

SOLIDWORKS Student Edition - Academic Use Only

Mass Properties

Lab 2 - Part 1

Include hidden bodies/components
 Create Center of Mass feature
 Show weld bead mass
Report coordinate values relative to: -- default --

Mass properties of Lab 2 - Part 1
Configuration: Default
Coordinate system: -- default --

Density = 0.04 pounds per cubic inch
Mass = 0.40 pounds
Volume = 11.17 cubic inches
Surface area = 68.80 square inches
Center of mass: (inches)
X = -2.46
Y = -0.37
Z = -0.32

Principal axes of inertia and principal moments of inertia: (pounds * square inches)
Taken at the center of mass.
Ix = (-1.00, 0.00, 0.03) Px = 0.75
Iy = (0.00, 1.00, 0.00) Py = 1.85
Iz = (-0.03, 0.00, 1.00) Pz = 1.87

Moments of inertia: (pounds * square inches)
Taken at the center of mass and aligned with the output coordinate system. (Using positive tensor notation.)
Lxx = 0.75 Lxy = 0.00 Lzx = 0.03
Lyx = 0.00 Lyy = 1.85 Lyz = 0.00
Lzx = 0.03 Lzy = 0.00 Lzz = 1.87

Moments of inertia: (pounds * square inches)
Taken at the output coordinate system. (Using positive tensor notation.)
Ix = 0.84 Iy = 0.37 Iz = 0.34
Iy = 0.37 Iy = 4.34 Iz = 0.05
Izx = 0.34 Iz = 0.05 Izz = 4.37

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Mass Properties

lab 2 - part 2

Options...

Include hidden bodies/components

Create Center of Mass feature

Show weld bead mass

Report coordinate values relative to: -- default --

Mass properties of lab 2 - part 2
 Configuration: Default
 Coordinate system: -- default --

Density = 0.04 pounds per cubic inch

Mass = 0.33 pounds

Volume = 9.05 cubic inches

Surface area = 32.64 square inches

Center of mass: (inches)
 X = -1.94
 Y = -0.80
 Z = 0.74

Principal axes of inertia and principal moments of inertia: (pounds * square inches)
 Taken at the center of mass.
 Ix = (0.99, 0.11, 0.11) Px = 0.16
 ly = -0.15, 0.79, 0.60 Py = 0.41
 Iz = (-0.02, -0.61, 0.79) Pz = 0.46

Moments of inertia: (pounds * square inches)
 Taken at the center of mass and aligned with the output coordinate system. (Using positive tensor notation.)
 Lxx = 0.17 Lxy = 0.03 Lxz = 0.03
 Lyx = 0.03 Lyy = 0.43 Lyz = 0.03
 Lzx = 0.03 Lzy = 0.03 Lzz = 0.44

Moments of inertia: (pounds * square inches)
 Taken at the output coordinate system. (Using positive tensor notation.)
 Ixx = 0.56 Ixy = 0.54 Izx = -0.44
 lyx = 0.54 Iyy = 1.84 Iyz = -0.17
 Izx = -0.44 Izy = -0.17 Izz = 1.88

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object modeler

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part 2 Bodies(1)

Extrude1 Sketch1 Extrude1 Extrude2 Extrude3

model of the roller shown below. The thickness of the web is .25 inch.

Use the Pattern command to create the 6 holes. Print out an isometric view window showing the volume in the correct units.

A $\phi 0.50$

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SOLIDWORKS File Edit View Insert Tools Simulation Window

Search Options

Mass Properties lab 2 part 3 Options... Recalculate

Include hidden bodies/components

Create Center of Mass feature

Show weld bead mass

Report coordinate values relative to: -- default --

Mass properties of lab 2 part 3
Configuration: Default
Coordinate system: -- default --

Density = 0.04 pounds per cubic inch

Mass = 0.23 pounds

Volume = 6.29 cubic inches

Surface area = 56.81 square inches

Center of mass: (inches)
X = 0.00
Y = 0.00
Z = 0.00

Principal axes of inertia and principal moments of inertia: (pounds * square inches)
Taken at the center of mass.
 $I_x = (0.00, 1.00, 0.00)$ $P_x = 0.28$
 $I_y = (0.00, 0.00, 1.00)$ $P_y = 0.28$
 $I_z = (1.00, 0.00, 0.00)$ $P_z = 0.52$

Moments of inertia: (pounds * square inches)
Taken at the center of mass and aligned with the output coordinate system. (Using positive tensor notation.)
 $I_{xx} = 0.52$ $I_{xy} = 0.00$ $I_{xz} = 0.00$
 $I_{yx} = 0.00$ $I_{yy} = 0.28$ $I_{yz} = 0.00$
 $I_{zx} = 0.00$ $I_{zy} = 0.00$ $I_{zz} = 0.28$

Moments of inertia: (pounds * square inches)
Taken at the output coordinate system. (Using positive tensor notation.)
 $I_{xx} = 0.52$ $I_{xy} = 0.00$ $I_{xz} = 0.00$
 $I_{yx} = 0.00$ $I_{yy} = 0.28$ $I_{yz} = 0.00$
 $I_{zx} = 0.00$ $I_{zy} = 0.00$ $I_{zz} = 0.28$

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Sketch Line Corner Rectangle Circle Polygon Centerpoint Arc Spline Smart Dimension Add Relation Sketch Fillet Trim Linear Sketch Offset Entities Convert Mirror Extruded Boss/Base Extruded Cut Fillet Linear Mirror Draft Shell Reference Geometry Measure Mass Properties

Basic Modeling Tools SOLIDWORKS CAM SOLIDWORKS CAM TBM Simulation Analysis Preparation

lab 2 part 3 Solid Bodies(1) Equations Material <not specified> Front Plane Top Plane Right Plane Origin Revolve1 Cut-Extrude1 Mirror1

3D View: A circular mechanical part with four holes and a central hub. A coordinate system (X, Y, Z) is shown at the center of the part.

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Mass Properties

lab 2 part 4

Options...

Include hidden bodies/components

Create Center of Mass feature

Show weld bead mass

Report coordinate values relative to: -- default --

Mass properties of lab 2 part 4
 Configuration: Default
 Coordinate system: -- default --

Density = 0.04 pounds per cubic inch

Mass = 2.44 pounds

Volume = 67.61 cubic inches

Surface area = 547.94 square inches

Center of mass: (inches)
 X = 0.00
 Y = 3.16
 Z = 0.00

Principal axes of inertia and principal moments of inertia: (pounds * square inches)
 Taken at the center of mass.
 Ix = (0.00, 0.00, 1.00) Px = 28.07
 ly = (1.00, 0.00, 0.00) Py = 28.07
 Iz = (0.00, 1.00, 0.00) Pz = 48.72

Moments of inertia: (pounds * square inches)
 Taken at the center of mass and aligned with the output coordinate system. (Using positive tensor notation.)
 Lxx = 28.07 Lxy = 0.00 Lzx = 0.00
 Lyx = 0.00 Lyy = 48.72 Lyz = 0.00
 Lzx = 0.00 Lzy = 0.00 Lzz = 28.07

Moments of inertia: (pounds * square inches)
 Taken at the output coordinate system. (Using positive tensor notation.)
 Ixx = 52.47 Ixy = 0.03 Izx = 0.00
 lyx = 0.03 Iyy = 48.72 Iyz = 0.00
 Izx = 0.00 Izy = 0.00 Izz = 52.47

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lab 2 part 4

Search files and models

Sketch Line Corner Rectangle Circle Polygon Centerpoint Arc Smart Dimension Add Relation Sketch Trim Linear Sketch Pattern Entities Offset Convert Mirror Extruded Boss/Base Extruded Cut Fillet Linear Mirror Draft Shell Reference Geometry Measure Mass Properties

lab 2 part 4

Solid Bodies(1)

- Equations
- Material <not specified>
- Front Plane
- Top Plane
- Right Plane
- Origin
- Revolve1
 - Sketch1
- Shell4

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