

Practice Problem 7.1

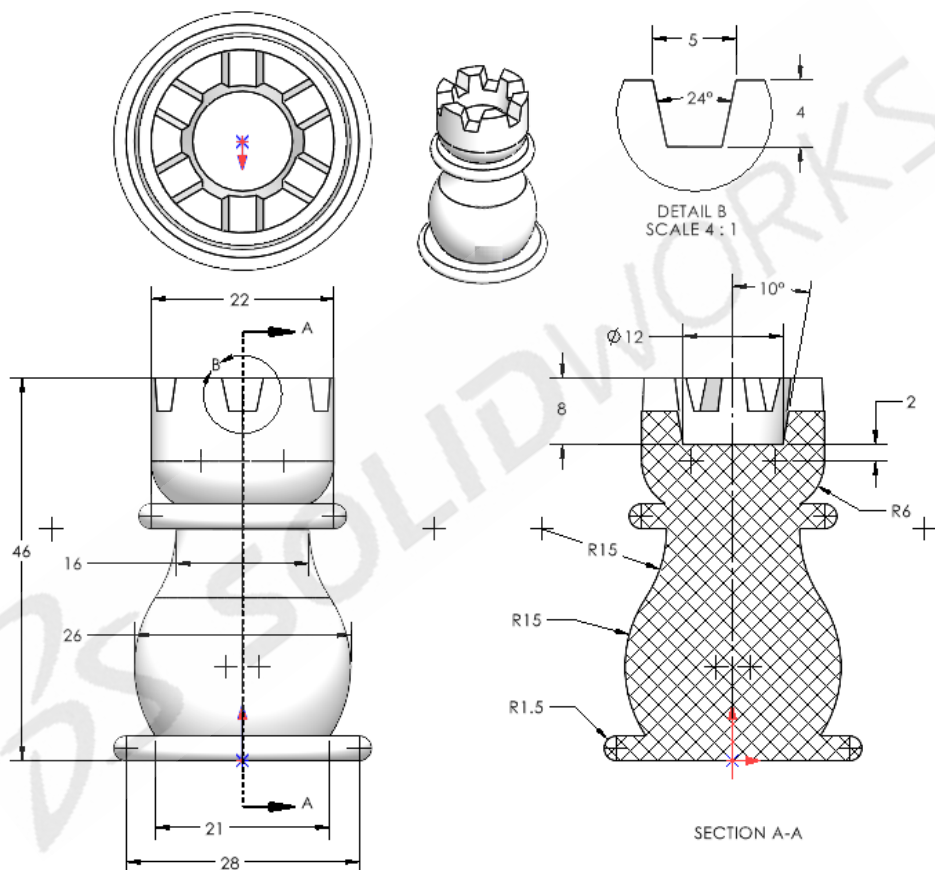
Feature Patterning (Level 7)

- Units: MMGS
- Difficulty Level: Medium
- Certification: CSWA
- Duration (min): 10
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is symmetric.
 - All sketches are fully-defined.

Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines
- Features: Revolves, Extrude Cut
- Patterns: Circular

Volume: 17327 mm³



Practice Problem 7.2

Feature Patterning (Level 7)

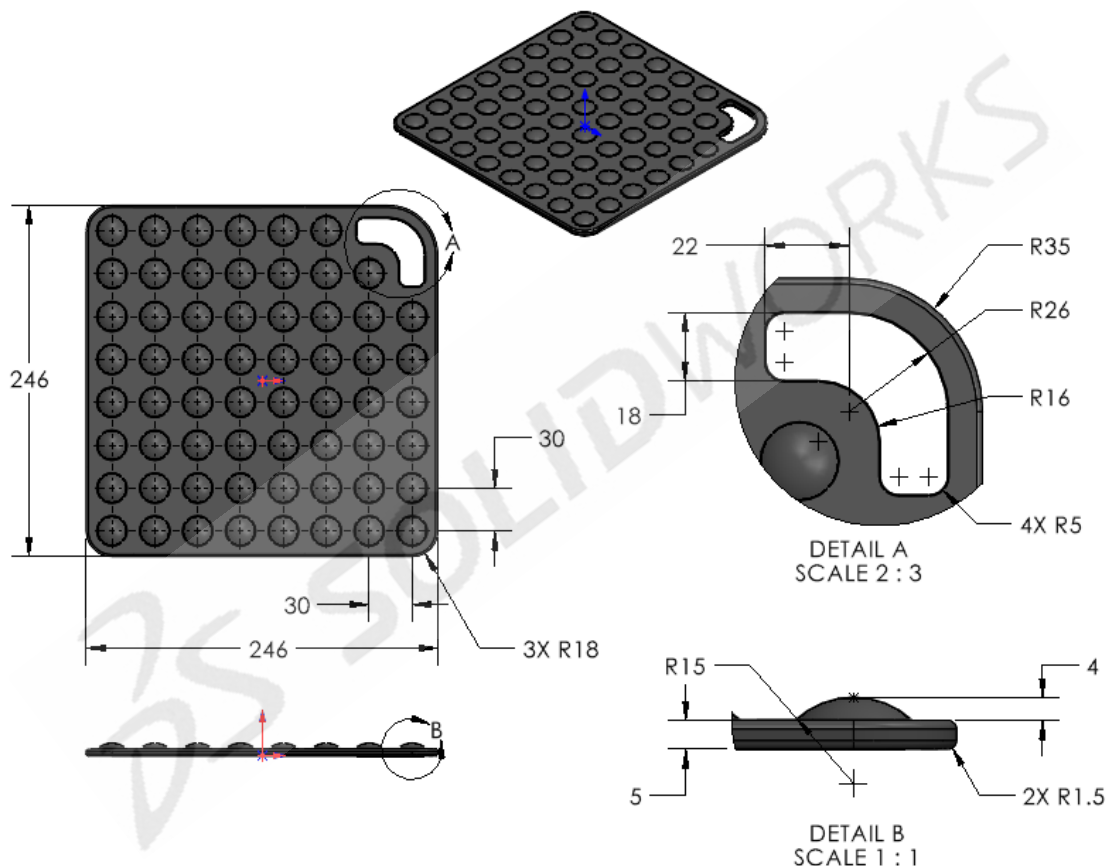
- Units: MMGS
- Difficulty Level: Medium
- Certification: CSWA
- Duration (min): 10
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is *asymmetric*.
 - All sketches are fully-defined.

Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines
- Features: Extrude Boss, Revolves, Fillets and Chamfers
- Patterns: Linear
- Reference Geometry: Planes

HINT: Skip instances in the Linear Pattern.

Volume: 334754 mm³



Practice Problem 7.3

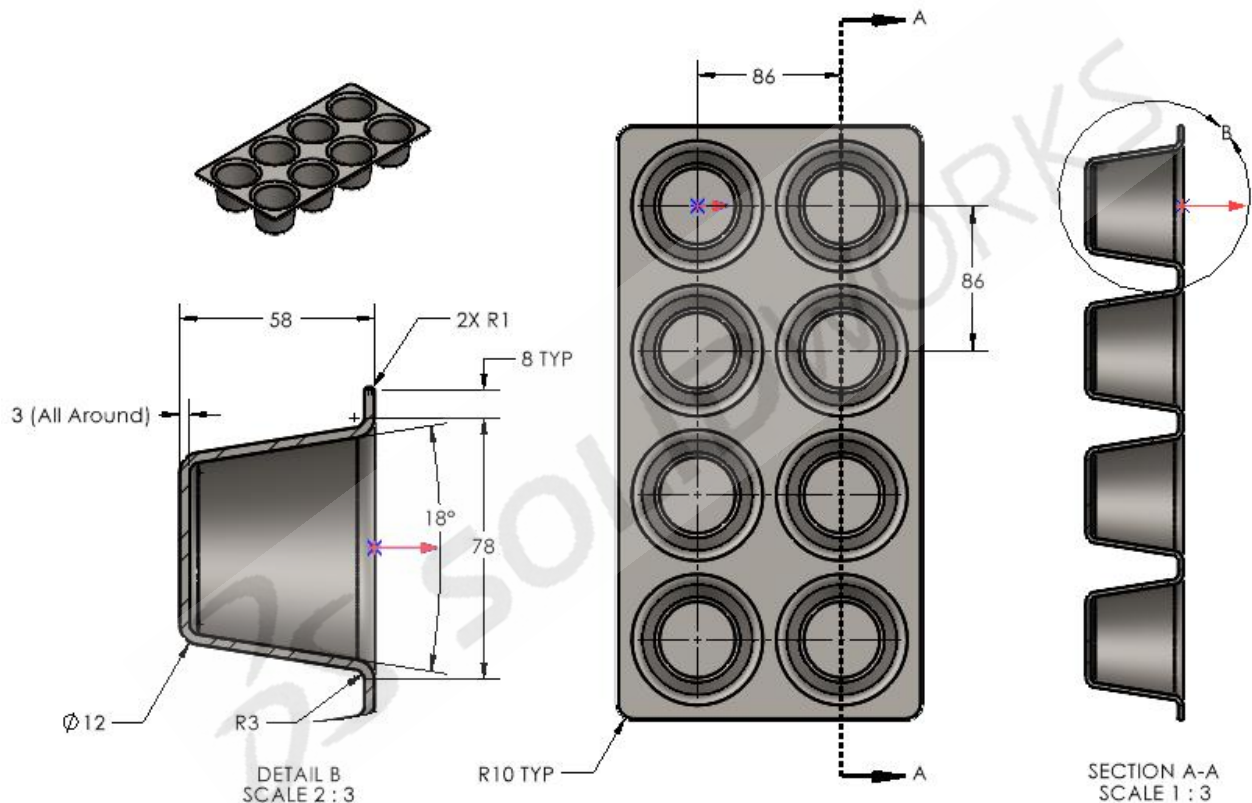
Feature Patterning (Level 7)

- Units: MMGS
- Difficulty Level: Medium
- Certification: CSWA
- Duration (min): 10
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is symmetric.
 - All sketches are fully-defined.

Suggested Sketch Tools / Features

- Sketch: Lines, Arcs, Centerlines
- Features: Extrude Boss, Revolves
- Patterns: Linear

Volume: 398448 mm³



Practice Problem 7.4

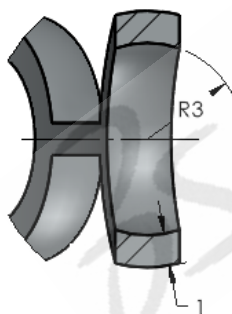
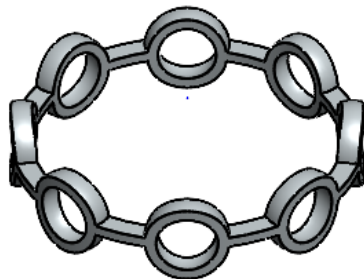
Feature Patterning (Level 7)

- Units: MMGS
- Difficulty Level: Medium
- Certification: CSWA
- Duration (min): 10
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is symmetric.
 - All sketches are fully-defined.

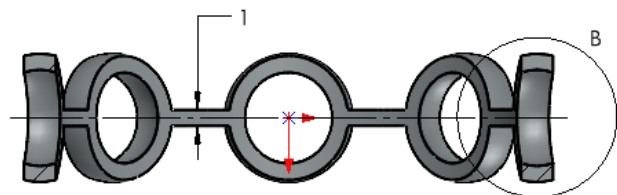
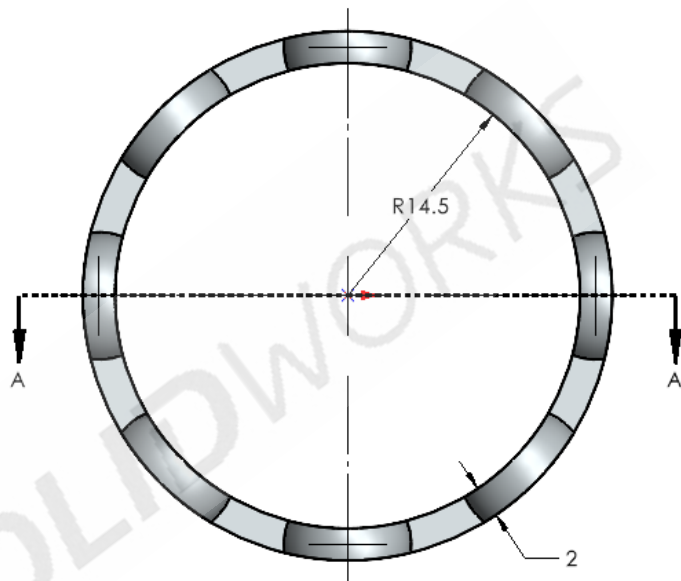
Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines, Arcs
- Features: Revolves
- Patterns: Circular

Volume: 421 mm³



DETAIL B
SCALE 6 : 1



SECTION A-A

Practice Problem 7.5

Feature Patterning (Level 7)

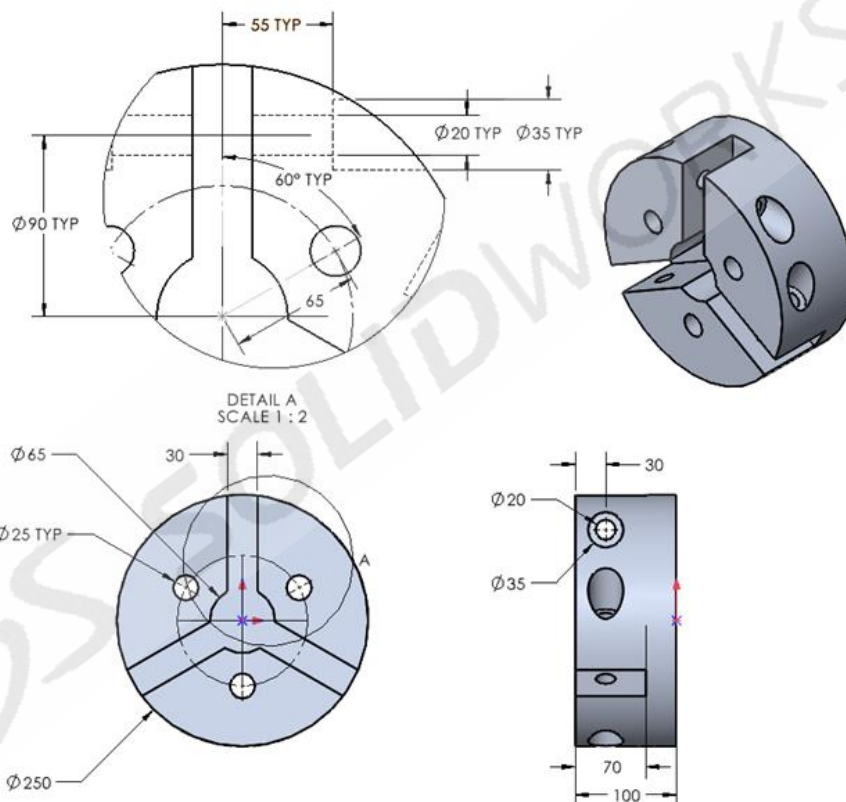
- Units: MMGS
- Difficulty Level: Easy
- Certification: CSWA
- Duration (min): 10
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is axisymmetric.
 - All sketches are fully-defined.

Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines, Rectangles
- Features: Extrude Boss, Extrude Cut
- Patterns: Circular, Mirror
- Reference Geometry: Planes

HINT: The holes and cuts are patterned.

Volume: 3687610 cm³



Practice Problem 7.6

Feature Patterning (Level 7)

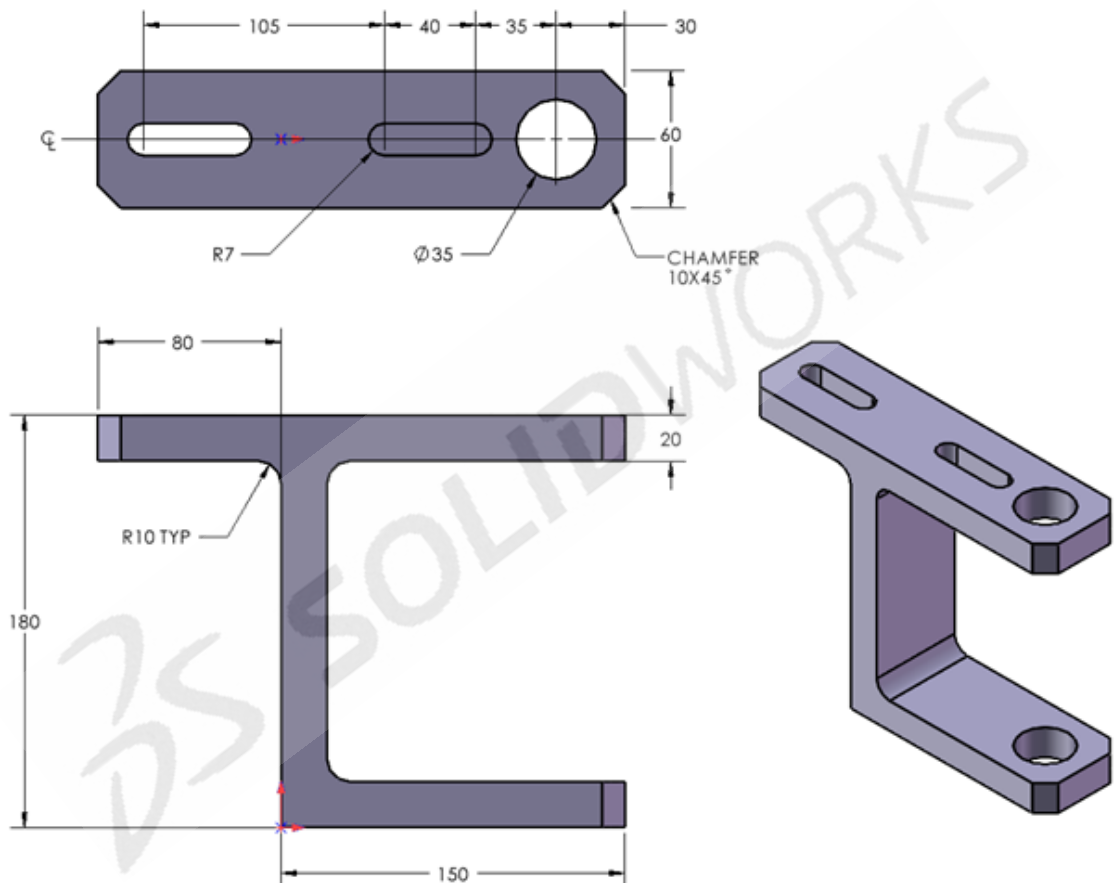
- Units: MMGS
- Difficulty Level: Medium
- Certification: CSWA
- Duration (min): 15
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is symmetric.
 - All sketches are fully-defined.

Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Rectangles, Offset, Slots, Centerlines
- Features: Extrude Boss, Extrude Cut, Fillets and Chamfers
- Patterns: Linear

HINT: Thickness remains the same.

Volume: 554821 mm³



Practice Problem 7.7

Feature Patterning (Level 7)

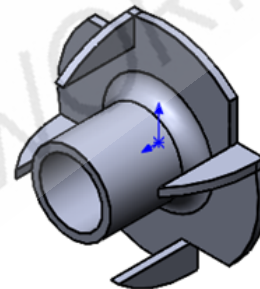
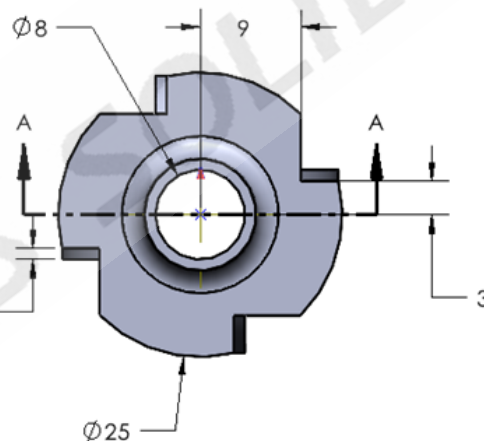
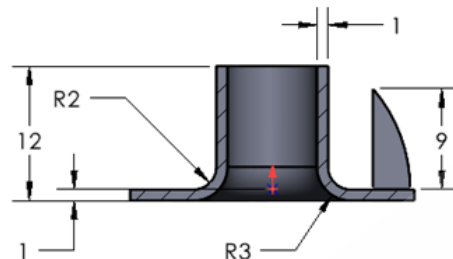
- Units: MMGS
- Difficulty Level: Hard
- Certification: CSWA
- Duration (min): 30
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is axisymmetric.
 - All sketches are fully-defined.

Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines
- Features: Extrude Boss, Revolves, Fillets and Chamfers
- Patterns: Circular

HINT: All 4 blades are evenly spaced.

Volume: 787 mm³



Practice Problem 7.8

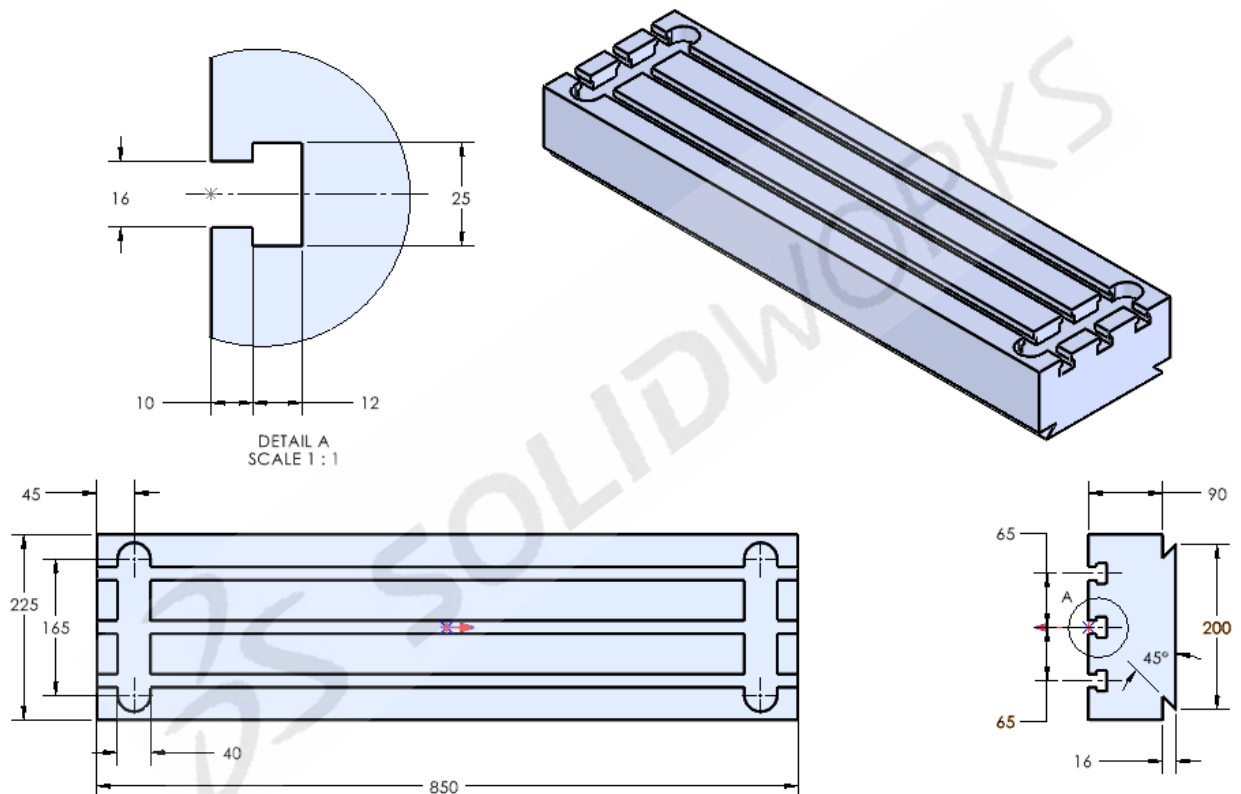
Feature Patterning (Level 7)

- Units: MMGS
- Difficulty Level: Hard
- Certification: CSWA
- Duration (min): 25
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is symmetric.
 - All sketches are fully-defined.

Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines, Slots
- Features: Extrude Boss, Extrude Cut
- Patterns: Linear, Mirror

Volume: 18306608 mm³



Practice Problem 7.9

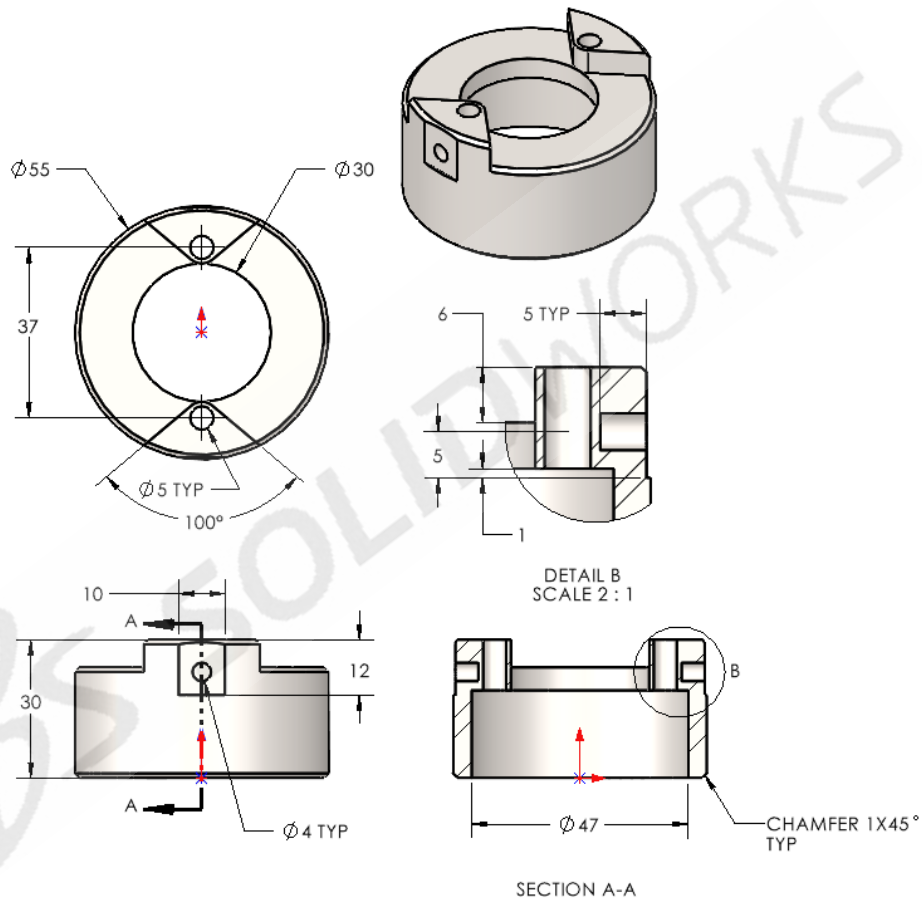
Feature Patterning (Level 7)

- Units: MMGS
- Difficulty Level: Hard
- Certification: CSWA
- Duration (min): 35
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is symmetric.
 - All sketches are fully-defined.

Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines, Rectangles
- Features: Extrude Boss, Extrude Cut, Fillets and Chamfers
- Patterns: Mirror

Volume: 21908 mm³



Practice Problem 7.10

Feature Patterning (Level 7)

- Units: MMGS
- Difficulty Level: Hard
- Certification: CSWA
- Duration (min): 45
- Design Intent:
 - The part's origin location is indicated in red.
 - The part is symmetric.
 - All sketches are fully-defined.

Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines, ARcs
- Features: Extrude Boss, Extrude Cut, Revolves, Fillets and Chamfers
- Patterns: Mirror

Volume: 113890 mm³

