



# **INTERFIS PROYECTOS EDUCATIVOS REPOSITORIO**

## **CENTRO DE GRAVEDAD**

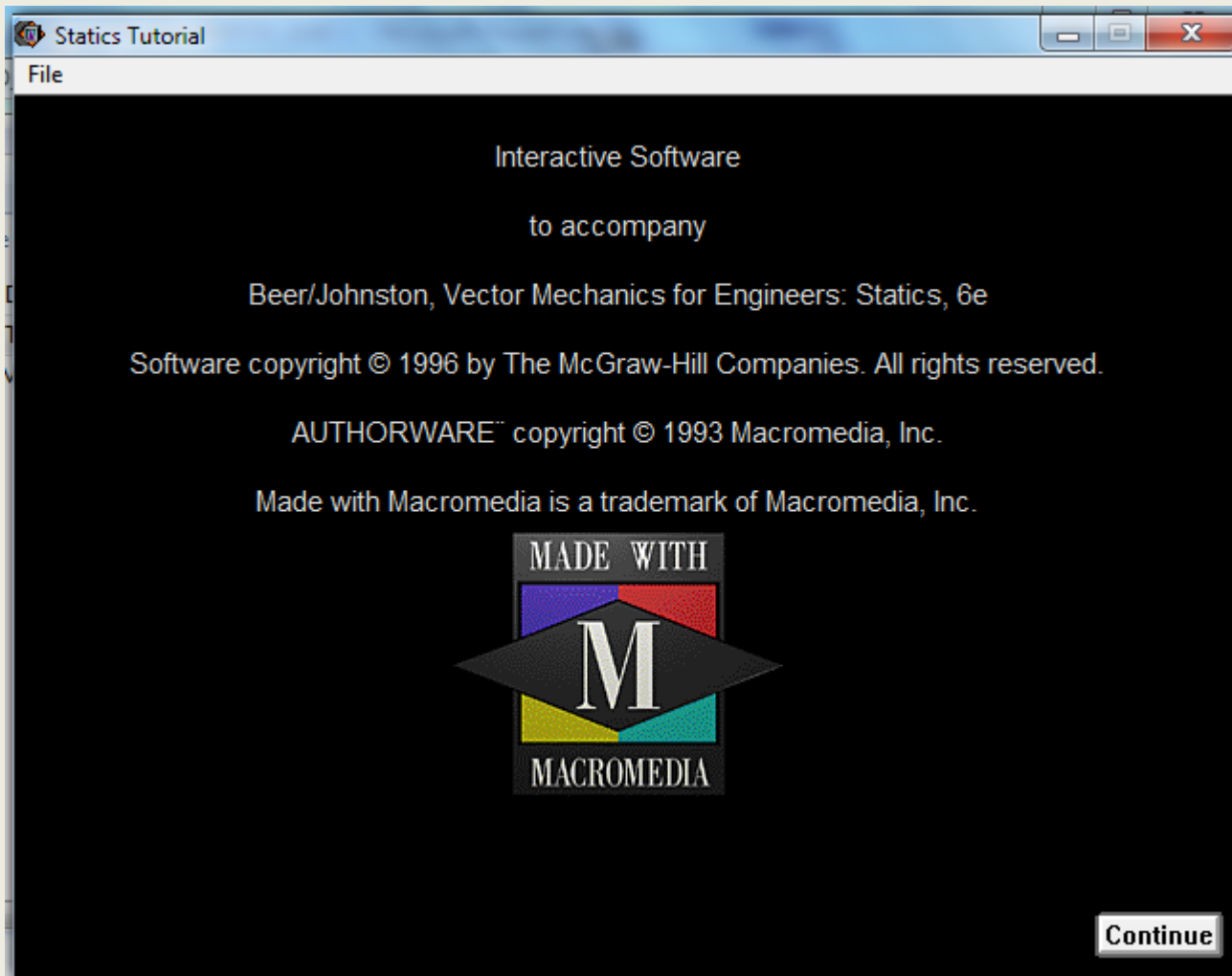
**Ejercicios paso a paso a partir de Software STATICS**

# CENTRO DE GRAVEDAD DE FIGURAS PLANAS (CENTROIDS. QUIZ)

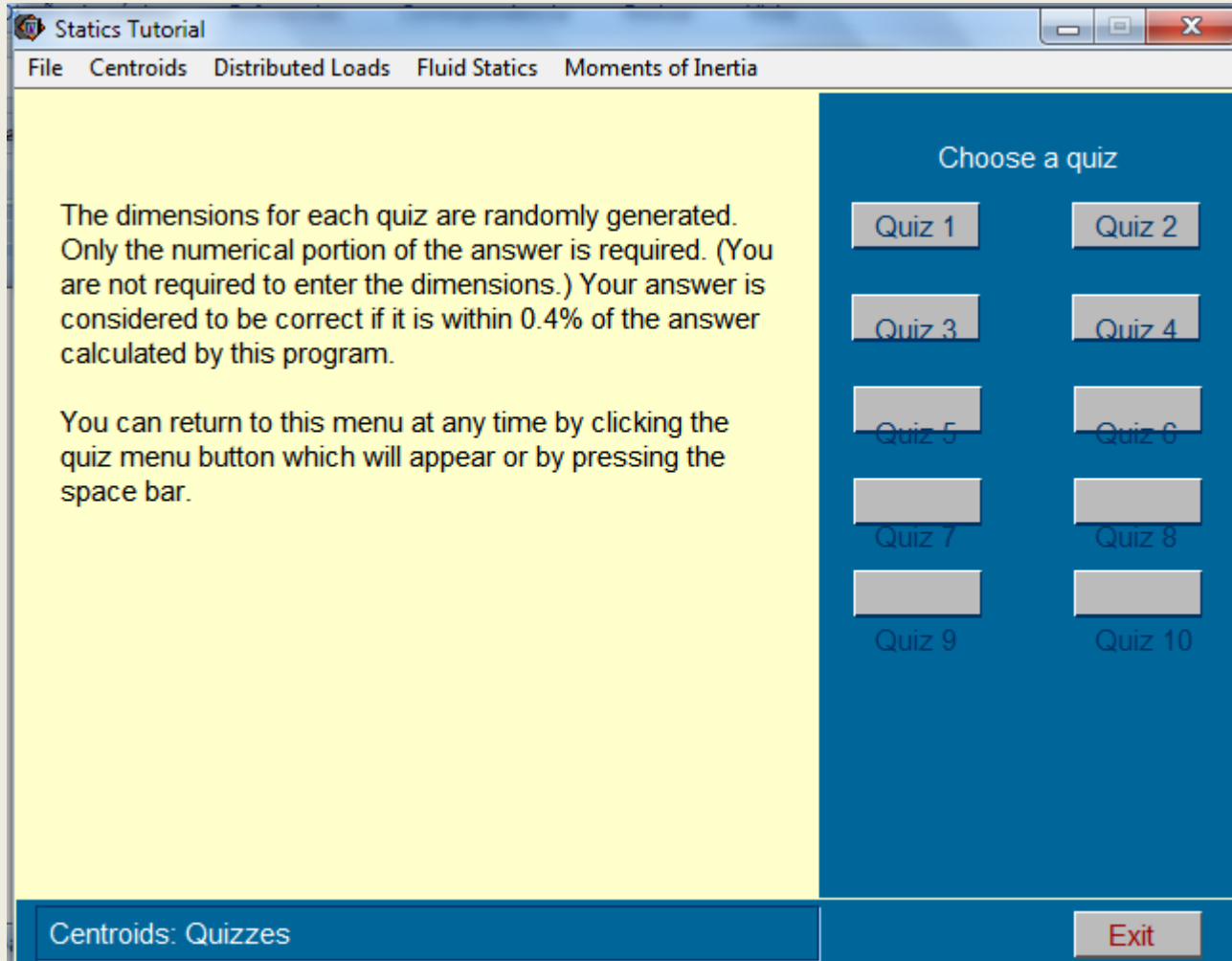
<http://interfis-edu.jimdo.com/repositorio/>

Los ejercicios siguientes se realizan con el **SOFTWARE STATICS**, incluido en “MECÁNICA VECTORIAL PARA INGENIEROS. ESTÁTICA”. Sexta edición. MCGRAW-HILL. 1997 ISBN 84-481-1079-X.

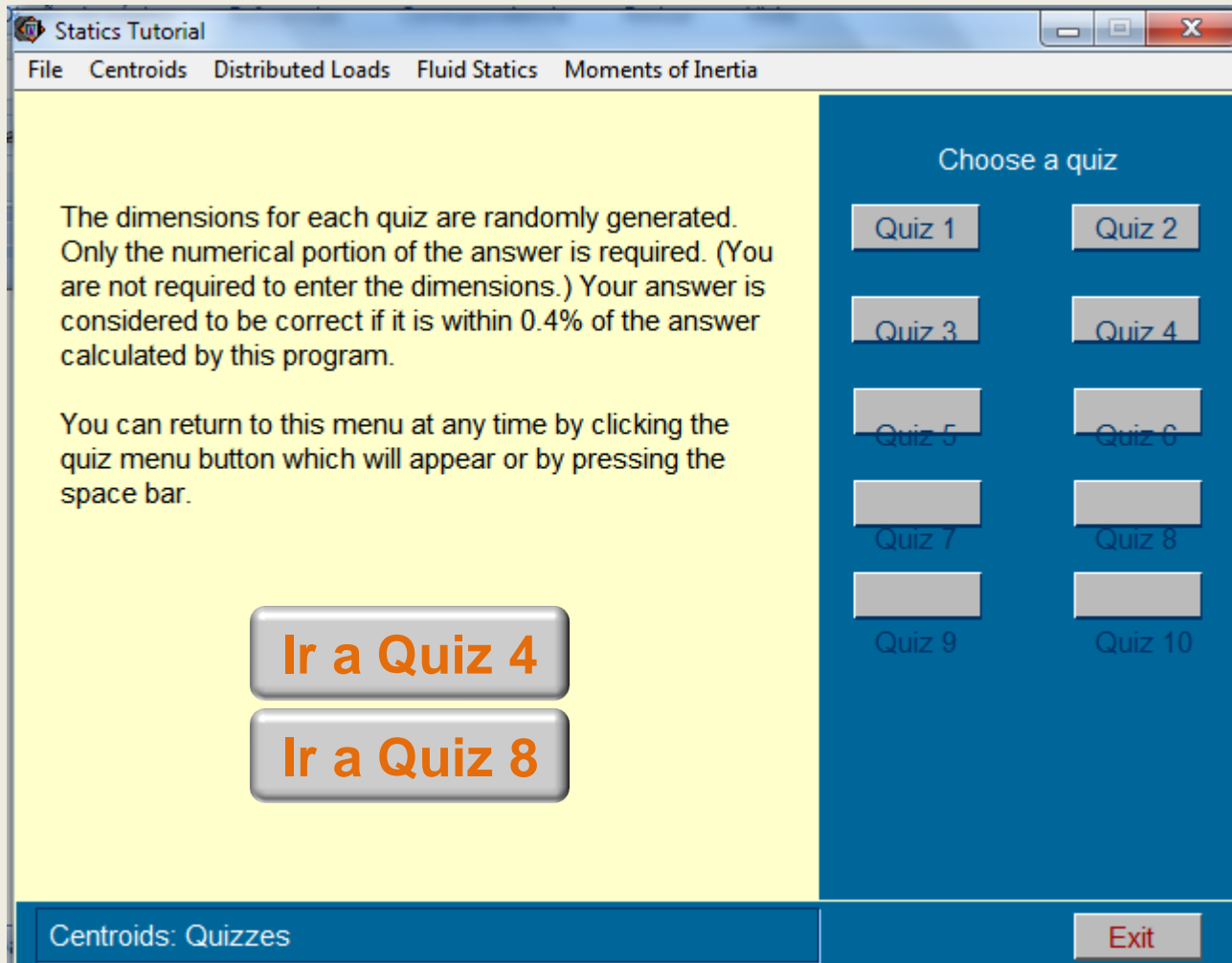
La presentación se realiza exclusivamente con fines educativos, para facilitar su discusión en clase.

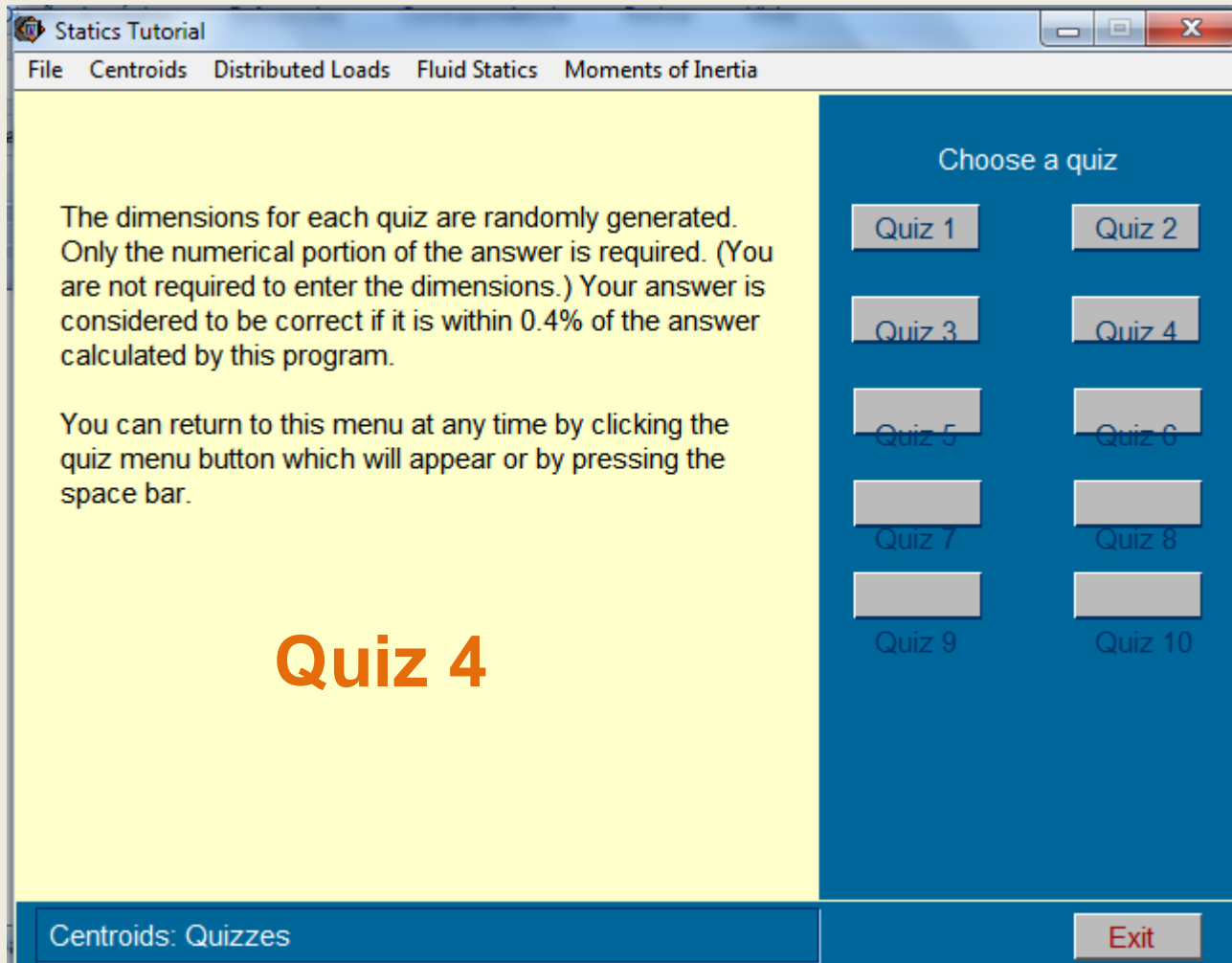


# CENTRO DE GRAVEDAD DE FIGURAS PLANAS (CENTROIDS. QUIZ)



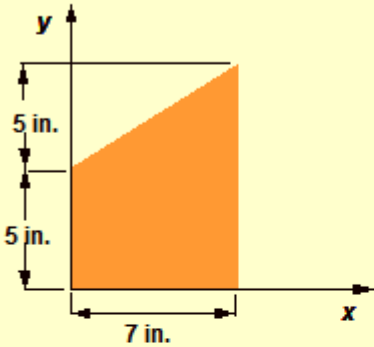
# CENTRO DE GRAVEDAD DE FIGURAS PLANAS (CENTROIDS. QUIZ)





Statics Tutorial

File Centroids Distributed Loads Fluid Statics Moments of Inertia



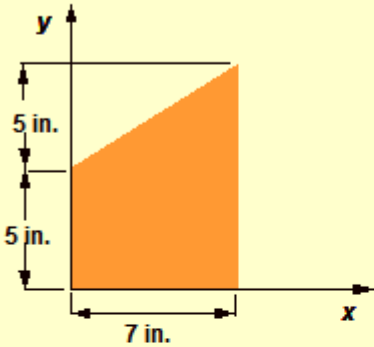
Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

$\bar{x} =$

Centroids: Quizzes #4 [Quiz Menu](#)

Statics Tutorial

File Centroids Distributed Loads Fluid Statics Moments of Inertia



Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

$\bar{x}$  =

The correct answer is  $\bar{x} = 3,89$  in.

Centroids: Quizzes#4

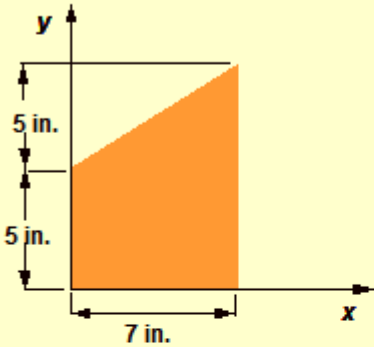
Quiz Menu

Continue



Statics Tutorial

File Centroids Distributed Loads Fluid Statics Moments of Inertia



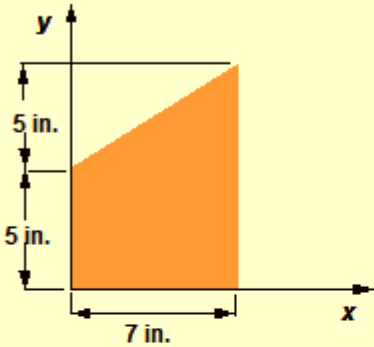
Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

$\bar{y} =$

Centroids: Quizzes #4 [Quiz Menu](#)

Statics Tutorial

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Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

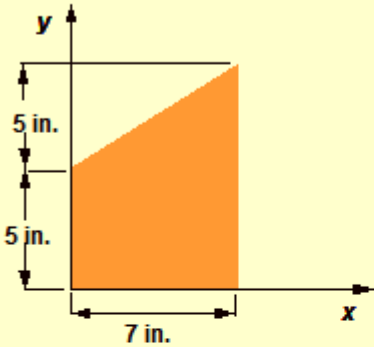
$\bar{y} =$

The correct answer is  $\bar{y} = 3,89$  in.

Centroids: Quizzes#4 Quiz Menu Continue

Statics Tutorial

File Centroids Distributed Loads Fluid Statics Moments of Inertia



Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

Do you want to see the solution?

Yes No

Centroids: Quizzes#4

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The diagram illustrates the decomposition of a composite area into two sections for centroid calculation. On the left, a solid orange trapezoidal area is shown in a Cartesian coordinate system. The base of the trapezoid is 7 in. along the x-axis. The left vertical edge is divided into two segments of 5 in. each, with the top vertex at a height of 10 in. from the x-axis. The right vertical edge is 10 in. high. This area is equated to the sum of two sections: 'section 1' and 'section 2'. Section 1 is a shaded rectangular area with a width of 3.5 in. and a height of 2.5 in., with its bottom-left corner at the origin (0,0). Section 2 is a shaded trapezoidal area with a height of 6.67 in. and a base of 4.67 in. along the x-axis. The top-right corner of section 2 is at the top-right corner of the original trapezoid (7 in., 10 in.).

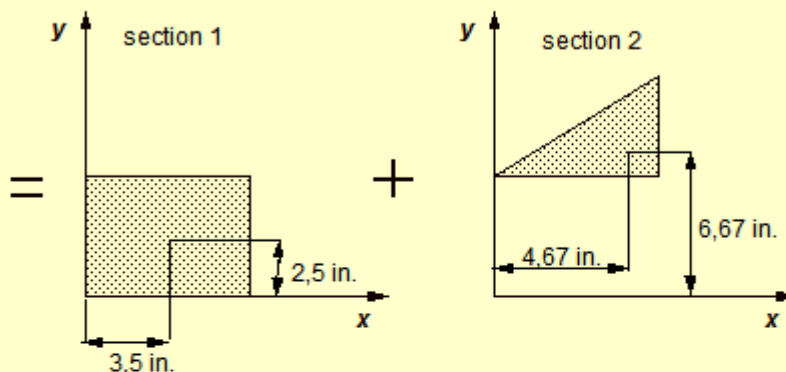
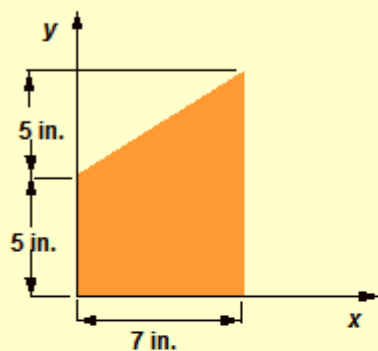
Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

A possible model for this problem is shown here.

Centroids: Quizzes #4

Quiz Menu

Continue



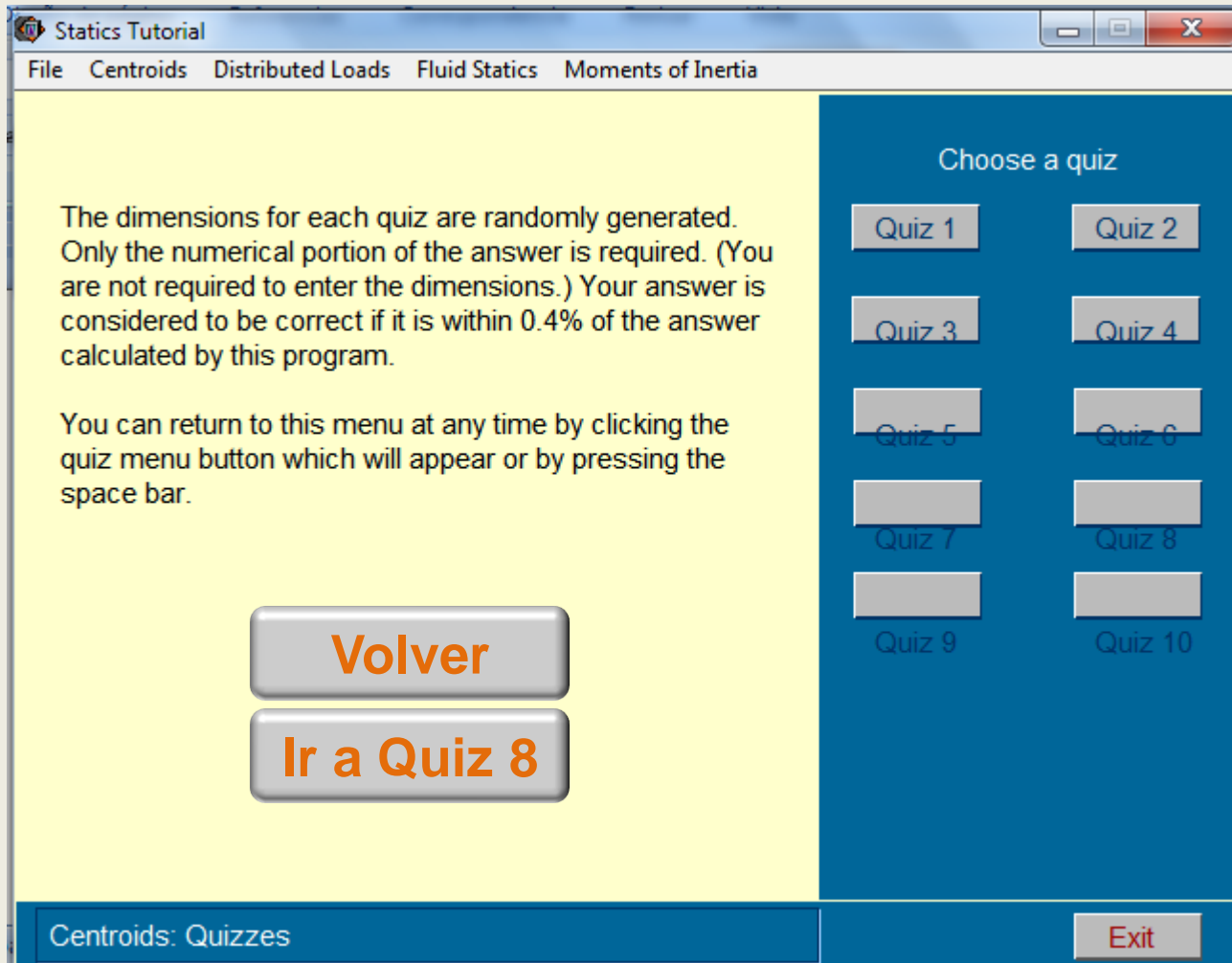
Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

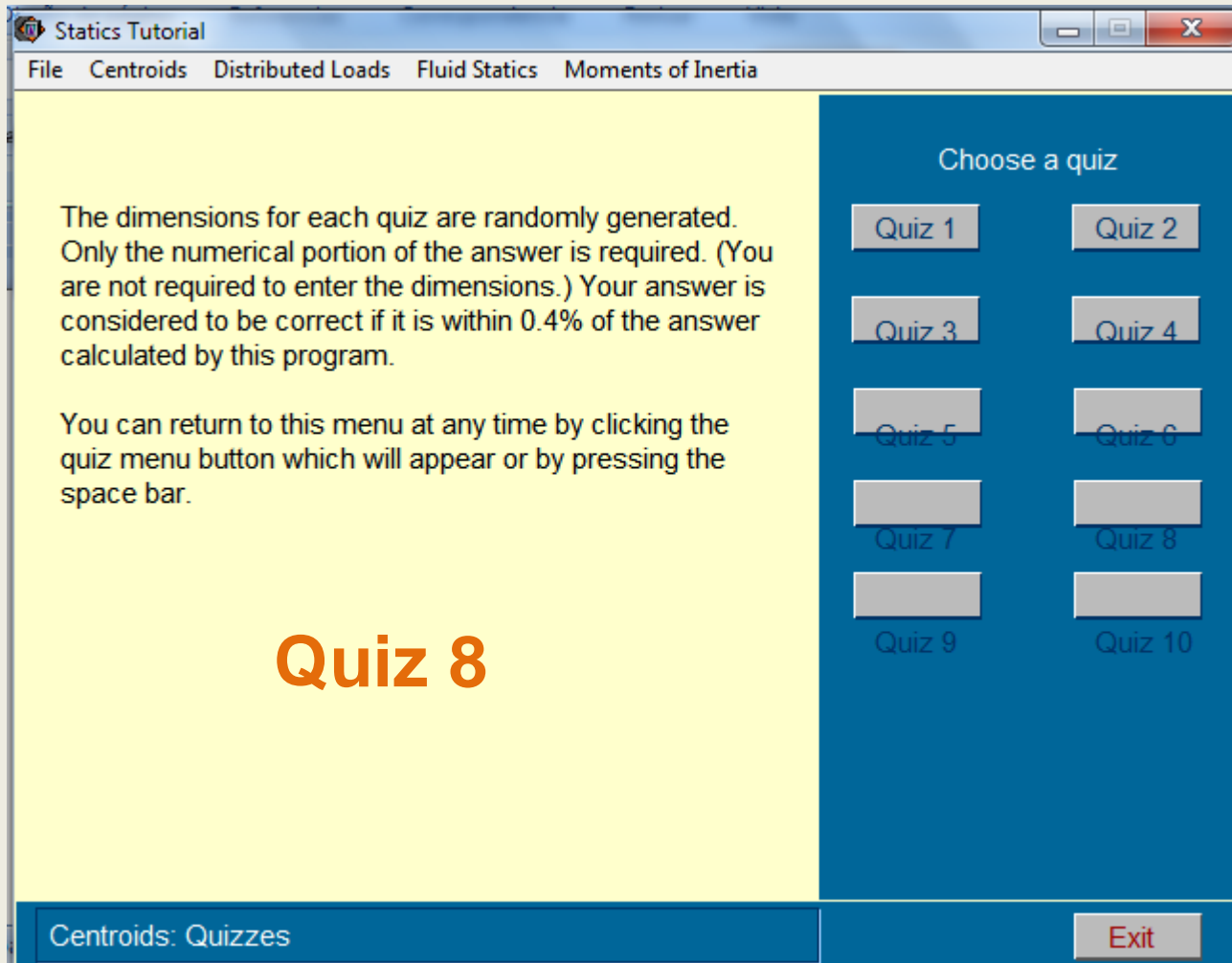
A possible model for this problem is shown here. After the model is established, a table can be constructed for computing the centroid.

section	Area	$\bar{x}$	$\bar{y}$	$A\bar{x}$	$A\bar{y}$
1	$(7)(5)=35$	3,5	2,5	122,5	87,5
2	$0,5(5)(7)=17,5$	4,67	6,67	81,67	116,67
	52,5			204,17	204,17

$$\bar{x} = \frac{204,17}{52,5} = 3,89 \text{ in.} \quad \bar{y} = \frac{204,17}{52,5} = 3,89 \text{ in.}$$

# CENTRO DE GRAVEDAD DE FIGURAS PLANAS (CENTROIDS. QUIZ)





Statics Tutorial

File Centroids Distributed Loads Fluid Statics Moments of Inertia

Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

$\bar{x} =$

Centroids: Quizzes#8 Quiz Menu



Statics Tutorial

File Centroids Distributed Loads Fluid Statics Moments of Inertia

Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

$\bar{x} =$

The correct answer is  $\bar{x} = 1,74$  in.

Centroids: Quizzes#8 Quiz Menu Continue

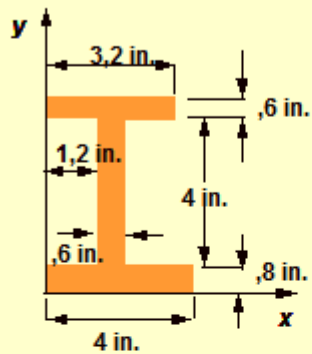
Statics Tutorial

File Centroids Distributed Loads Fluid Statics Moments of Inertia

Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

$\bar{y} =$

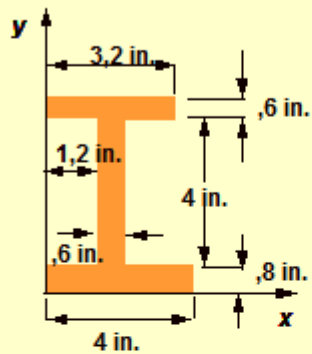
Centroids: Quizzes#8 Quiz Menu



Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

$\bar{y} =$

The correct answer is  $\bar{y} = 2.37$  in.

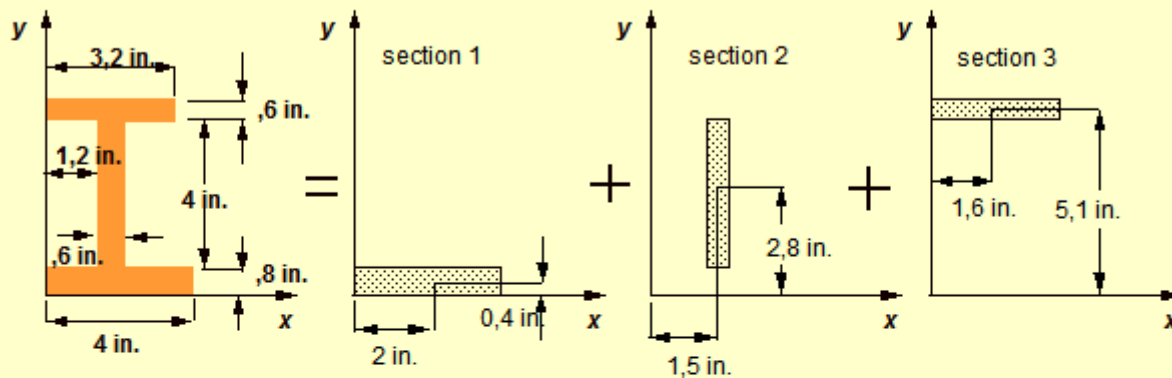


Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

Do you want to see the solution?

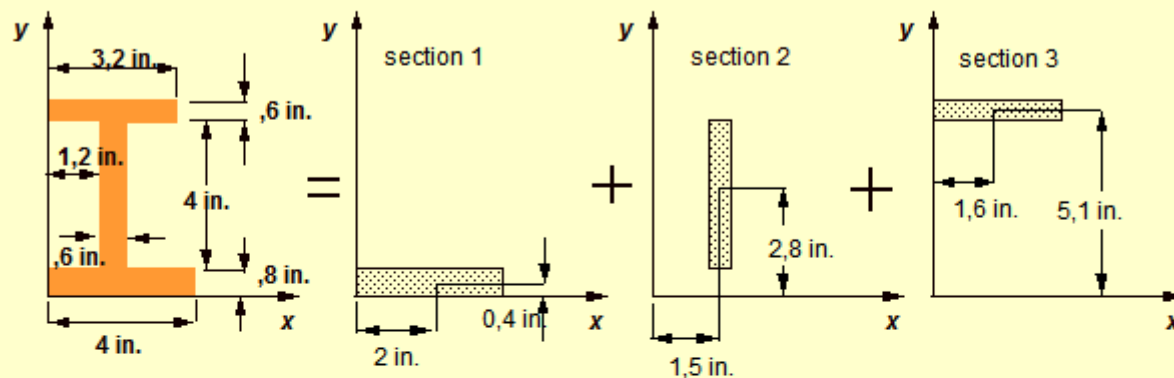
Yes

No



Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

A possible model for this problem is shown here.



Determine the  $\bar{x}$  and  $\bar{y}$  coordinates of the plane area shown.

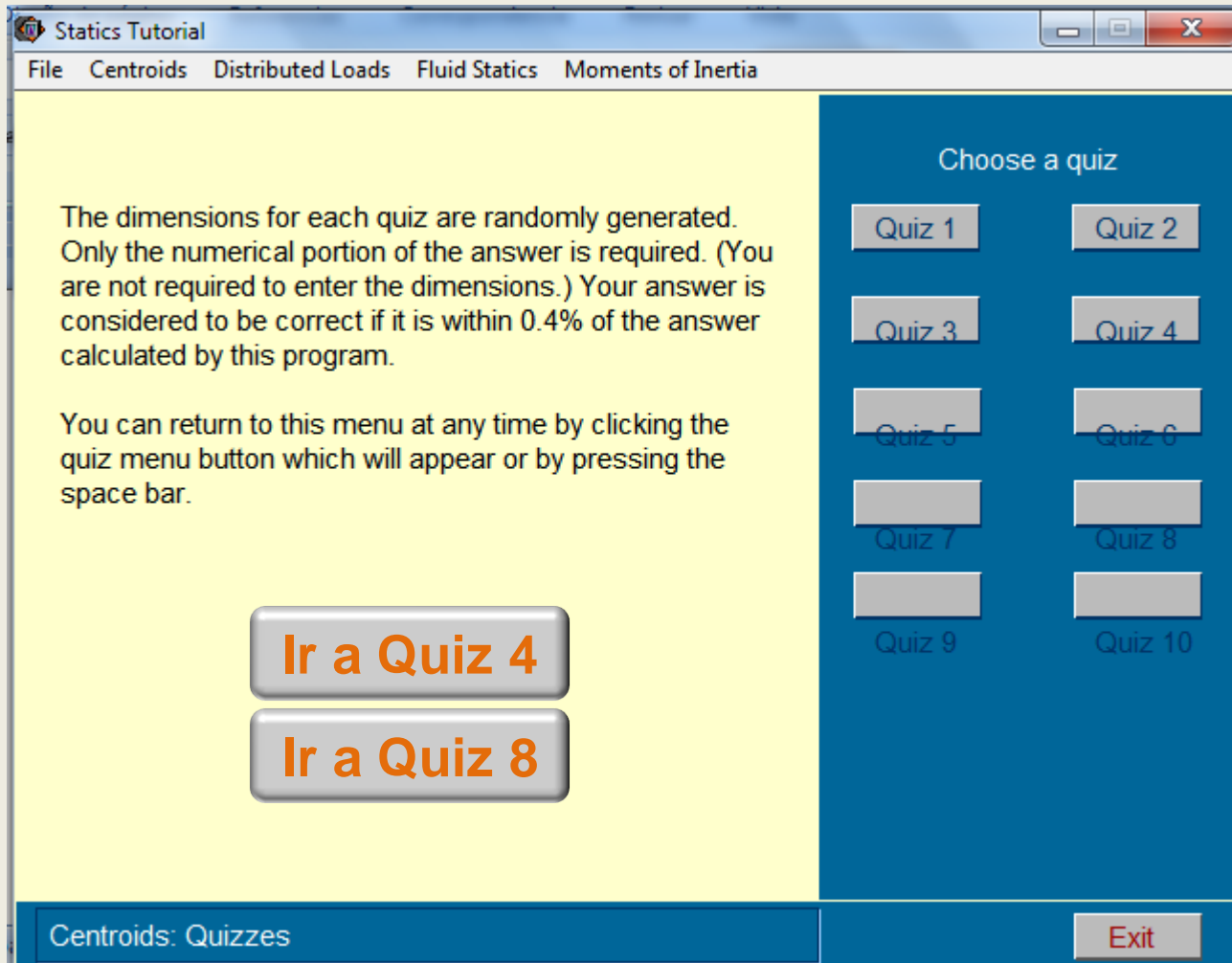
A possible model for this problem is shown here. After the model is established, a table can be constructed for computing the centroid.

section	Area	$\bar{x}$	$\bar{y}$	$A\bar{x}$	$A\bar{y}$
1	$(4)(0,8)=3,2$	2	0,4	6,4	1,28
2	$(4)(0,6)=2,4$	1,5	2,8	3,6	6,72
3	$(0,6)(3,2)=1,92$	1,6	5,1	3,07	9,79
	7,52			13,07	17,79

$$\bar{x} = \frac{13,07}{7,52} = 1,74 \text{ in.}$$

$$\bar{y} = \frac{17,79}{7,52} = 2,37 \text{ in.}$$

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