

# Practice Problem 3.1

## Global Variables & Sketch Patterns (Level 3)

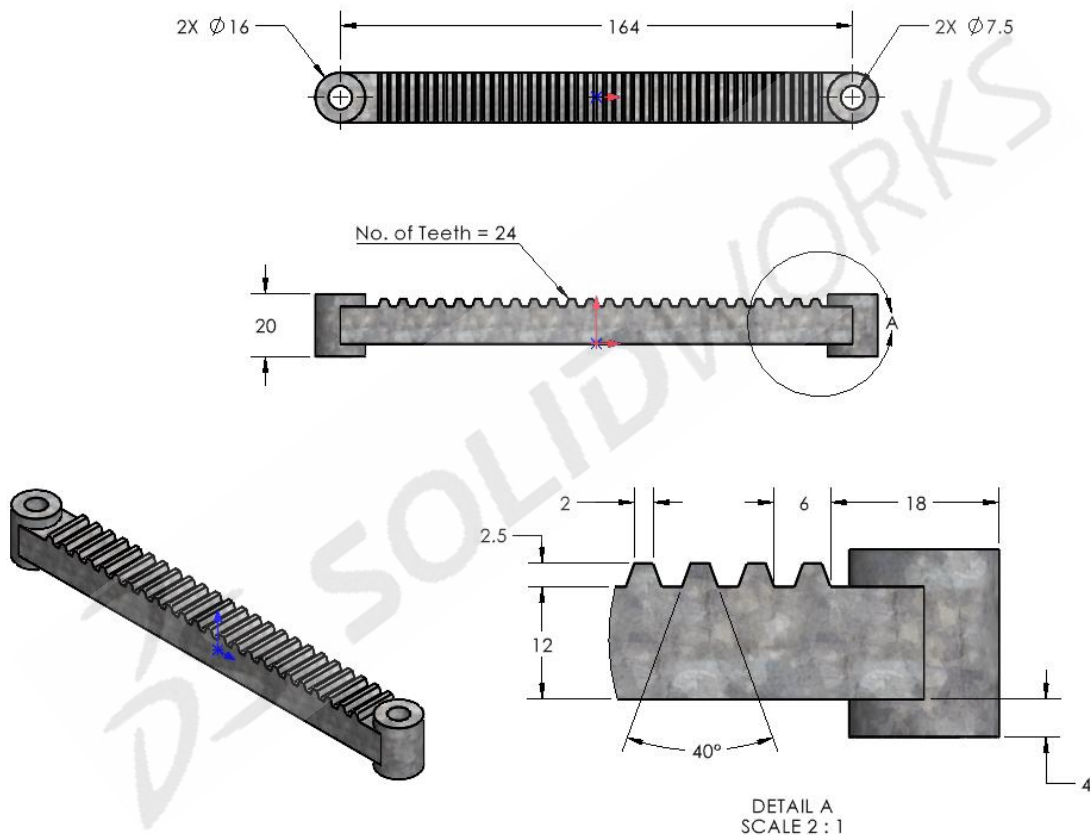
- Units: MMGS
- Difficulty Level: Medium
- Certification: CSWA
- Duration (min): 15
- Design Intent:
  - The part's origin location is indicated in red.
  - The part is symmetric.
  - All sketches are fully-defined.

## Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines, Sketch Patterns
- Features: Extrude Boss

HINT: Use a Linear Sketch pattern to create the teeth.

Volume: 38144 mm<sup>3</sup>



# Practice Problem 3.2

## Global Variables & Sketch Patterns (Level 3)

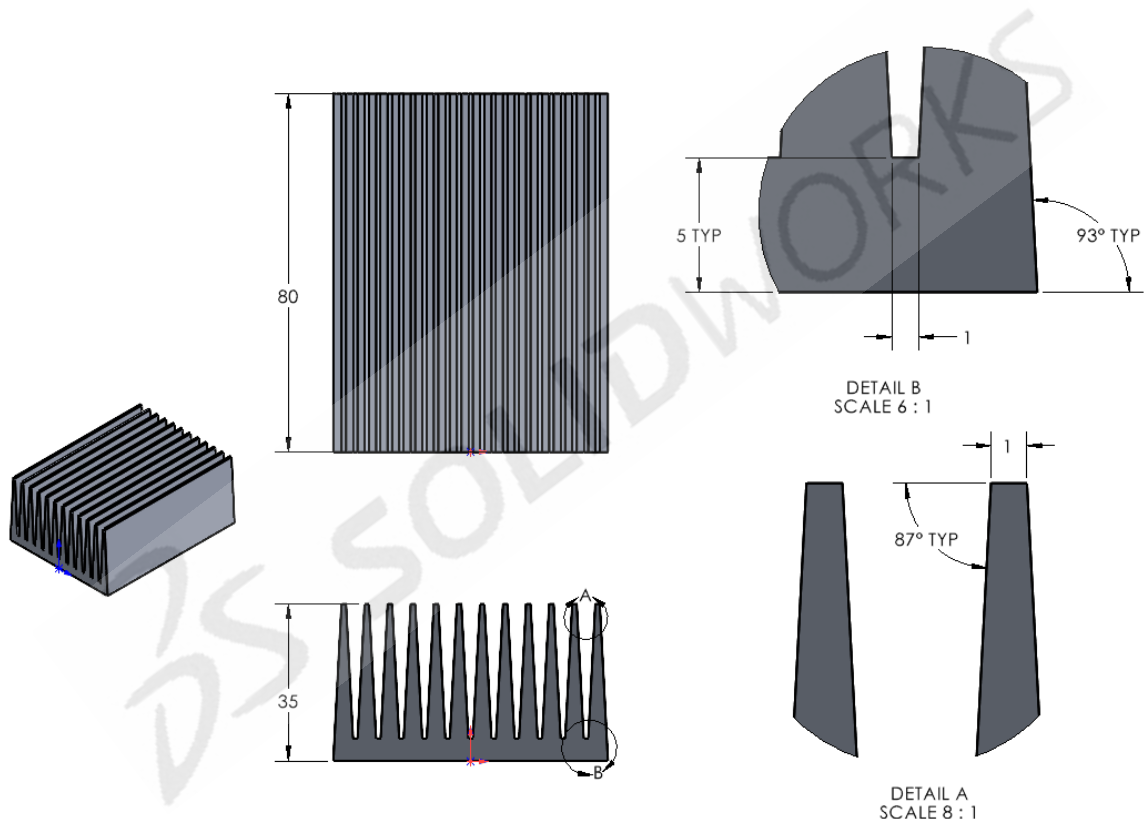
- Units: MMGS
- Difficulty Level: Easy
- Certification: CSWA
- Duration (min): 10
- Design Intent:
  - The part's origin location is indicated in red.
  - The part is symmetric.
  - All sketches are fully-defined.

## Suggested Sketch Tools / Features

- Sketch: Lines, Centerlines, Sketch Patterns
- Features: Extrude Boss

HINT: Use a Linear Sketch pattern to create the vanes.

Volume: 98479 mm<sup>3</sup>



# Practice Problem 3.3

## Global Variables & Sketch Patterns (Level 3)

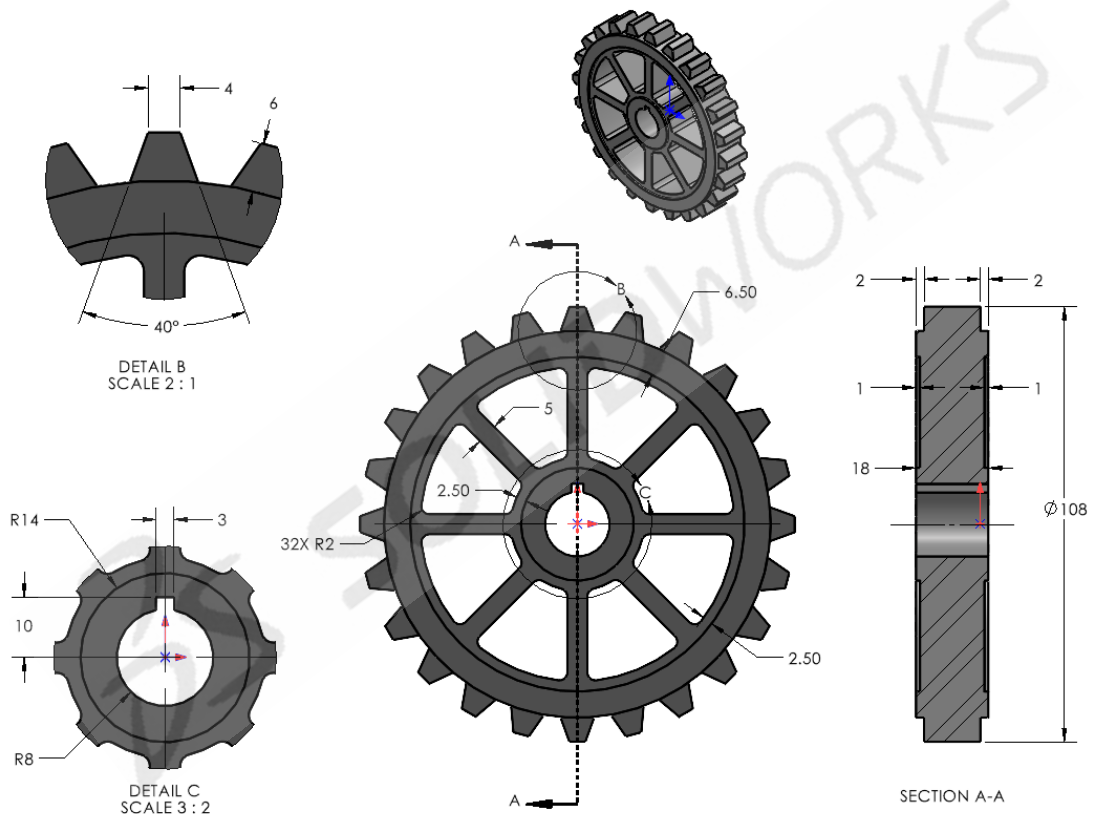
- Units: MMGS
- Difficulty Level: Medium
- Certification: CSWA
- Duration (min): 15
- Design Intent:
  - The part's origin location is indicated in red.
  - The part is symmetric.
  - All sketches are fully-defined.

## Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines, Arcs, Sketch Patterns, Sketch Fillets, Offset Entities
- Features: Extrude Boss

HINT: There are 24 gear teeth.

Volume: 81601 mm<sup>3</sup>



# Practice Problem 3.4

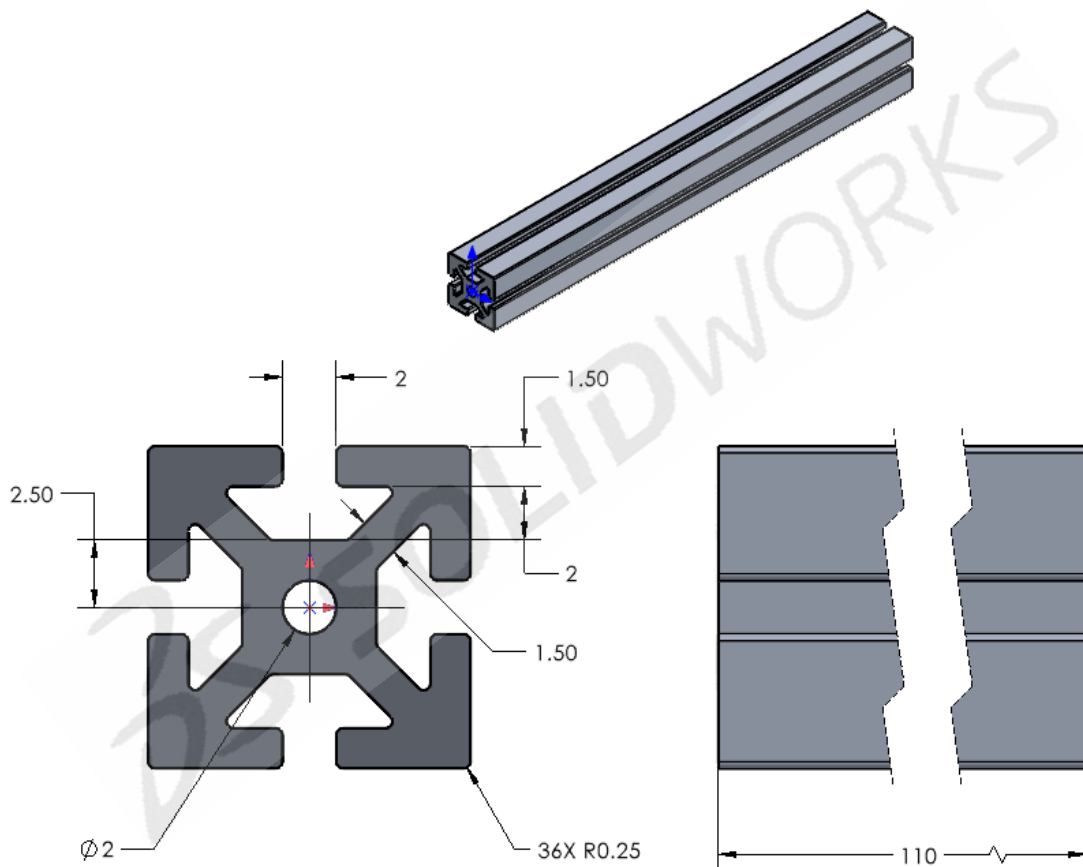
## Global Variables & Sketch Patterns (Level 3)

- Units: MMGS
- Difficulty Level: Easy
- 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, Sketch Patterns, Trim, Offset Entities, Sketch Fillets
- Features: Extrude Boss

Volume: 9921 mm<sup>3</sup>



# Practice Problem 3.5

## Global Variables & Sketch Patterns (Level 3)

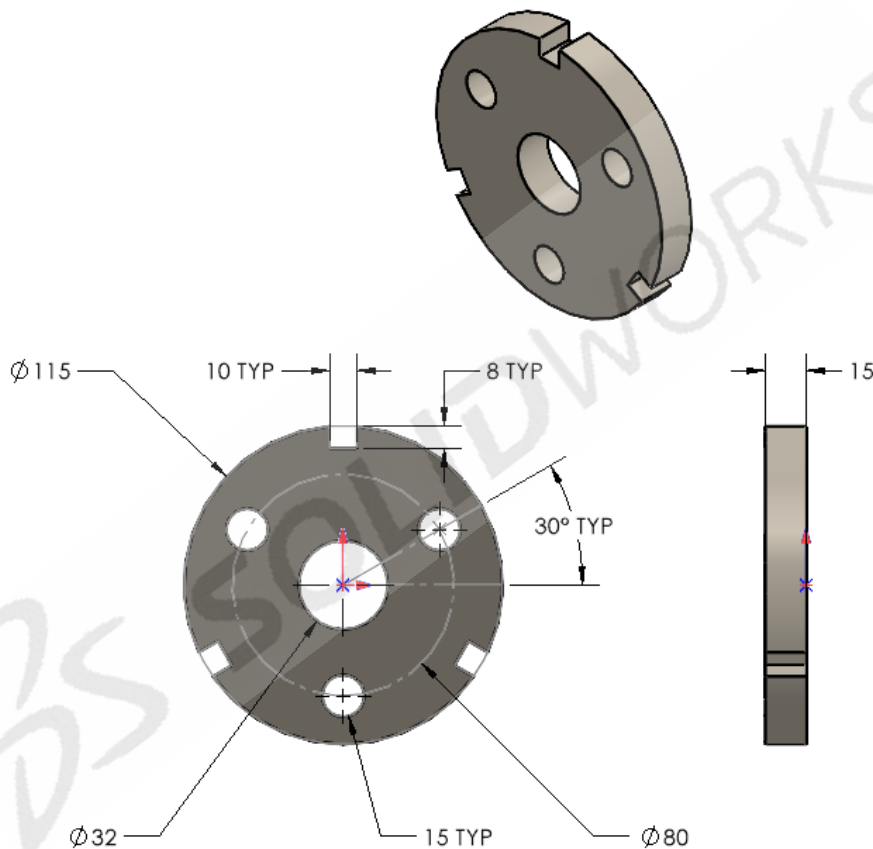
- Units: MMGS
- Difficulty Level: Easy
- Certification: CSWA
- Duration (min): 10
- Design Intent:
  - The part's origin location is indicated in red.
  - The part is symmetric.
  - All sketches are fully-defined.

## Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines, Rectangles, Sketch Patterns
- Features: Extrude Boss

HINT: Use a circular sketch pattern.

Volume: 132122 mm<sup>3</sup>



# Practice Problem 3.6

## Global Variables & Sketch Patterns (Level 3)

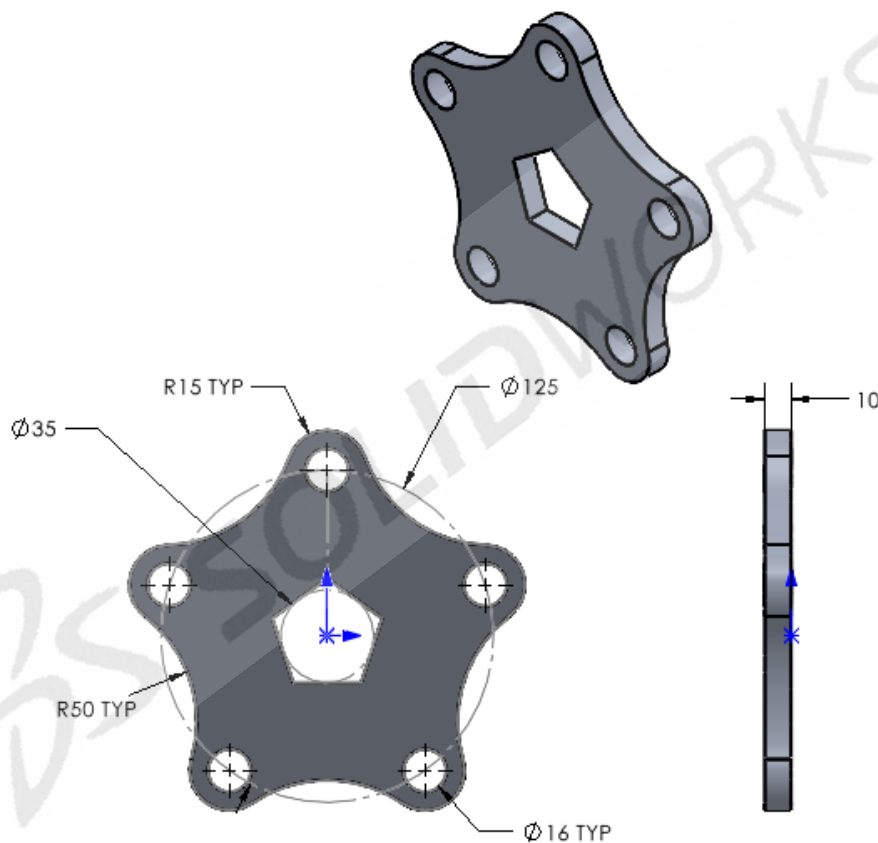
- Units: MMGS
- Difficulty Level: Easy
- Certification: CSWA
- Duration (min): 5
- Design Intent:
  - The part's origin location is indicated in red.
  - The part is symmetric.
  - All sketches are fully-defined.

## Suggested Sketch Tools / Features

- Sketch: Lines, Circles, Centerlines, Arcs, Polygons, Sketch Patterns
- Features: Extrude Boss

HINT: Use a 5-sided polygon.

Volume: 108939 mm<sup>3</sup>



# Practice Problem 3.7

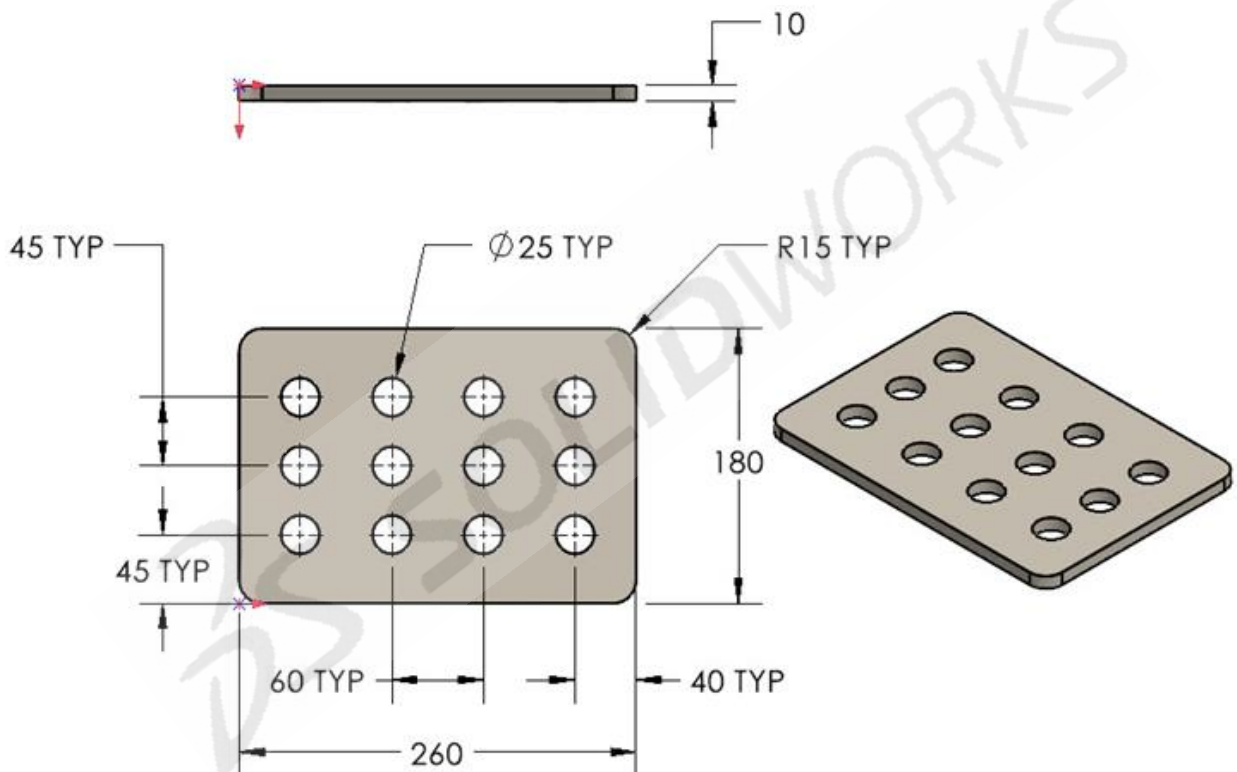
## Global Variables & Sketch Patterns (Level 3)

- Units: MMGS
- Difficulty Level: Easy
- 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, Rectangles, Sketch Patterns
- Features: Extrude Boss

Volume: 407164 mm<sup>3</sup>





# Practice Problem 3.8

## Global Variables & Sketch Patterns (Level 3)

- 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, Polygons, Sketch Patterns
- Features: Extrude Boss

HINT: Bosses are centered on the edges.

Volume: 50984 mm<sup>3</sup>

