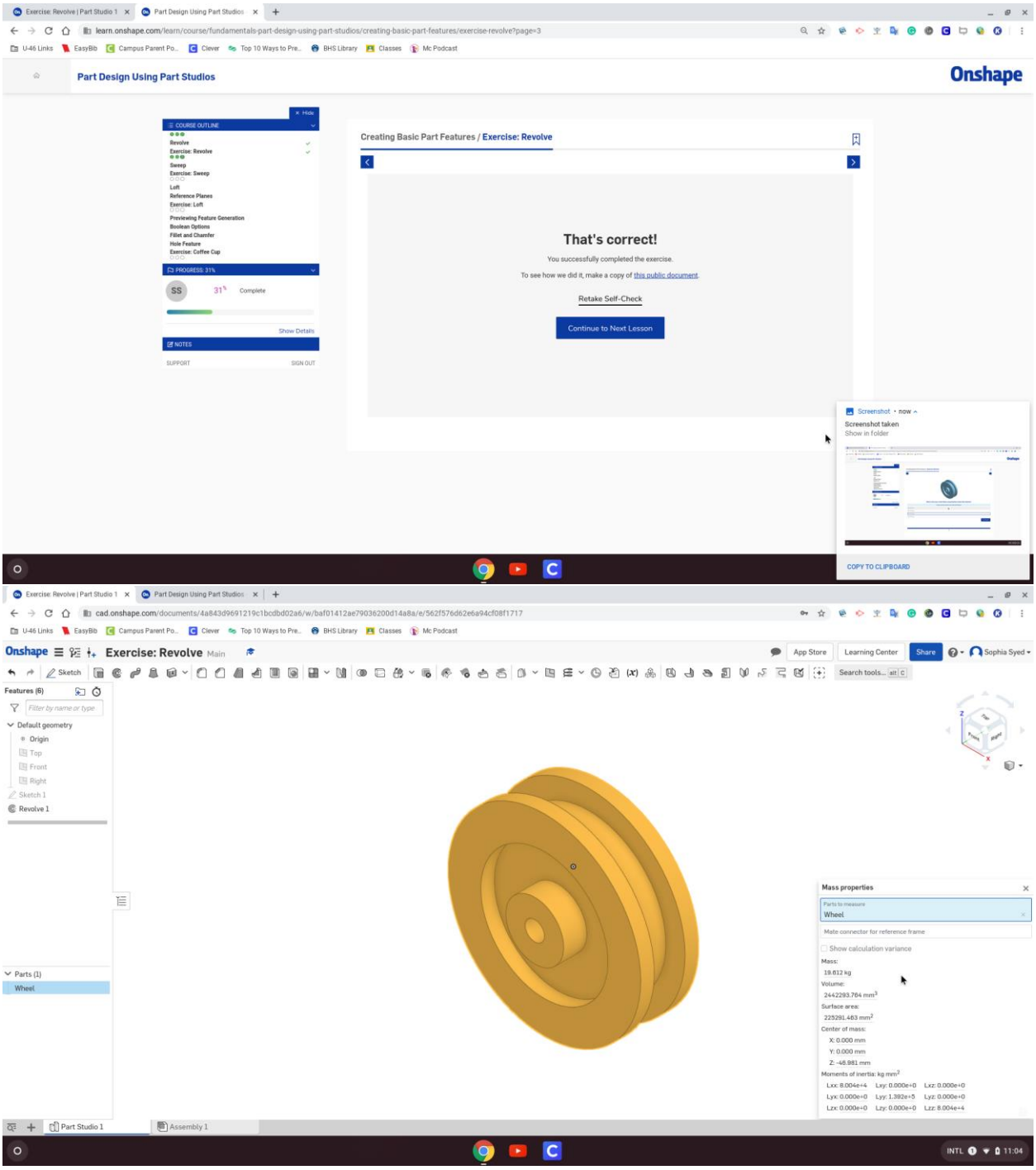
Continue to Next Section

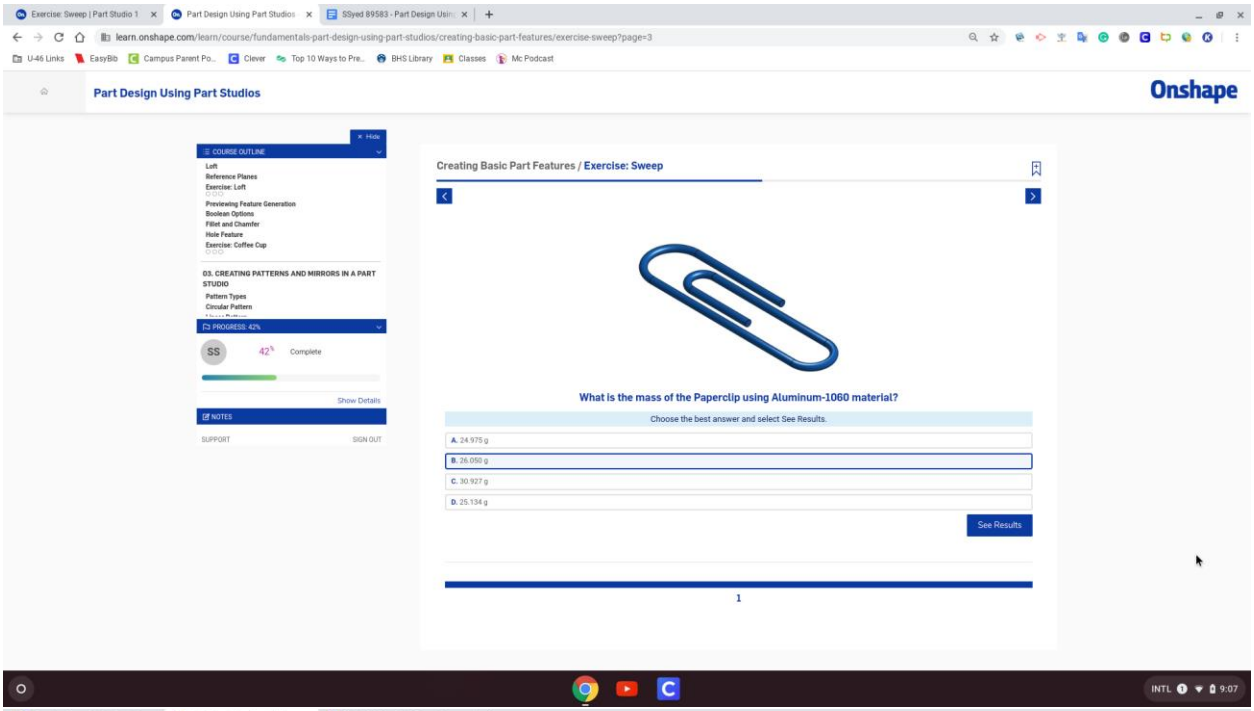

Onshape
Om Patel OP
MY TRAINING DASHBOARD
Here you can start, continue, and view courses that you have enrolled in.
AVAILABLE 117
STARTED 0
COMPLETED 1
DISCUSSIONS 0
DAILY ACTIVITY
Activity
Completed 1
Introduction to Sketching
Course | Self-Paced
View Course
Learn the basics of sketching in Onshape
TOTAL HOURS 1.6
CONTENT VIEWED 100 %
COMPLETE 100 %
Browse
Search for content
Sort by

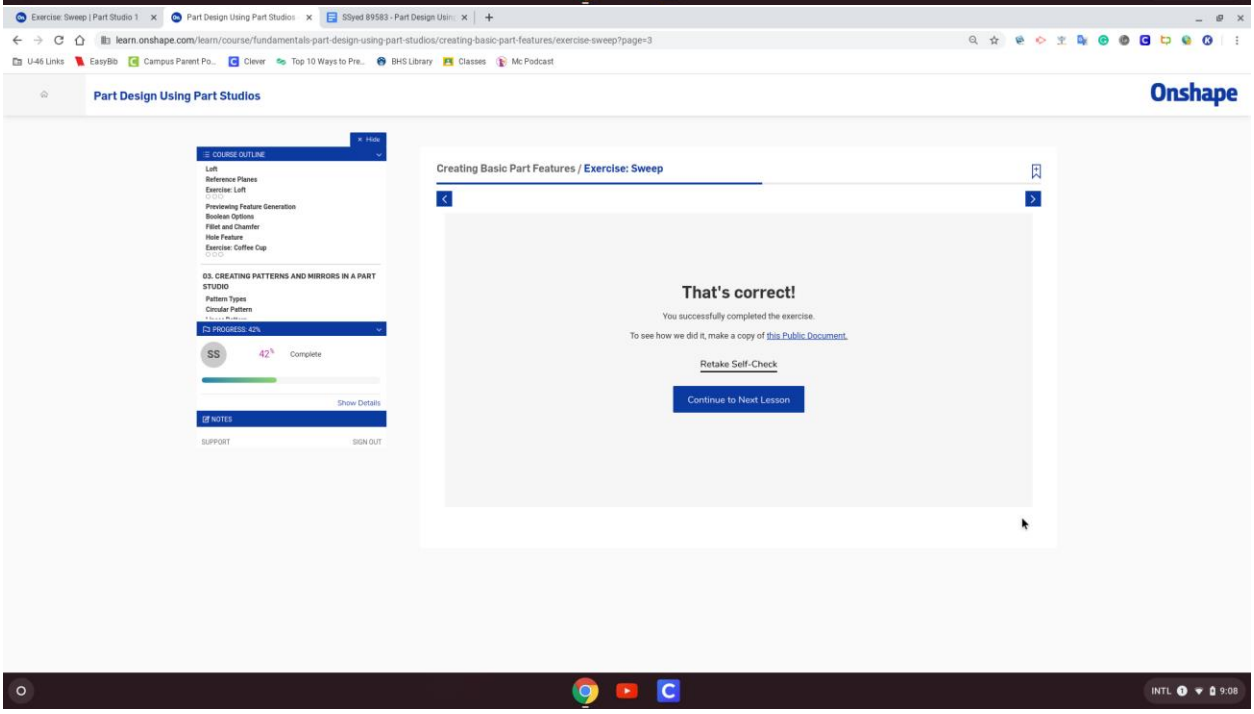
Part 2:

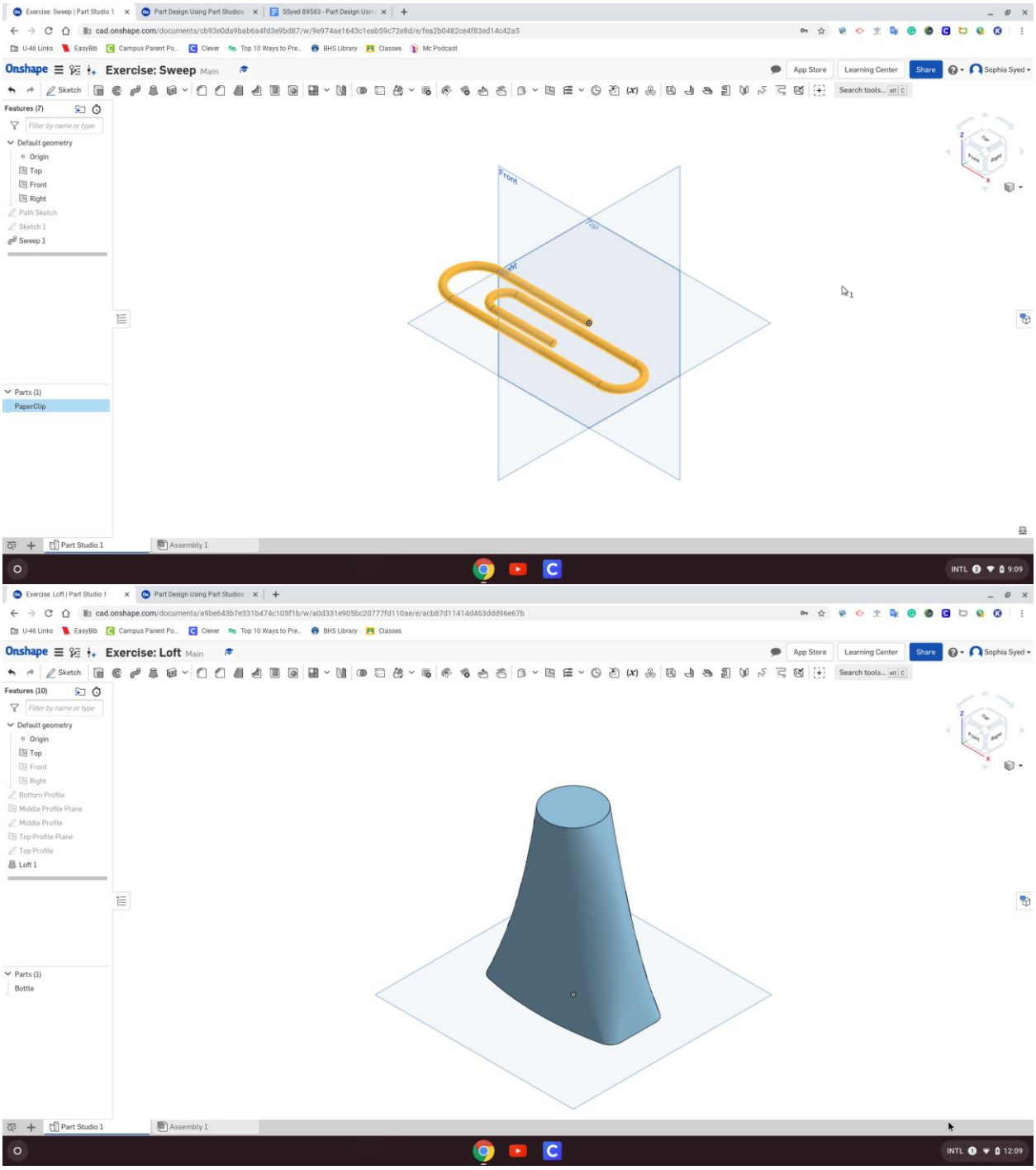

Part Design Using Part Studios
Onshape
Creating Basic Part Features / Exercise: Extrude
What is the mass of the Bracket using Steel 1020 material?
Choose the best answer and select See Results.
A. 2.902 kg
B. 3.128 kg
C. 2.814 kg
D. 2.254 kg
See Results
That's correct!
You successfully completed the exercise.
To see how we did it, make a copy of this public document.
Retake Self-Check
Continue to Next Lesson
Screenshot taken
Show in folder
COPY TO CLIPBOARD

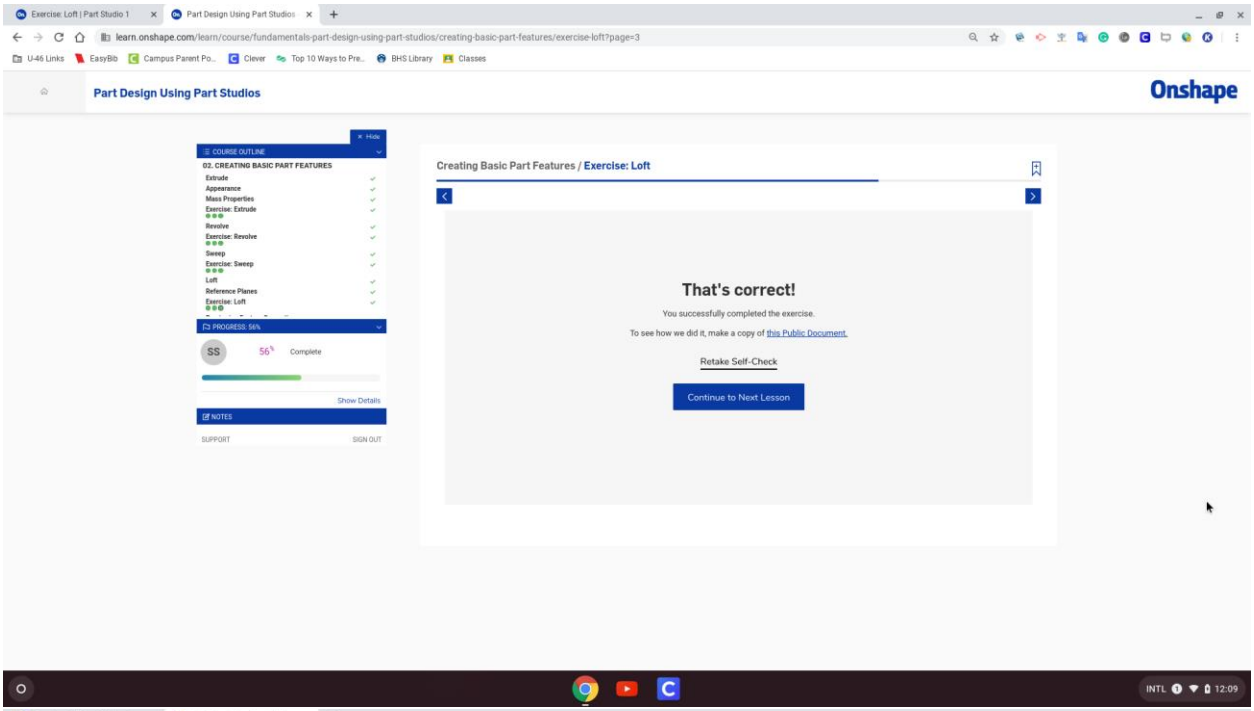

Exercise: Extrude
Features (7)
Default geometry
Origin
Top
Front
Right
Sketch 1
Extrude 1
Extrude 2
Parts (1)
Bracket
Mass properties
Bracket
Part Studio 1
Assembly 1
Part Design Using Part Studios
Creating Basic Part Features / Exercise: Revolve
What is the mass of the Wheel using Stainless Steel 304 material?
Choose the best answer and select See Results.
A. 20.021 kg
B. 16.398 kg
C. 19.612 kg
D. 15.672 kg
See Results

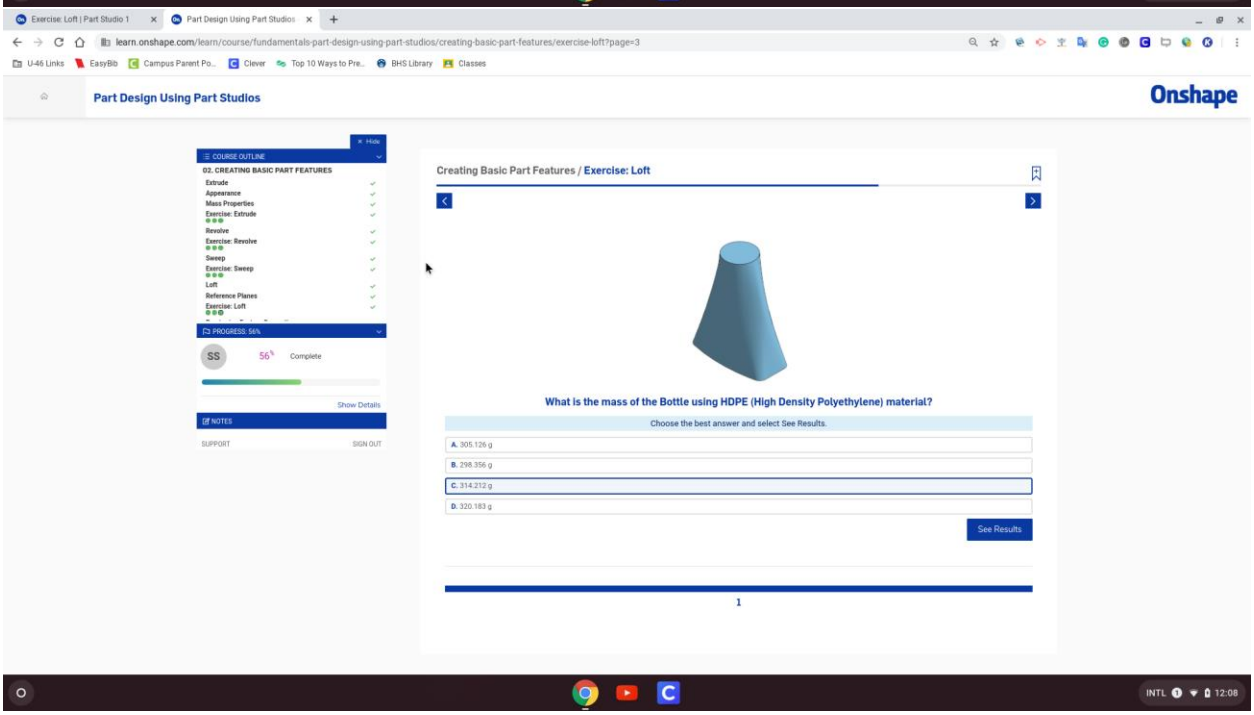

Part Design Using Part Studios
Onshape
Creating Basic Part Features / Exercise: Revolve
That's correct!
You successfully completed the exercise.
To see how we did it, make a copy of this public document.
Retake Self-Check
Continue to Next Lesson
Exercise: Revolve Main
App Store
Learning Center
Share
Sophia Syed
Features (6)
Default geometry
Origin
Top
Front
Right
Sketch 1
Revolve 1
Parts (1)
Wheel
Mass properties
Wheel
Mass:
19.612 kg
Volume:
2442293.764 mm³
Surface area:
225291.463 mm²
Center of mass:
X: 0.000 mm
Y: 0.000 mm
Z: -46.981 mm
Part Studio 1
Assembly 1

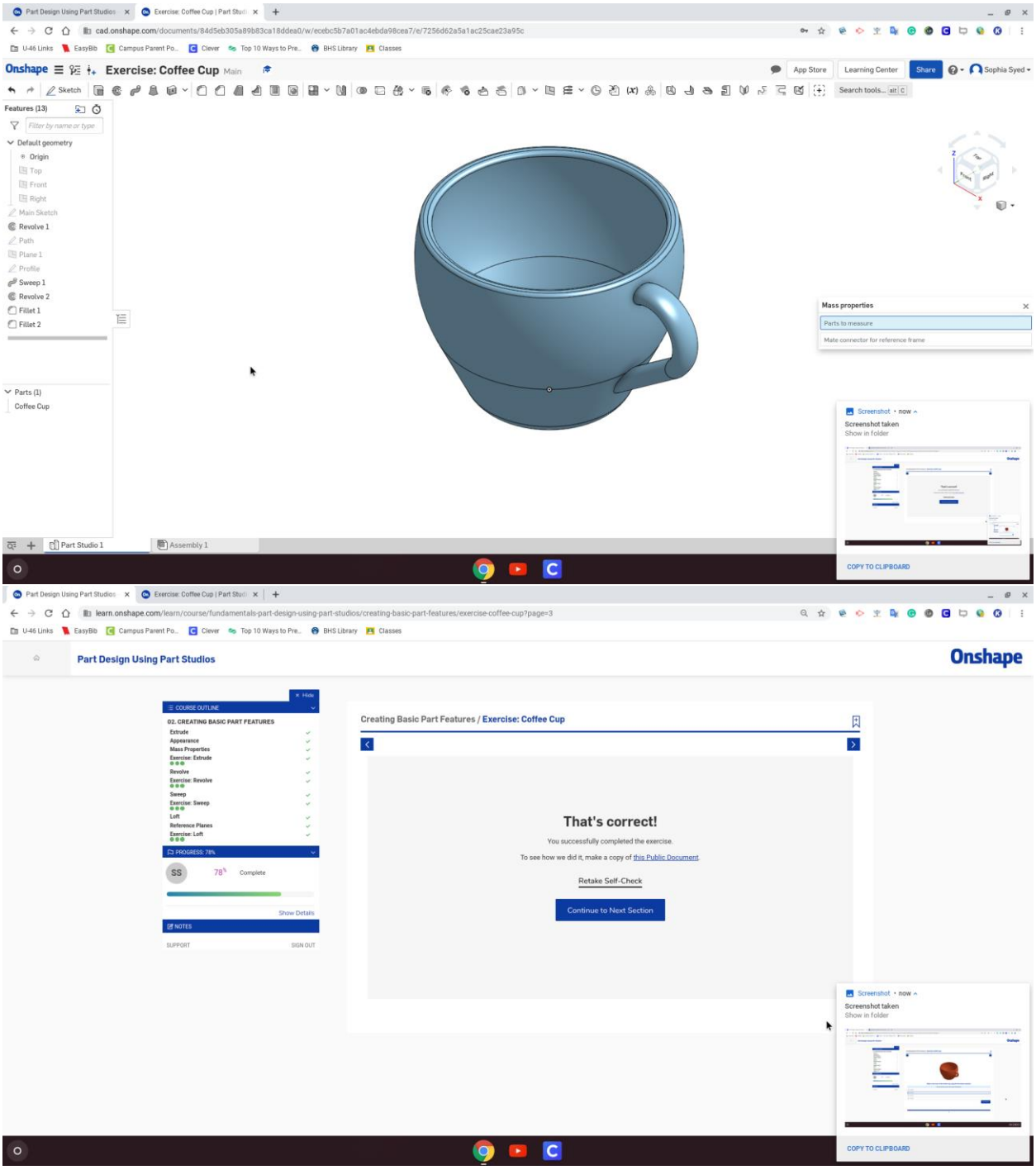

Exercise: Sweep | Part Studio 1
Part Design Using Part Studios
learn.onshape.com/learn/course/fundamentals-part-design-using-part-studios/creating-basic-part-features/exercise-sweep?page=3
Part Design Using Part Studios
Onshape
COURSE OUTLINE
Loft
Reference Planes
Exercise: Loft
Previewing Feature Generation
Boolean Options
Fillet and Chamfer
Hole Feature
Exercise: Coffee Cup
03. CREATING PATTERNS AND MIRRORS IN A PART STUDIO
Pattern Types
Circular Pattern
PROGRESS: 42%
SS
42%
Complete
Show Details
NOTES
SUPPORT
SIGN OUT
Creating Basic Part Features / Exercise: Sweep
What is the mass of the Paperclip using Aluminum-1060 material?
Choose the best answer and select See Results.
A. 24.975 g
B. 26.050 g
C. 30.927 g
D. 25.134 g
See Results
1
INTL
9:07

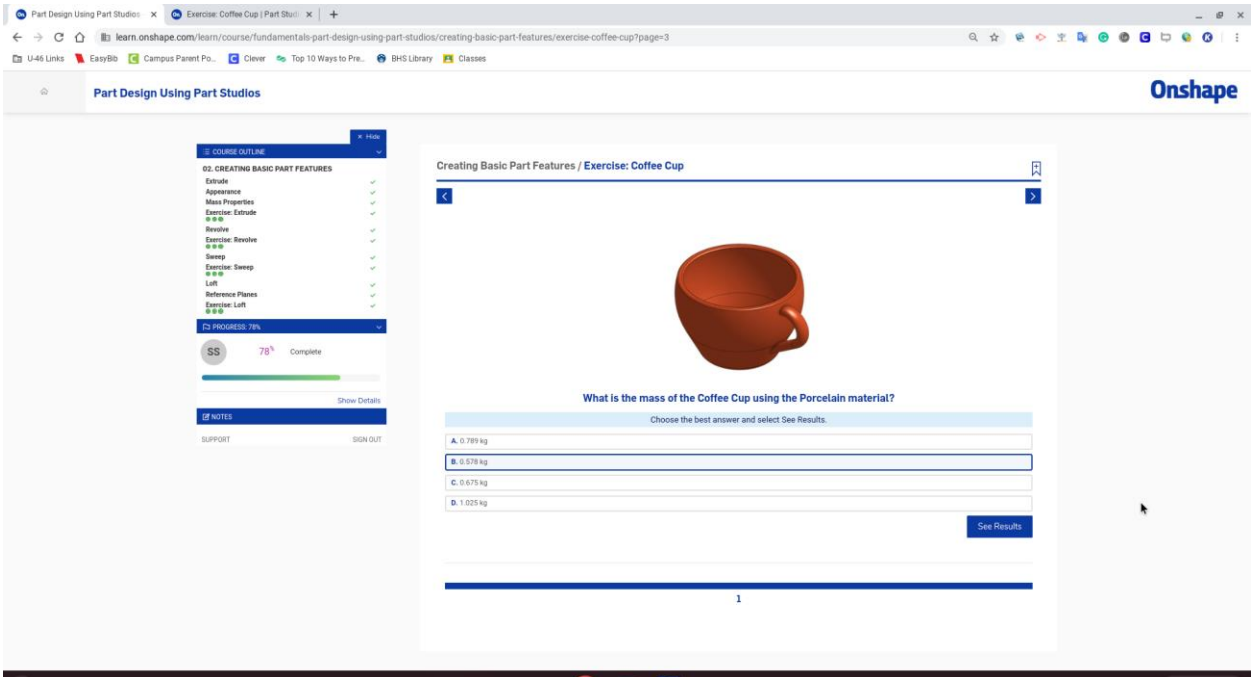

Exercise: Sweep | Part Studio 1
Part Design Using Part Studios
learn.onshape.com/learn/course/fundamentals-part-design-using-part-studios/creating-basic-part-features/exercise-sweep?page=3
Part Design Using Part Studios
Onshape
COURSE OUTLINE
Loft
Reference Planes
Exercise: Loft
Previewing Feature Generation
Boolean Options
Fillet and Chamfer
Hole Feature
Exercise: Coffee Cup
03. CREATING PATTERNS AND MIRRORS IN A PART STUDIO
Pattern Types
Circular Pattern
PROGRESS: 42%
SS
42%
Complete
Show Details
NOTES
SUPPORT
SIGN OUT
Creating Basic Part Features / Exercise: Sweep
That's correct!
You successfully completed the exercise.
To see how we did it, make a copy of this Public Document.
Retake Self-Check
Continue to Next Lesson
INTL
9:08

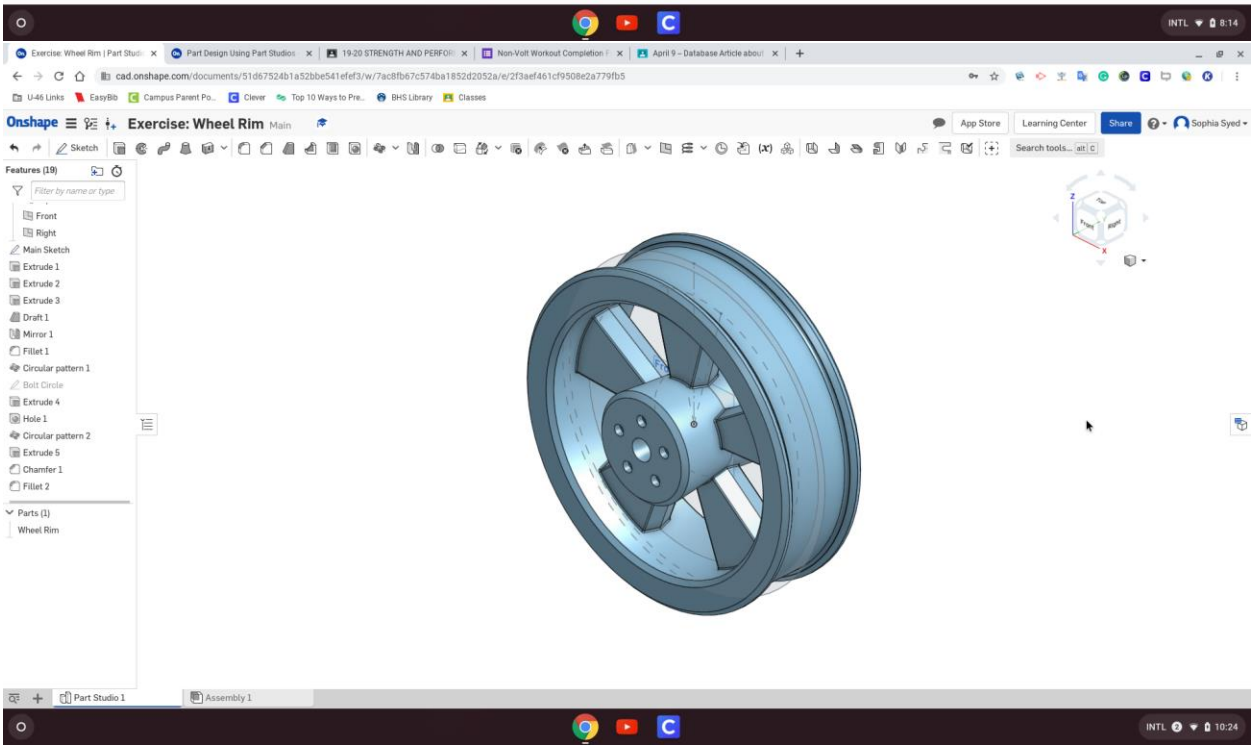

Exercise: Sweep | Part Studio 1
Part Design Using Part Studios
cad.onshape.com/documents/cb93e0da9bab6a4fd3e9bd87/w/9e974ae1643c1eab59c72e8d/e/fea2b0482ce4f83ed14c42a5
Onshape
Exercise: Sweep
Main
App Store
Learning Center
Share
Sophia Syed
Sketch
Features (7)
Filter by name or type
Default geometry
Origin
Top
Front
Right
Path Sketch
Sketch 1
Sweep 1
Parts (1)
PaperClip
Part Studio 1
Assembly 1
INTL
9:09
Exercise: Loft | Part Studio 1
Part Design Using Part Studios
cad.onshape.com/documents/a9be643b7e331b474c105f1b/w/a0d331e905bc20777fd110ae/e/acb87d11414d463ddd96e67b
Onshape
Exercise: Loft
Main
App Store
Learning Center
Share
Sophia Syed
Sketch
Features (10)
Filter by name or type
Default geometry
Origin
Top
Front
Right
Bottom Profile
Middle Profile Plane
Middle Profile
Top Profile Plane
Top Profile
Loft 1
Parts (1)
Bottle
Part Studio 1
Assembly 1
INTL
12:09

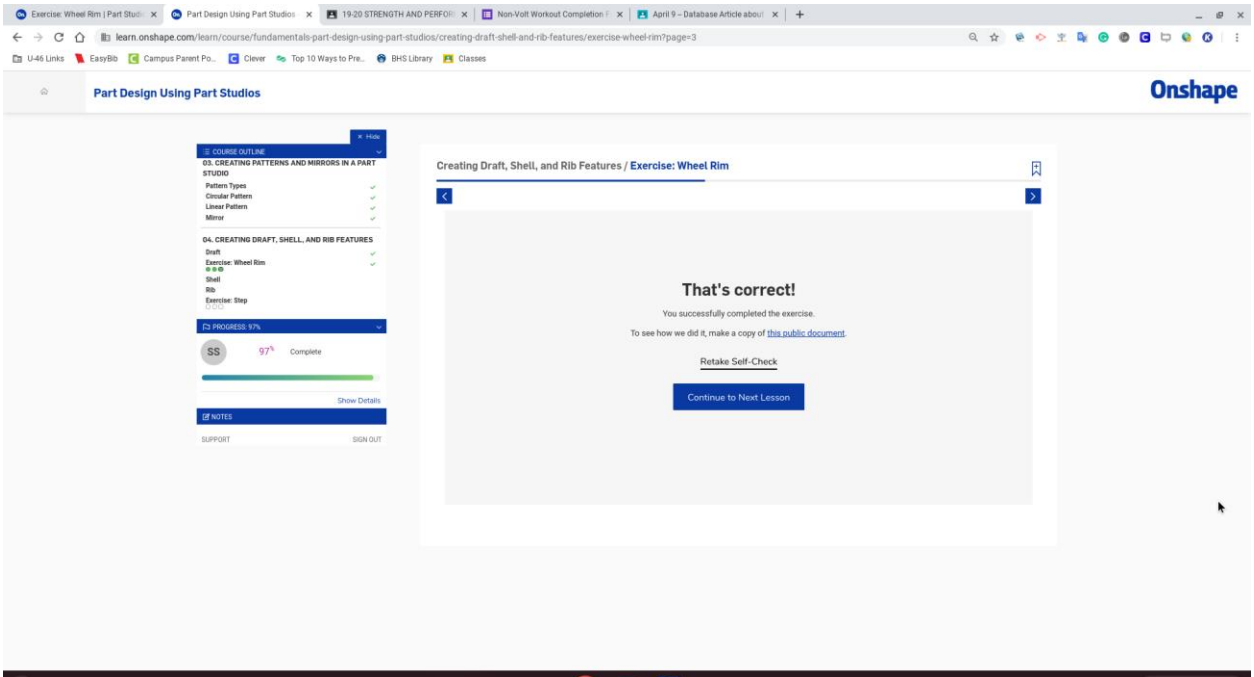

Exercise: Loft | Part Studio 1
Part Design Using Part Studios
learn.onshape.com/learn/course/fundamentals-part-design-using-part-studios/creating-basic-part-features/exercise-loft?page=3
Part Design Using Part Studios
Onshape
COURSE OUTLINE
02. CREATING BASIC PART FEATURES
Extrude
Appearance
Mass Properties
Exercise: Extrude
Revolve
Exercise: Revolve
Sweep
Exercise: Sweep
Loft
Reference Planes
Exercise: Loft
PROGRESS: 56%
SS
56%
Complete
Show Details
NOTES
SUPPORT
SIGN OUT
Creating Basic Part Features / Exercise: Loft
That's correct!
You successfully completed the exercise.
To see how we did it, make a copy of this Public Document.
Retake Self-Check
Continue to Next Lesson
INTL
12:09

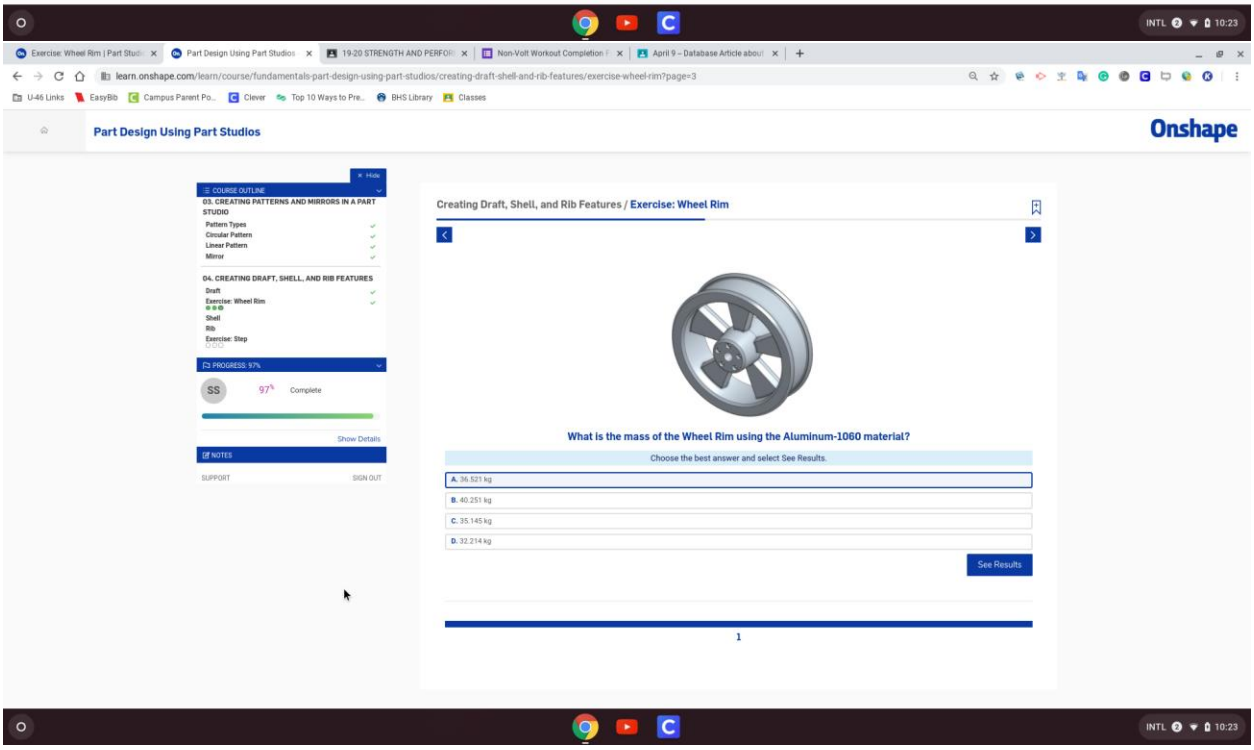

Exercise: Loft | Part Studio 1
Part Design Using Part Studios
learn.onshape.com/learn/course/fundamentals-part-design-using-part-studios/creating-basic-part-features/exercise-loft?page=3
Part Design Using Part Studios
Onshape
COURSE OUTLINE
02. CREATING BASIC PART FEATURES
Extrude
Appearance
Mass Properties
Exercise: Extrude
Revolve
Exercise: Revolve
Sweep
Exercise: Sweep
Loft
Reference Planes
Exercise: Loft
PROGRESS: 56%
SS
56%
Complete
Show Details
NOTES
SUPPORT
SIGN OUT
Creating Basic Part Features / Exercise: Loft
What is the mass of the Bottle using HDPE (High Density Polyethylene) material?
Choose the best answer and select See Results.
A. 305.126 g
B. 298.356 g
C. 314.212 g
D. 320.183 g
See Results
1
INTL
12:08

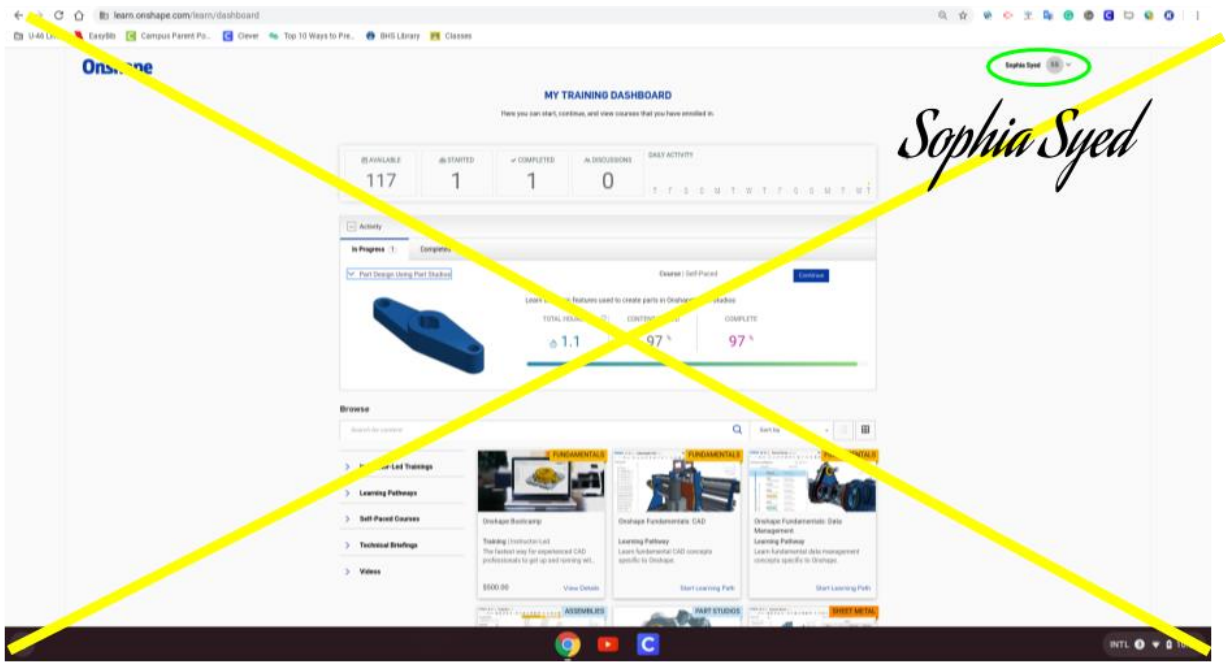

Exercise: Coffee Cup
Main
Features (13)
Default geometry
Origin
Top
Front
Right
Main Sketch
Revolve 1
Path
Plane 1
Profile
Sweep 1
Revolve 2
Fillet 1
Fillet 2
Parts (1)
Coffee Cup
Mass properties
Parts to measure
Mate connector for reference frame
Part Studio 1
Assembly 1
Screenshot taken
Show in folder
COPY TO CLIPBOARD
Part Design Using Part Studios
Onshape
02. CREATING BASIC PART FEATURES
Extrude
Appearance
Mass Properties
Exercise: Extrude
Revolve
Exercise: Revolve
Sweep
Exercise: Sweep
Loft
Reference Planes
Exercise: Loft
PROGRESS: 78%
78%
Complete
Show Details
NOTES
SUPPORT
SIGN OUT
Creating Basic Part Features / Exercise: Coffee Cup
That's correct!
You successfully completed the exercise.
To see how we did it, make a copy of this Public Document.
Retake Self-Check
Continue to Next Section
Screenshot taken
Show in folder
COPY TO CLIPBOARD

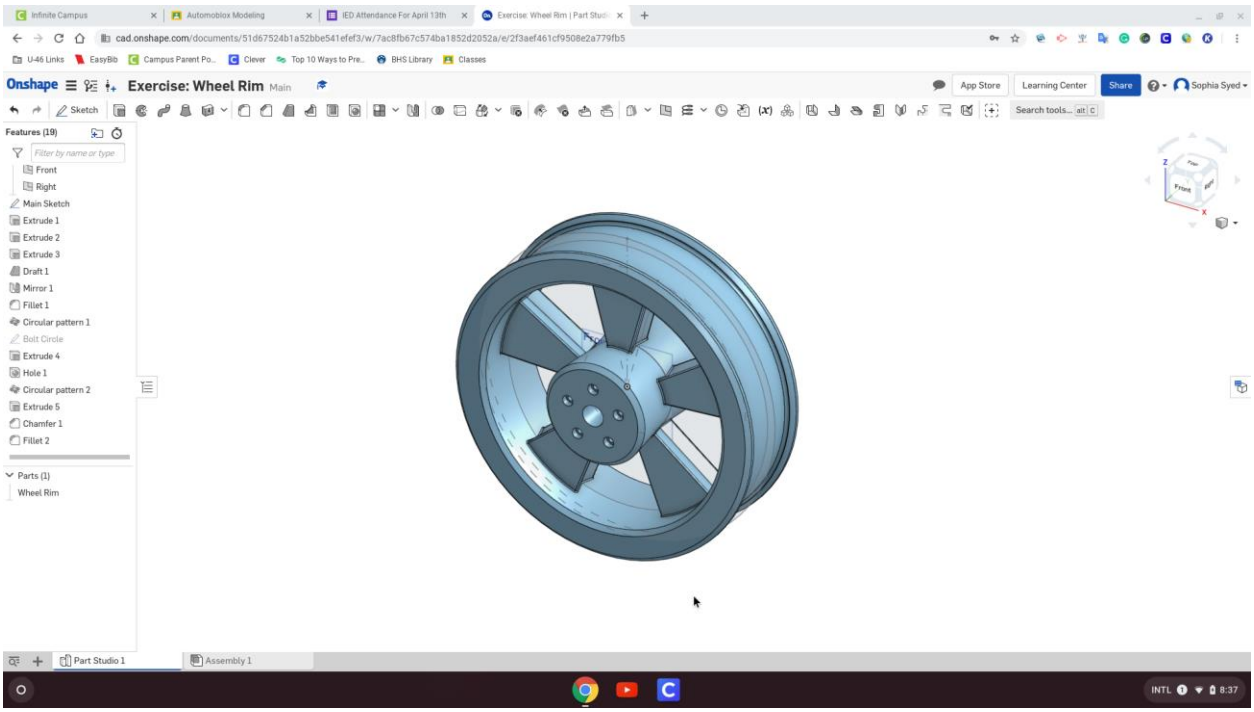

Part Design Using Part Studios
Onshape
02. CREATING BASIC PART FEATURES
Creating Basic Part Features / Exercise: Coffee Cup
What is the mass of the Coffee Cup using the Porcelain material?
Choose the best answer and select See Results.
A. 0.789 kg
B. 0.578 kg
C. 0.675 kg
D. 1.025 kg
See Results


Exercise: Wheel Rim Main
App Store
Learning Center
Share
Features (19)
Front
Right
Main Sketch
Extrude 1
Extrude 2
Extrude 3
Draft 1
Mirror 1
Fillet 1
Circular pattern 1
Bolt Circle
Extrude 4
Hole 1
Circular pattern 2
Extrude 5
Chamfer 1
Fillet 2
Parts (1)
Wheel Rim
Part Studio 1
Assembly 1


Part Design Using Part Studios
Onshape
COURSE OUTLINE
03. CREATING PATTERNS AND MIRRORS IN A PART STUDIO
Pattern Types
Circular Pattern
Linear Pattern
Mirror
04. CREATING DRAFT, SHELL, AND RIB FEATURES
Draft
Exercise: Wheel Rim
Shell
Rib
Exercise: Step
PROGRESS: 97%
SS
97%
Complete
Show Details
NOTES
SUPPORT
SIGN OUT
Creating Draft, Shell, and Rib Features / Exercise: Wheel Rim
That's correct!
You successfully completed the exercise.
To see how we did it, make a copy of this public document.
Retake Self-Check
Continue to Next Lesson


Part Design Using Part Studios
Onshape
COURSE OUTLINE
03. CREATING PATTERNS AND MIRRORS IN A PART STUDIO
Pattern Types
Circular Pattern
Linear Pattern
Mirror
04. CREATING DRAFT, SHELL, AND RIB FEATURES
Draft
Exercise: Wheel Rim
Shell
Rib
Exercise: Step
PROGRESS: 97%
SS
97%
Complete
Show Details
NOTES
SUPPORT
SIGN OUT
Creating Draft, Shell, and Rib Features / Exercise: Wheel Rim
What is the mass of the Wheel Rim using the Aluminum-1060 material?
Choose the best answer and select See Results.
A. 36.521 kg
B. 40.251 kg
C. 35.145 kg
D. 32.214 kg
See Results
1





wheel w/ edits