## STUDY SET 03

## ENGINEERING GEOMETRY

## PROBLEMS FOR LABORATORY WORK

### 3.1 Coordinate Exercise 1

Draw the shape using the coordinate values.


### 3.2 Coordinate Exercise 2

Draw the shape with the given dimensions.


### 3.3 Coordinate Exercise 3

Draw the shape using line commands.


### 3.4 Coordinate Exercise 4

Draw the shape using the dimensions.


### 3.5 Coordinate Exercise 5

Draw the shape using the dimensions.


### 3.6 Coordinate Exercise 6

Draw the shape using the dimensions. All angles are $45^{\circ}$ or its multiples. Use snap mode.


### 3.7 Polyline Example 1

Draw the shape using polyline command and coordinate values.


### 3.8 Polyline Example 2

Draw the shape using polyline command and snap mode.


### 3.9 Polyline Exercise 1

Draw the shape using polyline command and snap mode.


### 3.10 Polyline Exercise 2

Draw the shape using polyline command and snap mode.


### 3.11 Trim Exercise 1

Draw the top shape (locate the end points of parallel lines crossing the circles approximately. Using trim commands first obtain the second, then third shape.


### 3.12 Trim Exercise 2

Construct the approximate drawing of the left shape. Using trim command, obtain the right shape.


### 3.13 Extend Exercise

Construct the approximate drawing of the left shape. Using extend command, obtain the right shape.

3.14 Offset Arm (Figure 3.74)

Draw the offset arm, using the given dimensions.


### 3.15 Rocker-Arm Gasket (Figure 3.75)

Draw the rocker-arm gasket, using the given dimensions.


### 3.16 Adjustable Support (Figure 3.76)

Draw the adjustable support, using the given dimensions.


### 3.17 Slip Cover (Figure 3.79)

Draw the slip cover, using the given dimensions.


### 3.18 Geometric Construction Exercise 1

Draw the 2-D shape with the given dimensions.


### 3.19 Geometric Construction Exercise 2

Draw the 2-D shape with the given dimensions.


### 3.20 Geometric Construction Exercise 3

Draw the 2-D shape with the given dimensions.

3.21 Geometric Construction Exercise 4

Draw the 2-D shape with the given dimensions.


### 3.22 Geometric Construction Exercise 5

Draw the 2-D shape with the given dimensions.


### 3.23 Geometric Construction Exercise 6

Draw the 2-D shape with the given dimensions.


### 3.24 Geometric Construction Exercise 7

Draw the 2-D shape with the given dimensions.


### 3.25 Geneva Stop Mechanism

Mechanism has a driving wheel turning at a constant speed and a driven wheel turning intermittently. The driven wheel rotates one-fourth turn every time the drive enters and leaves slot. Start with drawing triangle $A B C$, then locate Point $P$ and centerline CP.


### 3.26 Turkish Flag

Draw Turkish Flag with the given dimensions.


## WORKBOOK PROBLEMS

### 3.1 Ridge Gasket

Sketch the ridge gasket using the rectangular grid.


RIDGE GASKET

| NMME - $_{-}$ |  |  |
| :--- | :---: | :--- |
| COURSE - | DATE - |  |

## 3．2 Centering Plate

Sketch the centering plate using the rectangular grid．


| NANE二 |  |  |
| :--- | :--- | :--- |
| COURSE $二 ~$ | OATE二 |  |

### 3.3 Coordinates 1

Four grid lines equal one unit. In the upper half of the rectangular grid paper, sketch the figure using the following absolute coordinate values: 0,$0 ; 3,0 ; 3,2 ; 0,2$; and 0,0 . In the lower half of the rectangular grid paper, sketch the figure using the following relative coordinate values: 0,$0 ; 4,0 ; 0,3 ;-4,0$, and $0,-3$.


### 3.4 Coordinates 2

Four grid lines equal one unit. Using the isometric grid paper and following the right-hand rule, place and label points at the following locations: $1(0,0,0)$; $2(4,0,0) ; 3(4,2,0) ; 4(0,2,0) ; 5(0,0,2) ; 6(4,0,2) ; 7(4,2,2)$; and $8(0,2,2)$. After placing the points on the isometric grid, connect the following points with lines:

1-2, 2-3, 3-4, 4-1.

5-6, 6-7, 7-8, 8-5.

4-8, 3-7, 1-5, 2-6.


### 3.5 Geometric Construction

Using scissors, cut out the pattern then use glue or tape to create the 3-D from the cube. The dashed lines represent where the paper is to be folded and the solid lines are where the paper is cut.


## SELECTED PROBLEMS

### 3.1 Piston, Connecting Rod, and Crankshaft (Figure 3.77)

Construct the piston and the crankshaft.


### 3.2 Split Guide (Figure 3.80)

Draw the split guide, using the given dimensions.


### 3.3 Arched Follower (Figure 3.81)

Draw the arched follower, using the given dimensions.


### 3.4 Offset Wrench (Figure 3.84)

Draw the offset wrench, using the given dimensions.


## CLASSIC PROBLEMS

### 3.1 Rod Guide (Figure 149.a)

Sketch or draw with CAD the 2-D drawing. All fillets and rounds are 0.125 inches or 2 mm unless otherwise indicated


### 3.2 Eyelet (Figure 149.b)

Sketch or draw with CAD the 2-D drawing. All fillets and rounds are 0.125 inches or 2 mm unless otherwise indicated.


### 3.3 Spline Lock (Figure 150.a)

Sketch or draw with CAD the 2-D drawing. All fillets and rounds are 0.125 inches or 2 mm unless otherwise indicated.


### 3.4 Pulley Shaft (Figure 150.b)

Sketch or draw with CAD the 2-D drawing. All fillets and rounds are 0.125 inches or 2 mm unless otherwise indicated.


