



INTERFIS PROYECTOS EDUCATIVOS REPOSITORIO

VIGAS

Diagrama de Cortante. Ejercicios cualitativos.

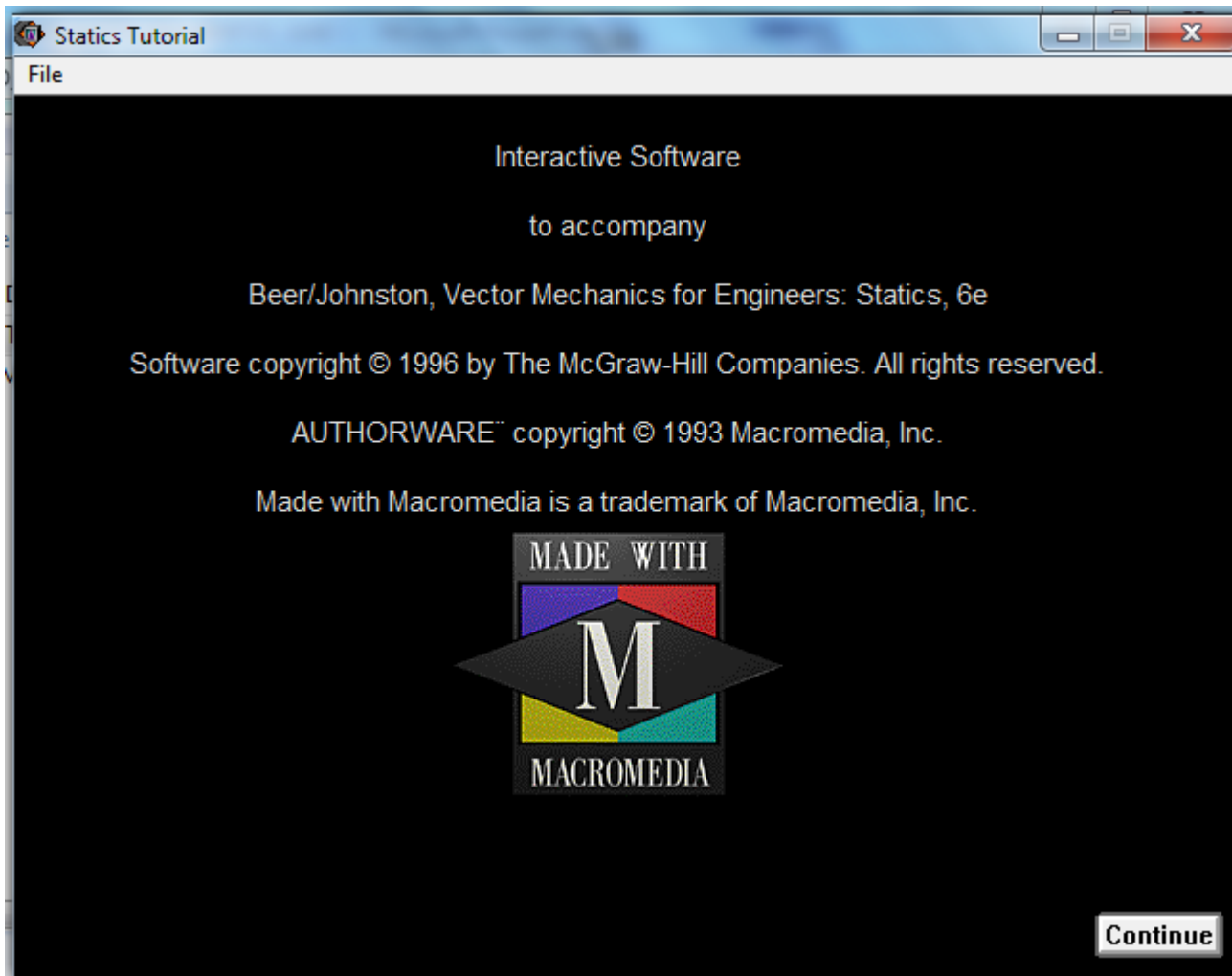
Software STATICS

SHEAR & MOMENT DIAGRAMS. (QUIZZES)

Los ejercicios siguientes se realizan con el **SOFTWARE STATICS**,
incluido en “MECÁNICA VECTORIAL PARA INGENIEROS.
ESTÁTICA”.

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





VIGAS

**DIAGRAMA
DE
CORTANTE**

DIAGRAMA DE CORTANTE

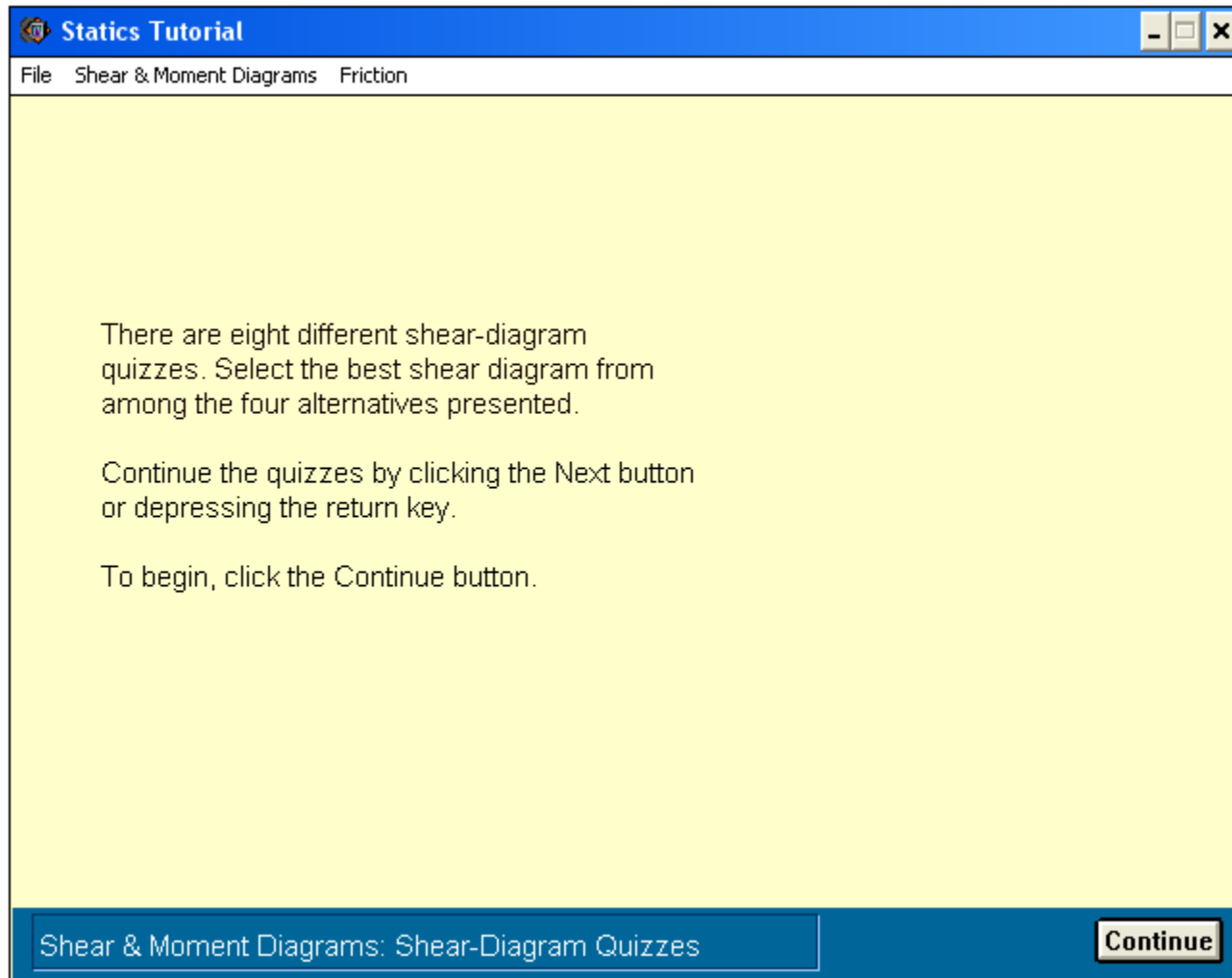


DIAGRAMA DE CORTANTE

EJERCICIOS DE DIAGRAMAS DE CORTANTE

Seleccionar el diagrama de cortante correcto de las alternativas que se presentan.

Para realizar la presentación se ha capturado la imagen de los ejercicios propuestos y de las cuatro posibles soluciones para cada uno.

Posteriormente se presenta la imagen inicial señalando con línea punteada la respuesta correcta.

Se realiza con fines didácticos a partir del software STATICS TUTORIAL

El software permite clicar sobre la respuesta que se considera correcta y recibe un mensaje sobre si es la adecuada o no.

The screenshot shows a software window titled "Statics Tutorial" with a menu bar containing "File", "Shear & Moment Diagrams", and "Friction". The main area displays four diagrams of a cantilevered beam fixed to a wall on the left and free on the right. Each beam is subjected to a uniformly distributed load w acting downwards. Below each beam is a shear force diagram (SFD) with a vertical axis labeled v . The four SFDs are: 1) A constant positive shear force v from the wall to the free end, then a linear decrease to zero at the free end. 2) A linear decrease from a positive value v at the wall to a negative value at the free end, then a constant negative shear force. 3) A constant negative shear force v from the wall to the free end, then a linear increase to zero at the free end. 4) A linear increase from a negative value v at the wall to zero at the free end. A green-bordered box on the right contains the text: "For the cantilevered beam loaded as shown, click the shear diagram which is most appropriate." At the bottom of the window, there is a blue bar with the text "Shear & Moment Diagrams: Shear-Diagram Quizzes#1" and a "Next" button.

DIAGRAMA DE CORTANTE

Q#2

Statics Tutorial

File Shear & Moment Diagrams Friction

For the cantilevered beam loaded as shown, click the shear diagram which is most appropriate.

Shear & Moment Diagrams: Shear-Diagram Quiz#2

Next

DIAGRAMA DE CORTANTE

Q#3

Statics Tutorial

File Shear & Moment Diagrams Friction

For the simply supported beam loaded as shown, click the shear diagram which is most appropriate.

Shear & Moment Diagrams: Shear-Diagram Quiz#3

Next

DIAGRAMA DE CORTANTE

Q#4

The screenshot shows a software window titled "Statics Tutorial" with a menu bar containing "File", "Shear & Moment Diagrams", and "Friction". The main area displays four diagrams of a simply supported beam with a distributed load W and a point load F . Each diagram is paired with a shear force diagram (V) on the vertical axis. The diagrams represent different possible shear force distributions:

- Top-left: Shear force starts at a positive value, decreases linearly to zero at the point load, and then remains constant at a negative value.
- Top-right: Shear force starts at a positive value, remains constant until the point load, then drops abruptly to a lower positive value, and remains constant until the end.
- Bottom-left: Shear force starts at a negative value, increases linearly to zero at the point load, and then remains constant at a positive value.
- Bottom-right: Shear force starts at a positive value, decreases linearly to zero at the point load, and then remains constant at a negative value.

The top-right diagram and its corresponding shear force diagram are enclosed in a green box. A text box next to it contains the instruction: "For the simply supported beam loaded as shown, click the shear diagram which is most appropriate."

At the bottom of the window, there is a blue bar with the text "Shear & Moment Diagrams: Shear-Diagram Quizzes #4" and a "Next" button.

DIAGRAMA DE CORTANTE

Q#5

Statics Tutorial

File Shear & Moment Diagrams Friction

For the simply supported beam loaded as shown, click the shear diagram which is most appropriate.

Shear & Moment Diagrams: Shear-Diagram Quiz#5

Next

DIAGRAMA DE CORTANTE

Q#6

Statics Tutorial

File Shear & Moment Diagrams Friction

For the simply supported beam loaded as shown, click the shear diagram which is most appropriate.

Shear & Moment Diagrams: Shear-Diagram Quiz#6

Next

DIAGRAMA DE CORTANTE

Q#7

Statics Tutorial

File Shear & Moment Diagrams Friction

For the cantilevered beam loaded as shown, click the shear diagram which is most appropriate.

Shear & Moment Diagrams: Shear-Diagram Quiz#7

Next

DIAGRAMA DE CORTANTE

Q#8

Statics Tutorial

File Shear & Moment Diagrams Friction

For the simply supported beam loaded as shown, click the shear diagram which is most appropriate.

Shear & Moment Diagrams: Shear-Diagram Quizzes#8

Next

DIAGRAMA DE CORTANTE

EJERCICIOS DE DIAGRAMAS DE CORTANTE

#1

Para la viga cantilever (viga sujeta por un extremo o por el centro, pero no por los dos extremos) cargada como se muestra, (en recuadro verde), indicar el diagrama de cortante más apropiado de las cuatro respuestas alternativas que se presentan

#2

Para la viga cantilever (viga sujeta por un extremo o por el centro, pero no por los dos extremos) cargada como se muestra, (en recuadro verde), indicar el diagrama de cortante más apropiado de las cuatro respuestas alternativas que se presentan

DIAGRAMA DE CORTANTE

EJERCICIOS DE DIAGRAMAS DE CORTANTE

#3

Para la viga simplemente apoyada (viga que está soportada por apoyos simples en los extremos y que permiten el libre movimiento de sus extremos) cargada como se muestra, (en recuadro verde), indicar el diagrama de cortante más apropiado de las cuatro respuestas alternativas que se presentan

#4

Para la viga simplemente apoyada (viga que está soportada por apoyos simples en los extremos y que permiten el libre movimiento de sus extremos) cargada como se muestra, (en recuadro verde), indicar el diagrama de cortante más apropiado de las cuatro respuestas alternativas que se presentan

DIAGRAMA DE CORTANTE

EJERCICIOS DE DIAGRAMAS DE CORTANTE

#5

Para la viga simplemente apoyada (viga que está soportada por apoyos simples en los extremos y que permiten el libre movimiento de sus extremos) cargada como se muestra, (en recuadro verde), indicar el diagrama de cortante más apropiado de las cuatro respuestas alternativas que se presentan

#6

Para la viga simplemente apoyada (viga que está soportada por apoyos simples en los extremos y que permiten el libre movimiento de sus extremos) cargada como se muestra, (en recuadro verde), indicar el diagrama de cortante más apropiado de las cuatro respuestas alternativas que se presentan

DIAGRAMA DE CORTANTE

EJERCICIOS DE DIAGRAMAS DE CORTANTE

#7

Para la viga cantilever (viga sujeta por un extremo o por el centro, pero no por los dos extremos) cargada como se muestra, (en recuadro verde), indicar el diagrama de cortante más apropiado de las cuatro respuestas alternativas que se presentan

#8

Para la viga simplemente apoyada (viga que está soportada por apoyos simples en los extremos y que permiten el libre movimiento de sus extremos) cargada como se muestra, (en recuadro verde), indicar el diagrama de cortante más apropiado de las cuatro respuestas alternativas que se presentan

DIAGRAMA DE CORTANTE

R #1

The screenshot shows a software window titled "Statics Tutorial" with a menu bar containing "File", "Shear & Moment Diagrams", and "Friction". The main area displays a quiz question. On the left, a cantilevered beam is shown fixed to a wall on the left and free on the right, subjected to a uniformly distributed load w acting downwards. Below the beam are four shear force diagrams (SFDs) for selection. The first SFD shows a constant positive shear force. The second SFD shows a linearly decreasing shear force from a positive value at the wall to a negative value at the free end. The third SFD shows a linearly increasing shear force from a negative value at the wall to a positive value at the free end. The fourth SFD shows a linearly decreasing shear force from a positive value at the wall to zero at the free end. This fourth SFD is circled with a green dotted line. A green-bordered box on the right contains the text: "For the cantilevered beam loaded as shown, click the shear diagram which is most appropriate." At the bottom of the window, a blue bar contains the text "Shear & Moment Diagrams: Shear-Diagram Quiz#1" and a "Next" button.

The screenshot shows a software window titled "Statics Tutorial" with a menu bar containing "File", "Shear & Moment Diagrams", and "Friction". The main area displays four diagrams of a cantilevered beam fixed to a wall on the left and free on the right. Each beam is subjected to a uniformly distributed load w acting downwards. Below each beam is a shear force diagram (V) plotted against the beam's length. The diagrams represent different possible shear force distributions:

- Top-left: Shear force starts at a positive value at the fixed end and decreases linearly to zero at the free end.
- Top-right: Shear force starts at zero at the fixed end and increases linearly to a positive value at the free end.
- Bottom-left: Shear force starts at a negative value at the fixed end and increases linearly to zero at the free end.
- Bottom-right: Shear force starts at a positive value at the fixed end and decreases linearly to zero at the free end. This diagram is circled in green.

A green-bordered box on the right contains the text: "For the cantilevered beam loaded as shown, click the shear diagram which is most appropriate." At the bottom of the window, there is a status bar with the text "Shear & Moment Diagrams: Shear-Diagram Quiz#2" and a "Next" button.

The screenshot shows a software window titled "Statics Tutorial" with a menu bar containing "File", "Shear & Moment Diagrams", and "Friction". The main area displays four diagrams of a simply supported beam of length L with a uniformly distributed load w acting downwards. Each diagram is paired with a shear force diagram (V) on the vertical axis. The diagrams represent different possible shear force distributions:

- Top-left: Shear force starts at a positive value, remains constant until the end of the beam, then drops to a negative value.
- Top-middle (circled in green): Shear force starts at a positive value, decreases linearly to zero at the midpoint, then continues to decrease linearly to a negative value.
- Top-right (boxed in green): Shear force starts at a positive value, decreases linearly to zero at the midpoint, then continues to decrease linearly to a negative value.
- Bottom-left: Shear force starts at a positive value, decreases linearly to zero at the midpoint, then remains constant at zero until the end of the beam.
- Bottom-right: Shear force starts at a positive value, remains constant until the end of the beam, then drops to a negative value.

A text box on the right side of the window contains the following instruction:

For the simply supported beam loaded as shown, click the shear diagram which is most appropriate.

At the bottom of the window, there is a status bar with the text "Shear & Moment Diagrams: Shear-Diagram Quiz#3" and a "Next" button.

DIAGRAMA DE CORTANTE

R #4

Statics Tutorial

File Shear & Moment Diagrams Friction

For the simply supported beam loaded as shown, click the shear diagram which is most appropriate.

Shear & Moment Diagrams: Shear-Diagram Quizzes #4

Next

DIAGRAMA DE CORTANTE

R #5

Statics Tutorial

File Shear & Moment Diagrams Friction

For the simply supported beam loaded as shown, click the shear diagram which is most appropriate.

Shear & Moment Diagrams: Shear-Diagram Quiz#5

Next

The screenshot shows a software window titled "Statics Tutorial" with a menu bar containing "File", "Shear & Moment Diagrams", and "Friction". The main area displays a quiz question. At the top, a simply supported beam is shown with a triangular load w increasing from left to right. Below the beam are four different shear force diagrams (V vs. x) to be selected. The second diagram from the left is circled in green. To the right of the diagrams is a text box with the following text: "For the simply supported beam loaded as shown, click the shear diagram which is most appropriate." At the bottom of the window, there is a status bar with the text "Shear & Moment Diagrams: Shear-Diagram Quiz#6" and a "Next" button.

The screenshot shows a software window titled "Statics Tutorial" with a menu bar containing "File", "Shear & Moment Diagrams", and "Friction". The main area displays four diagrams of a cantilever beam fixed to a wall on the left and free on the right. Each beam is subjected to a triangular load w that increases linearly from zero at the free end to a maximum value w at the fixed end. Below each beam is a shear force diagram (V) plotted against the beam's length. The four diagrams represent different possible shear force distributions: 1) A constant shear force followed by a linear decrease to zero at the free end. 2) A constant shear force followed by a parabolic curve that reaches zero at the free end. 3) A constant shear force followed by a linear decrease to a negative value at the free end. 4) A constant shear force followed by a curve that starts at zero and increases to a negative value at the free end. The second diagram is highlighted with a green dotted circle. A green-bordered text box to the right of this diagram contains the text: "For the cantilevered beam loaded as shown, click the shear diagram which is most appropriate." At the bottom of the window, there is a blue bar with the text "Shear & Moment Diagrams: Shear-Diagram Quiz#7" and a "Next" button.

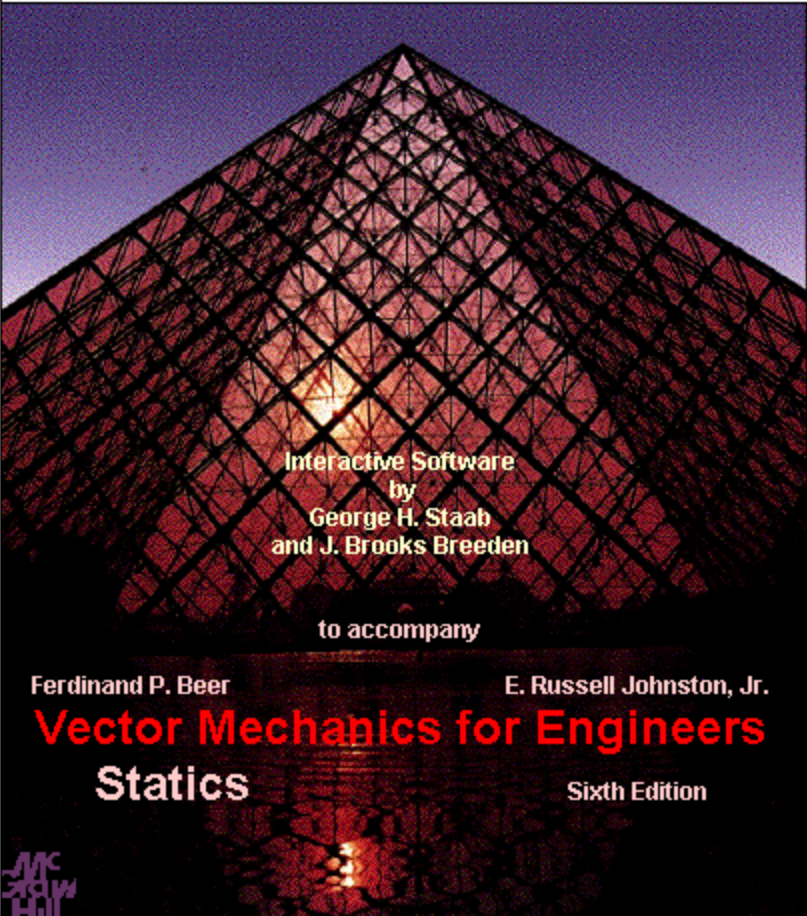
DIAGRAMA DE CORTANTE

R #8

The screenshot shows a software window titled "Statics Tutorial" with a menu bar containing "File", "Shear & Moment Diagrams", and "Friction". The main area displays four examples of a simply supported beam with a distributed load W and a point load F . Each example is accompanied by a shear force diagram (V). The second example, which is circled in green, shows a shear diagram that starts at a positive value, decreases linearly to a negative value, jumps up at the point load, and then decreases linearly to zero. A green box highlights this diagram with the text: "For the simply supported beam loaded as shown, click the shear diagram which is most appropriate." The bottom of the window features a blue bar with the text "Shear & Moment Diagrams: Shear-Diagram Quizzes #8" and a "Next" button.

Statics Tutorial

File Info Contents



Interactive Software
by
George H. Staab
and J. Brooks Breeden

to accompany

Ferdinand P. Beer E. Russell Johnston, Jr.
Vector Mechanics for Engineers
Statics Sixth Edition

Mc
Graw
Hill

About the Authors

George H. Staab, Associate Professor of Applied Mechanics at The Ohio State University, received his BS (1972) and MS (1973) in Aeronautical Engineering from Purdue University. After graduating, he worked for three years as a stress analyst at Sikorsky Aircraft. In 1976, he returned to Purdue University, and graduated with a Ph.D. in 1979.

He joined the faculty of the Department of Engineering Mechanics at The Ohio State University as an Assistant Professor, and in 1984, he was promoted to Associate Professor. His research interests include numerical methods, composite materials, and experimental techniques.

J. Brooks Breeden, Professor in the Austin E. Knowlton School of Architecture at The Ohio State University, received his BS (1968) and MS (1970) in Architecture from Purdue University. After graduating, he worked for three years as a design architect at the firm of Skidmore, OWing, Merrill and Knapp. In 1973, he returned to Purdue University, and graduated with a Ph.D. in 1976.

[Continue](#)

SHEAR & MOMENT DIAGRAMS. (QUIZZES)

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