CMGT 340   Quiz #12   Spring 2012
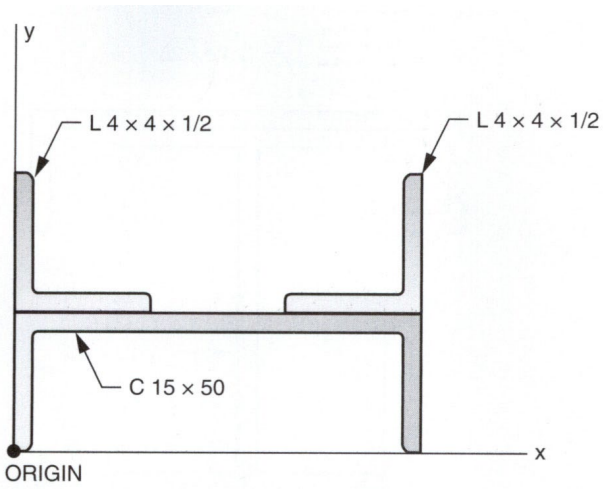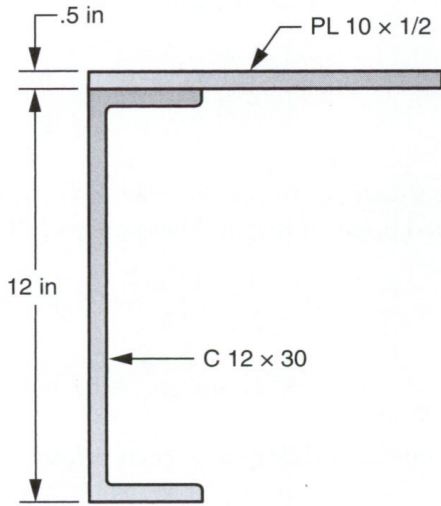
NAME: _____

1. Find the centroid of the built-up structural steel shape shown below with respect to the origin shown.

Solution.

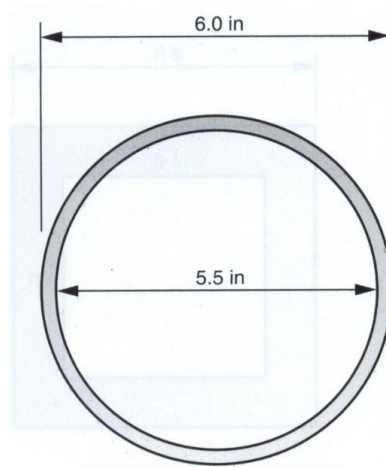| Shape	Area (IN²)	X (IN)	Ax (IN³)	Y (IN)	Ay (IN³)
L 4 X 4 X 1/2					
L 4 X 4 X 1/2					
C 15 X 50					

2. Find the centroid of the built-up structural steel shape shown below. Use the lower left corner of the channel as the point of origin.

Solution.

Shape	Area (IN²)	X (IN)	Ax (IN³)	Y (IN)	Ay (IN³)
PL 10 X 1/2					
C 12 X 30					

3. Calculate the moment of inertia about the centroidal *x*- and the centroidal *y*- axes for the shape shown below.

6.0 in

5.5 in

Solution.

4. Calculate the moment of inertia about the centroidal x- and the centroidal y- axes for the shape shown below.

L's 5 × 3 × 1/2
PL 8 × 3/4

Solution.
Note: You must first locate the centroid for the given shape.

X-X Axis

Shape	Area (in²)	X (in)	Ax (in³)	Y (in)	Ay (in³)	d (in)	Ad² (in⁴)	I (in⁴)
PL 8 X 3/4								
L 5 X 3 X 1/2								
L 5 X 3 X ½								

Y-Y Axis

Shape	Area (in²)	X (in)	Ax (in³)	Y (in)	Ay (in³)	d (in)	Ad² (in⁴)	I (in⁴)
PL 8 X 3/4								
L 5 X 3 X 1/2								
L 5 X 3 X ½								