# Statics Power

***Your 24-7 Tutor***

***For***

***Engineering Statics***

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www.actuspotentia.com/Statics.shtml

# Bottom Line

- Finish Homework quickly
- Ace your Exams and get good grades
- Be ready for next level of Mechanics courses
- Become an expert in drawing free body diagram

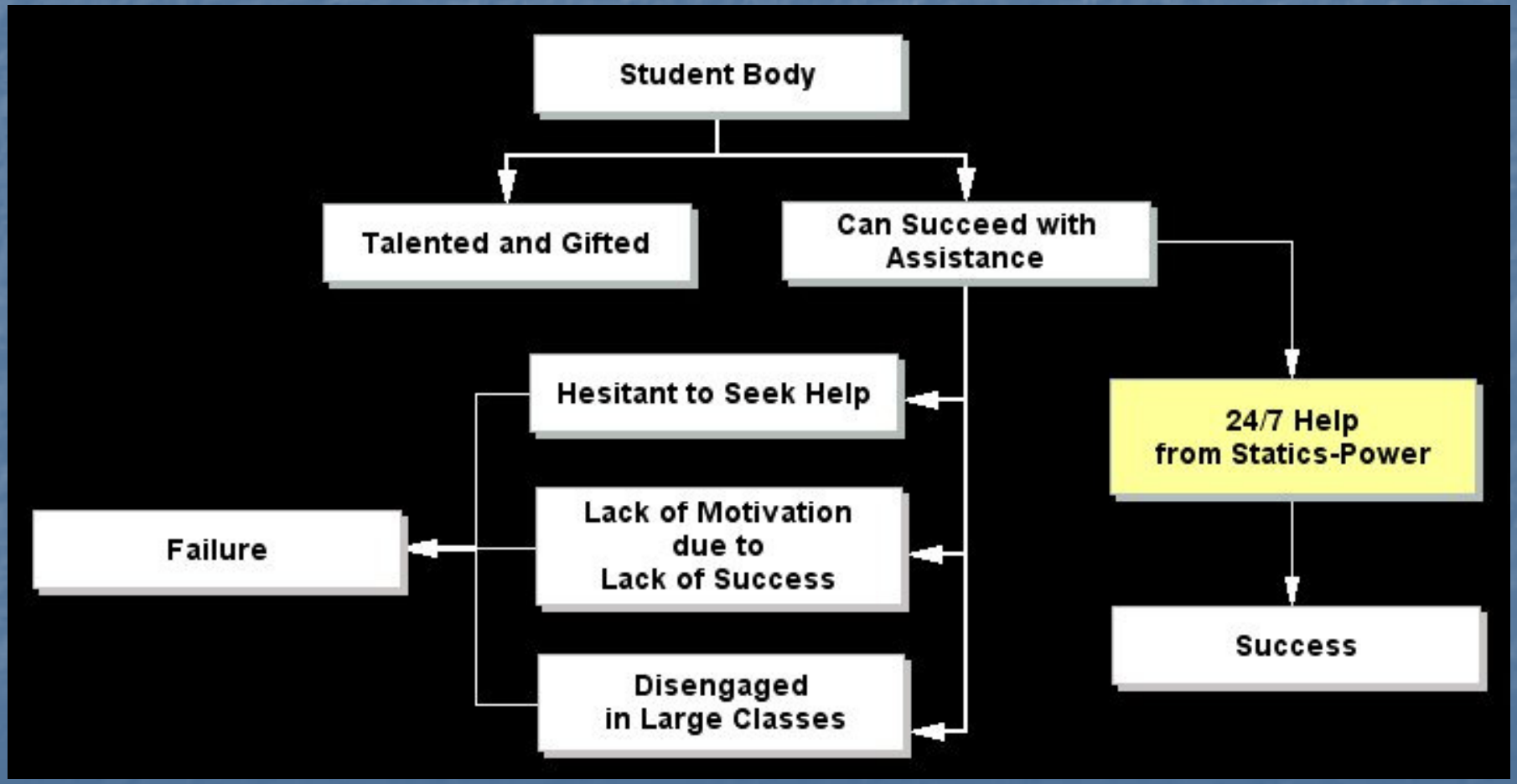
# *How is Statics Power Different ?*

- ***Other Software :***
  - *Operates from a problem bank*
- ***Statics Power :***
  - *The students can pose and solve an unlimited number of problems of their choice.*
  - *Easy-to-learn drawing tools enable the students to pose the problems.*
  - *Six topics wrapped in one package–*
    - ✓ *Force-Moment-Couple*
    - ✓ *Free-body-diagram*
    - ✓ *Shear-Moment Diagrams*
    - ✓ *Area Properties*
    - ✓ *Friction Problems*
    - ✓ *Method of Joints*

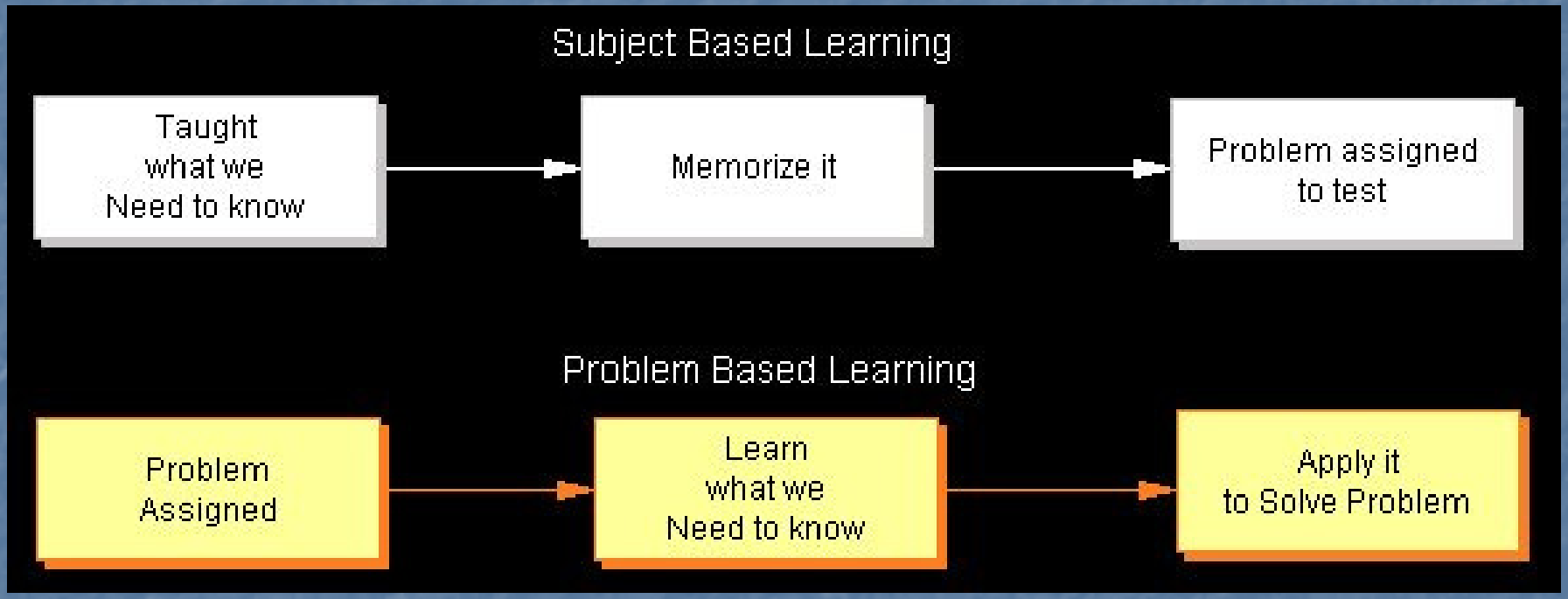
# *What will it do for the students?*

- *Will supplement and reinforce classroom activities.*
- *Will give them the control over the pace of the progress in their learning.*
- *Will keep them engaged through interactive lessons.*
- *Will put them in a structured environment for mastering new concepts.*
- *Will develop their ability to formulate and solve problems.*
- *Will enhance their skill through drill and practice.*
- *Will provide 24/7 help/support on the desktop.*
- *Will tell them what went wrong and where in multistep problems.*
- *Will prepare them for higher level courses.*

# No Student Left Behind



# *Statics* ***Power***
# *Promotes Problem-Based-Learning*

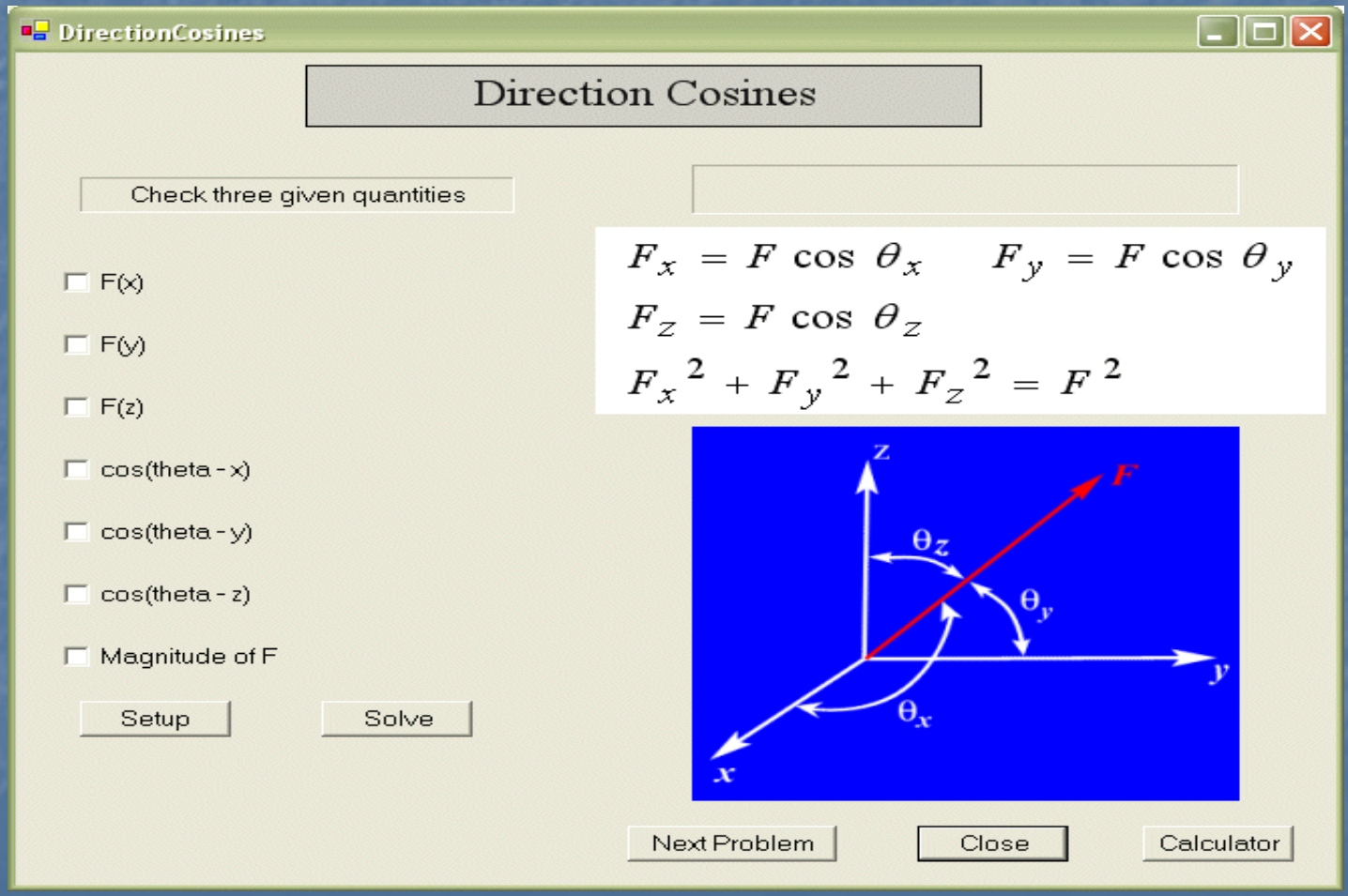


# Lecture Contents

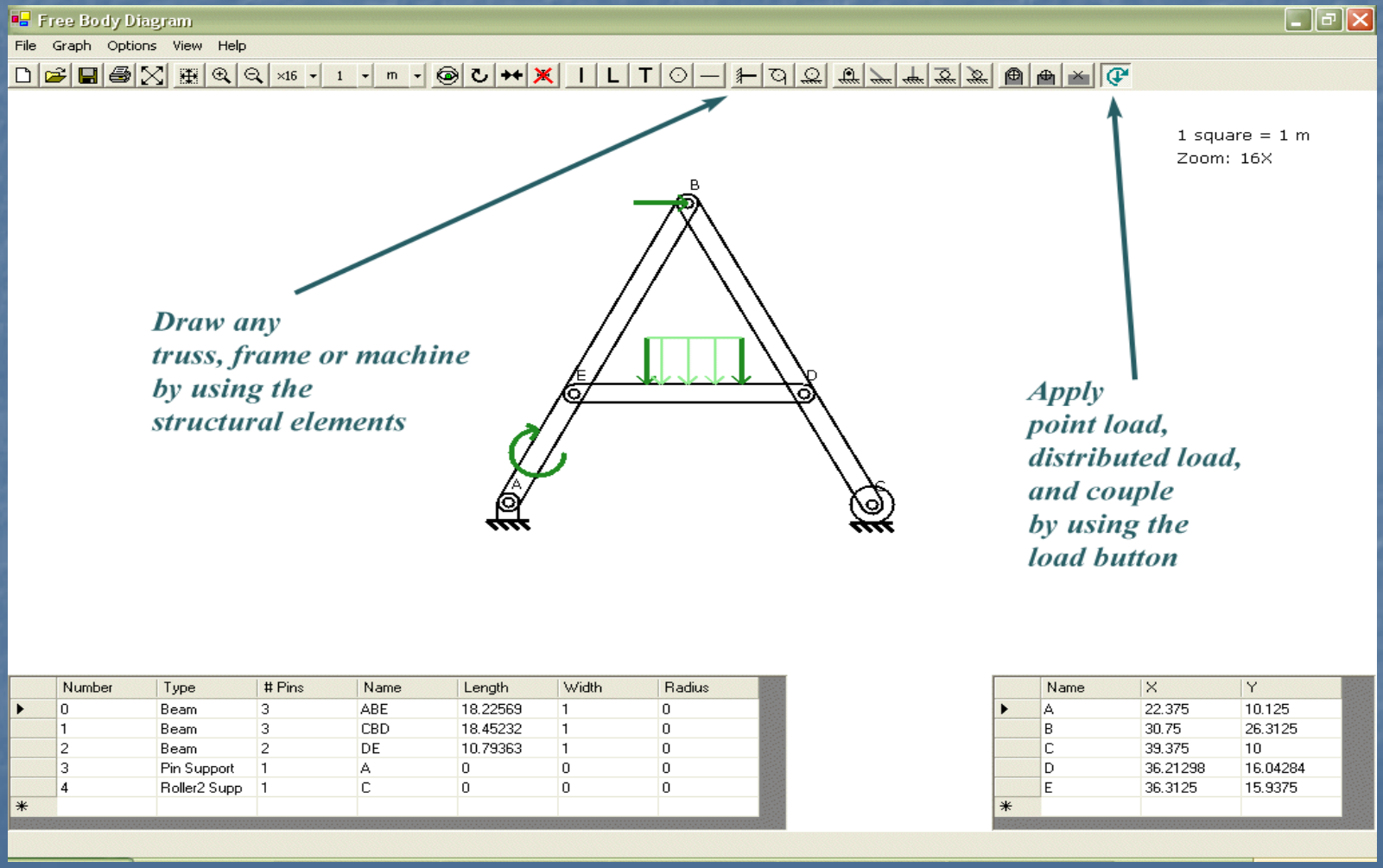
## Contents

**(slide numbers in parenthesis)**

# Screen Shot
# Force-Moment-Couple Application
## (9 problem situations are included in the application)



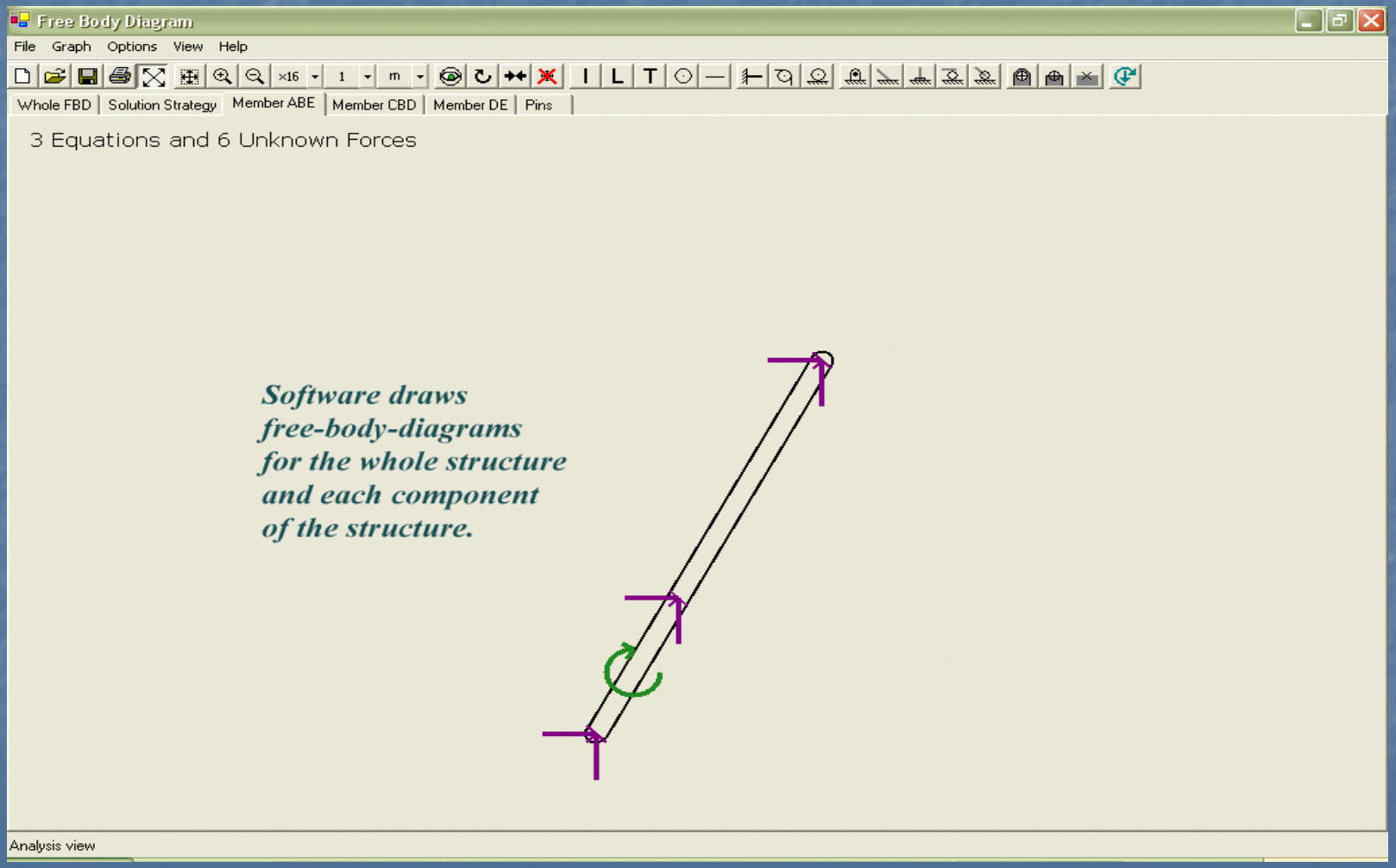
# Screen Shot
# Free-Body-Diagram Application



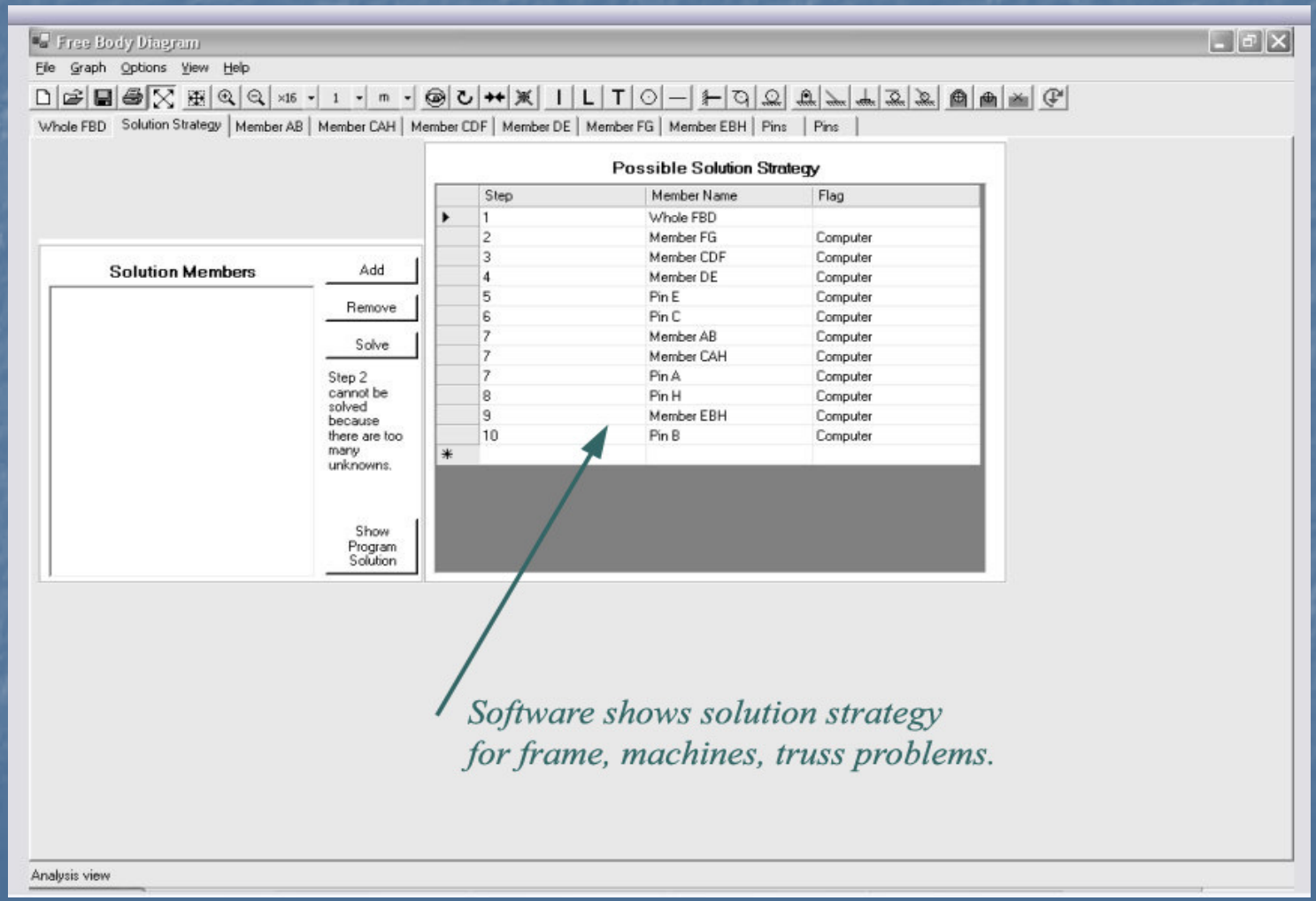

| | Number | Type | # Pins | Name | Length | Width | Radius |
|---|---|---|---|---|---|---|---|
| ▶ | 0 | Beam | 3 | ABE | 18.22569 | 1 | 0 |
| | 1 | Beam | 3 | CBD | 18.45232 | 1 | 0 |
| | 2 | Beam | 2 | DE | 10.79363 | 1 | 0 |
| | 3 | Pin Support | 1 | A | 0 | 0 | 0 |
| | 4 | Roller2 Supp | 1 | C | 0 | 0 | 0 |
| * | | | | | | | |

| | Name | X | Y |
|---|---|---|---|
| ▶ | A | 22.375 | 10.125 |
| | B | 30.75 | 26.3125 |
| | C | 39.375 | 10 |
| | D | 36.21298 | 16.04284 |
| | E | 36.3125 | 15.9375 |
| * | | | |

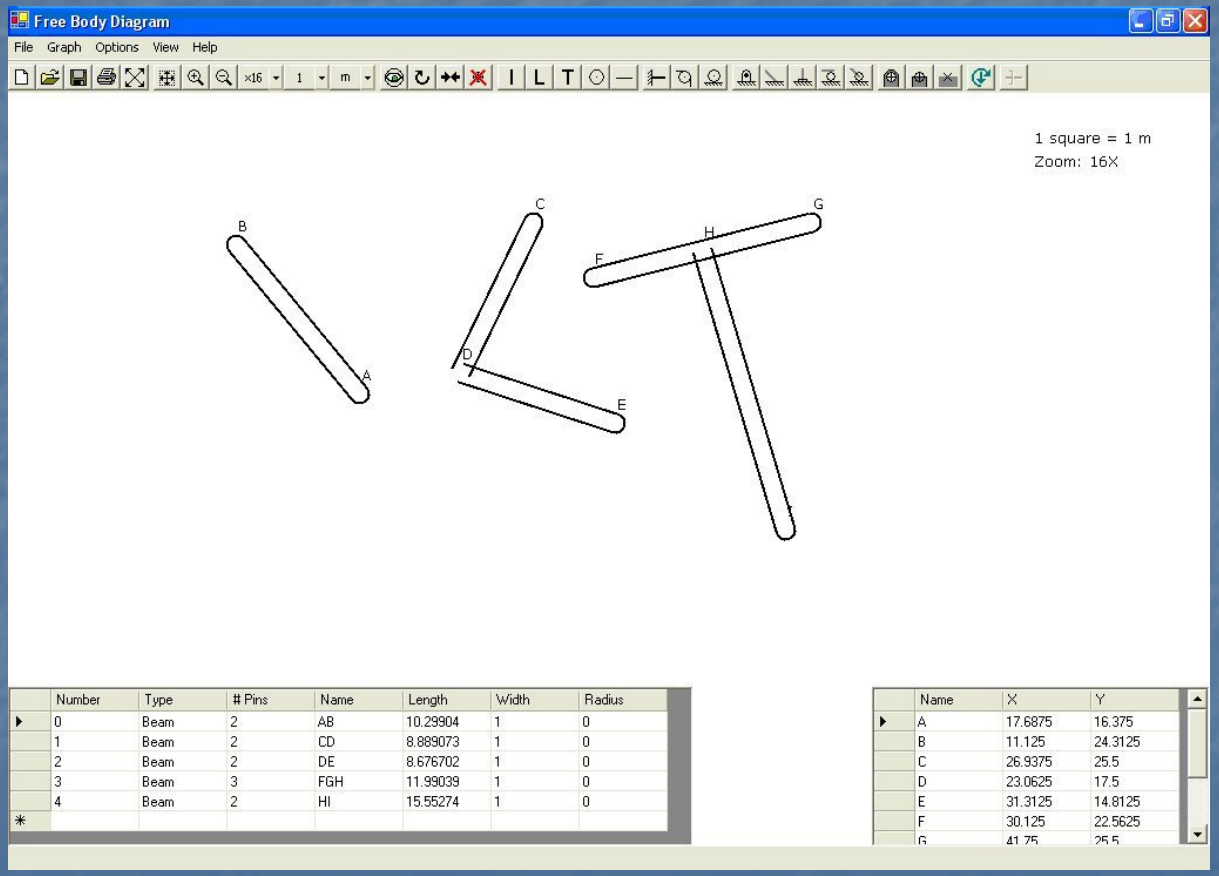
# Screen Shot
# Free-Body-Diagram Application



# Screen Shot
# Free-Body-Diagram Application



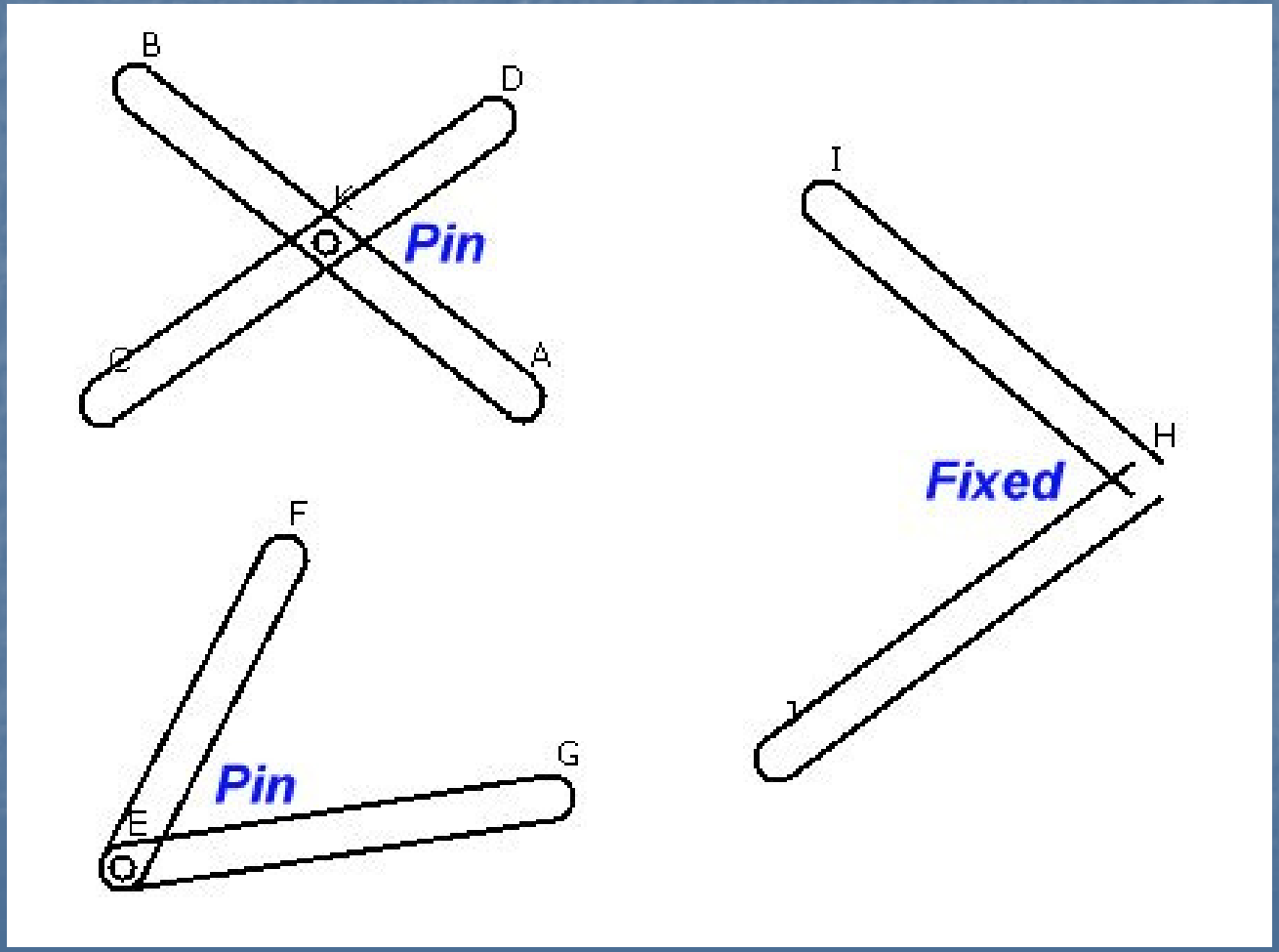
# Free-Body-Diagram Drawing Tools



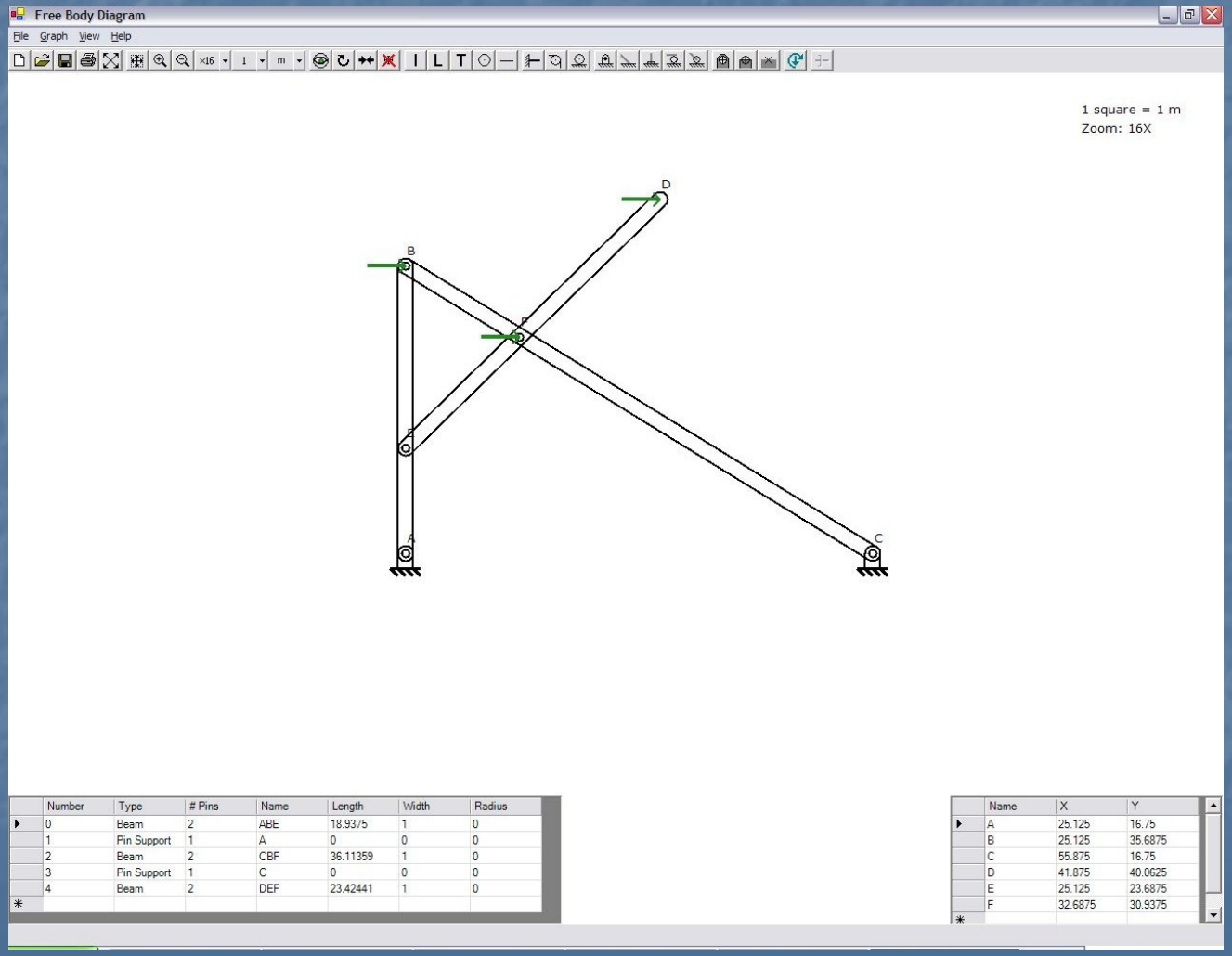

| | Number | Type | # Pins | Name | Length | Width | Radius |
|---|---|---|---|---|---|---|---|
| ▶ | 0 | Beam | 2 | AB | 10.29904 | 1 | 0 |
| | 1 | Beam | 2 | CD | 8.889073 | 1 | 0 |
| | 2 | Beam | 2 | DE | 8.676702 | 1 | 0 |
| | 3 | Beam | 3 | FGH | 11.99039 | 1 | 0 |
| | 4 | Beam | 2 | HI | 15.55274 | 1 | 0 |
| * | | | | | | | |

| | Name | X | Y |
|---|---|---|---|
| ▶ | A | 17.6875 | 16.375 |
| | B | 11.125 | 24.3125 |
| | C | 26.9375 | 25.5 |
| | D | 23.0625 | 17.5 |
| | E | 31.3125 | 14.8125 |
| | F | 30.125 | 22.5625 |
| | G | 41.75 | 25.5 |

# Free-Body-Diagram Connect Members



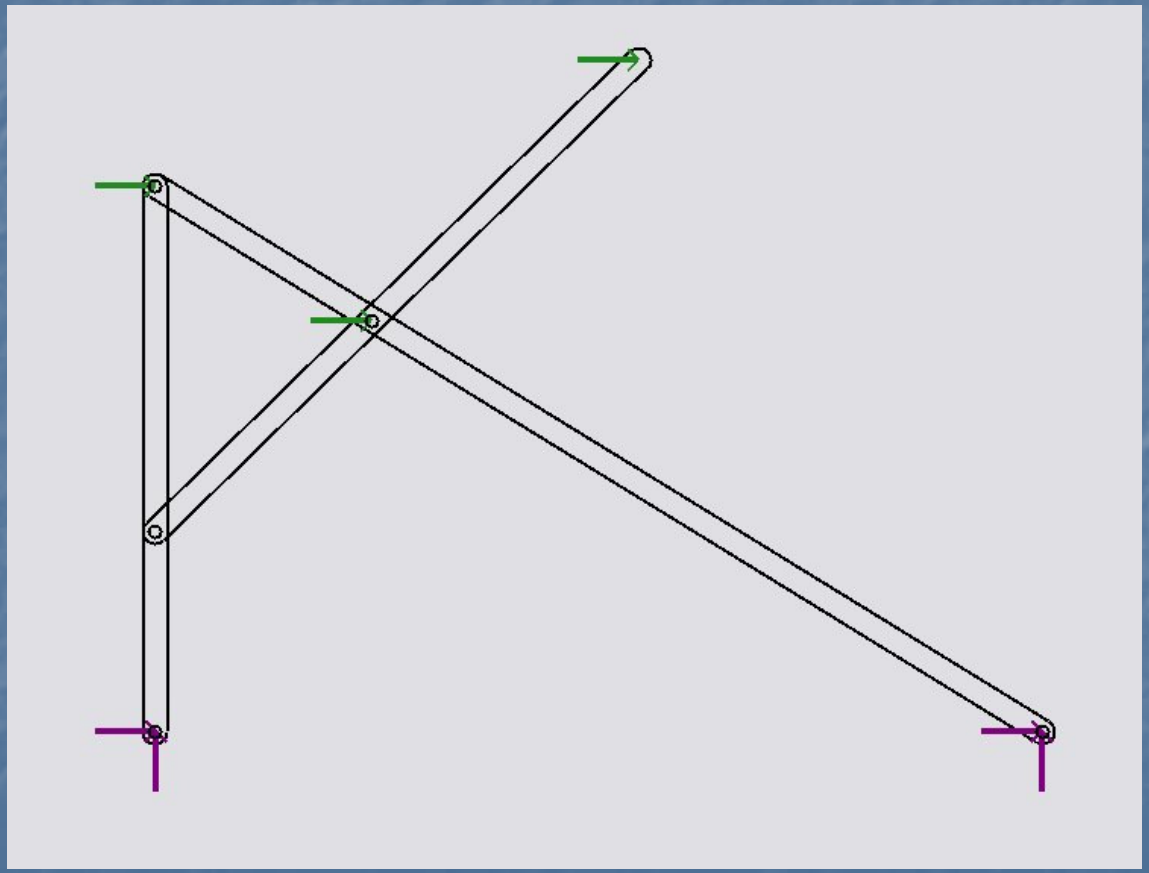
# Frame-1



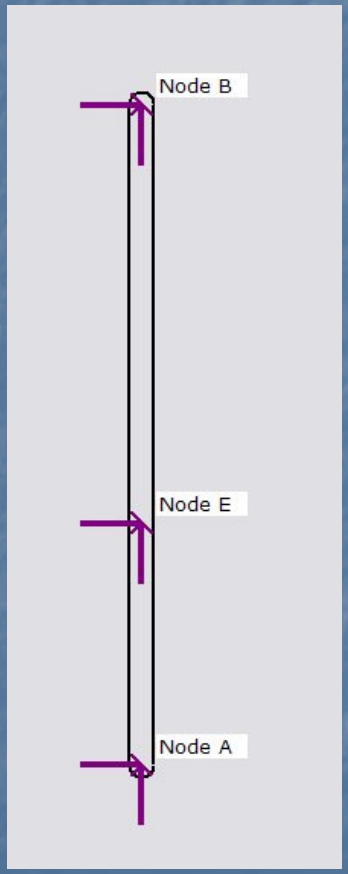

| | Number | Type | # Pins | Name | Length | Width | Radius |
|---|---|---|---|---|---|---|---|
| ▶ | 0 | Beam | 2 | ABE | 18.9375 | 1 | 0 |
| | 1 | Pin Support | 1 | A | 0 | 0 | 0 |
| | 2 | Beam | 2 | CBF | 36.11359 | 1 | 0 |
| | 3 | Pin Support | 1 | C | 0 | 0 | 0 |
| | 4 | Beam | 2 | DEF | 23.42441 | 1 | 0 |
| * | | | | | | | |

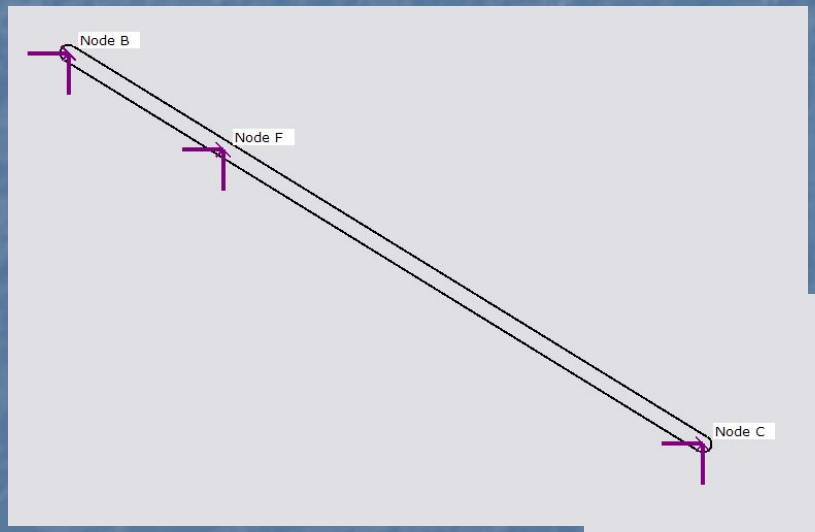
| | Name | X | Y |
|---|---|---|---|
| ▶ | A | 25.125 | 16.75 |
| | B | 25.125 | 35.6875 |
| | C | 55.875 | 16.75 |
| | D | 41.875 | 40.0625 |
| | E | 25.125 | 23.6875 |
| | F | 32.6875 | 30.9375 |
| * | | | |

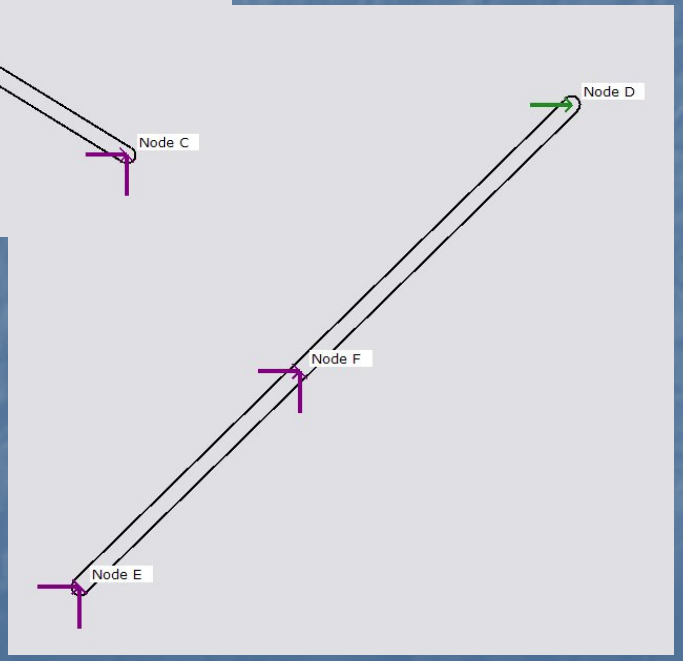
# Software Draws FBDs
# Frame-1



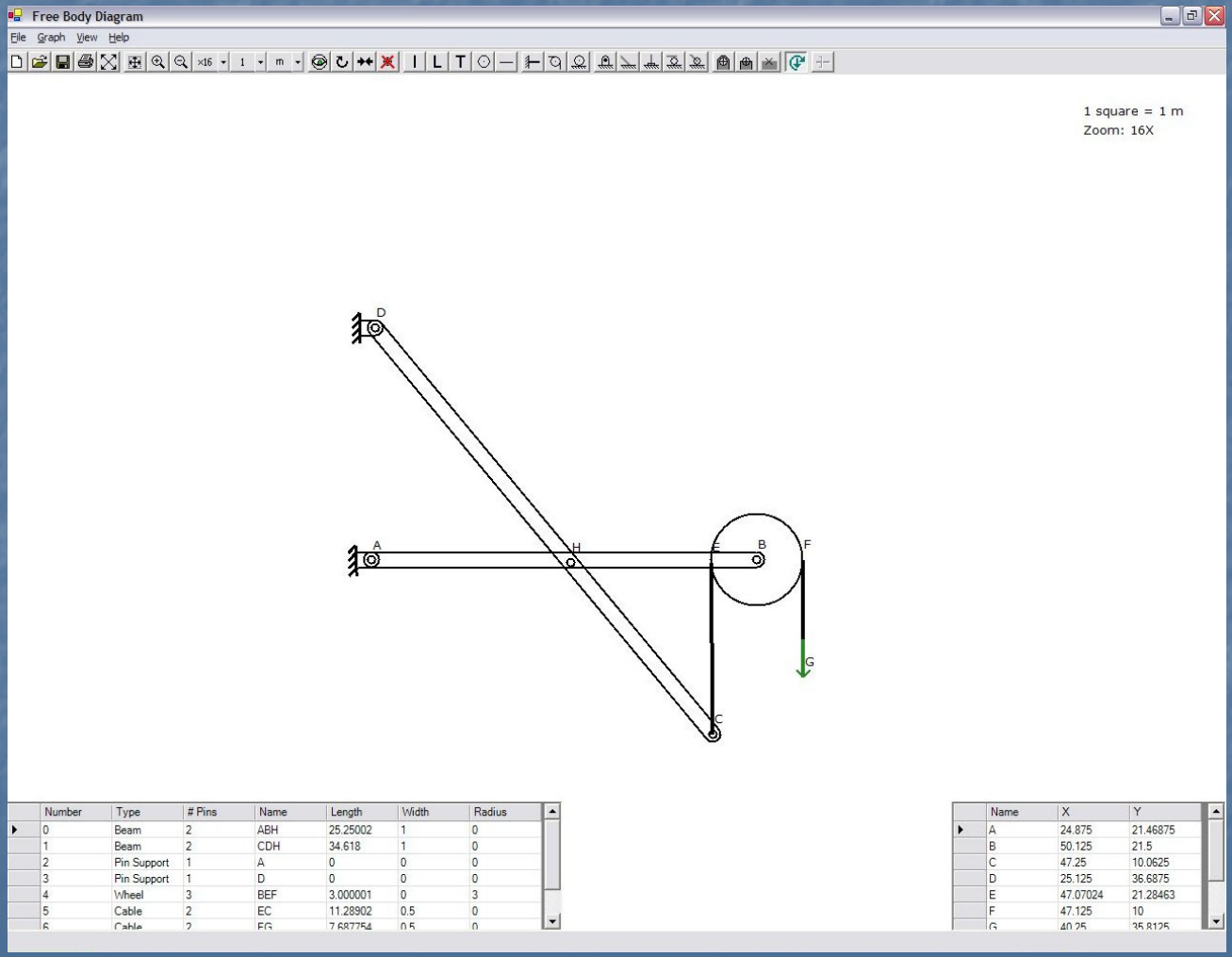
# FBDs for Frame-1



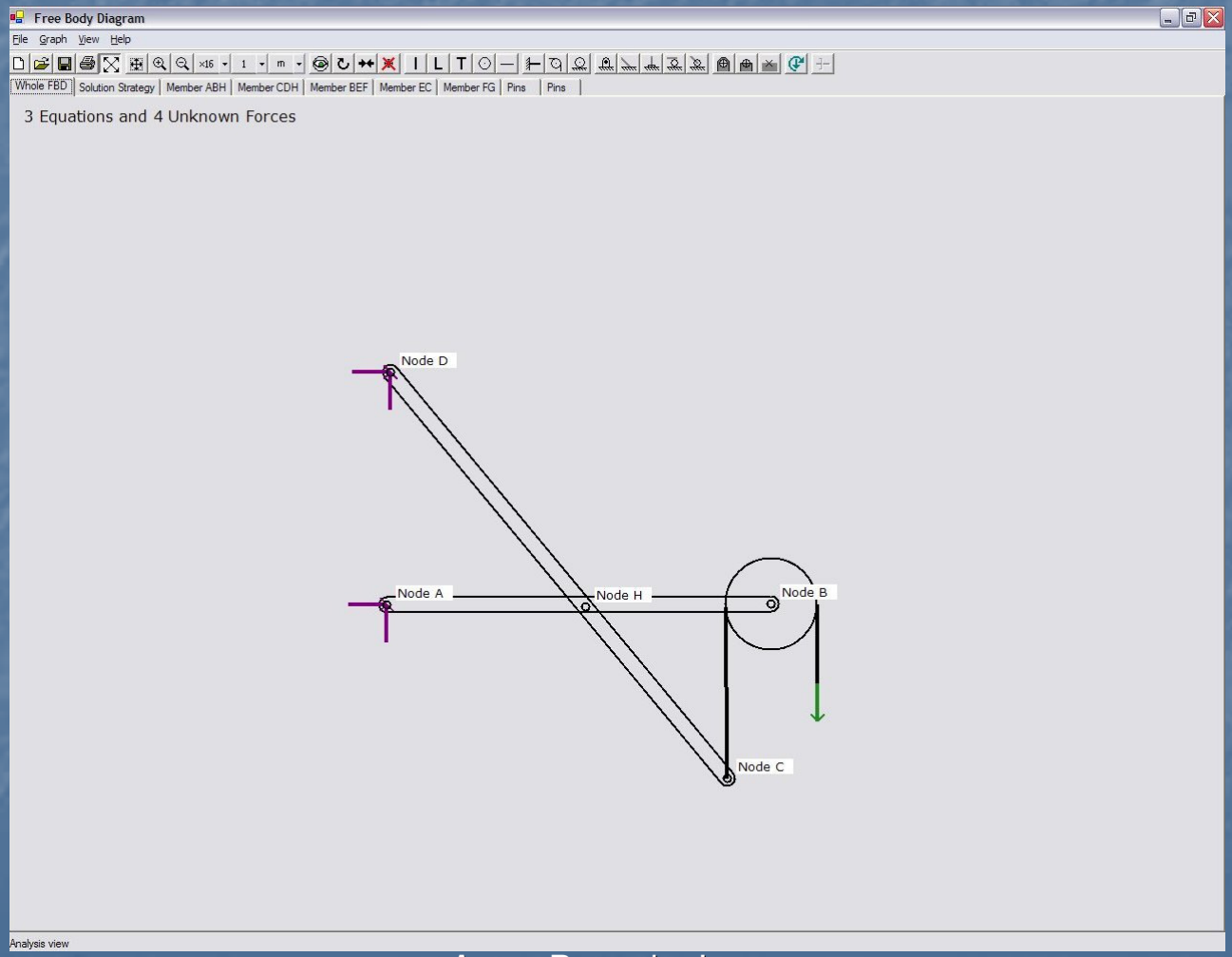
# Frame-2



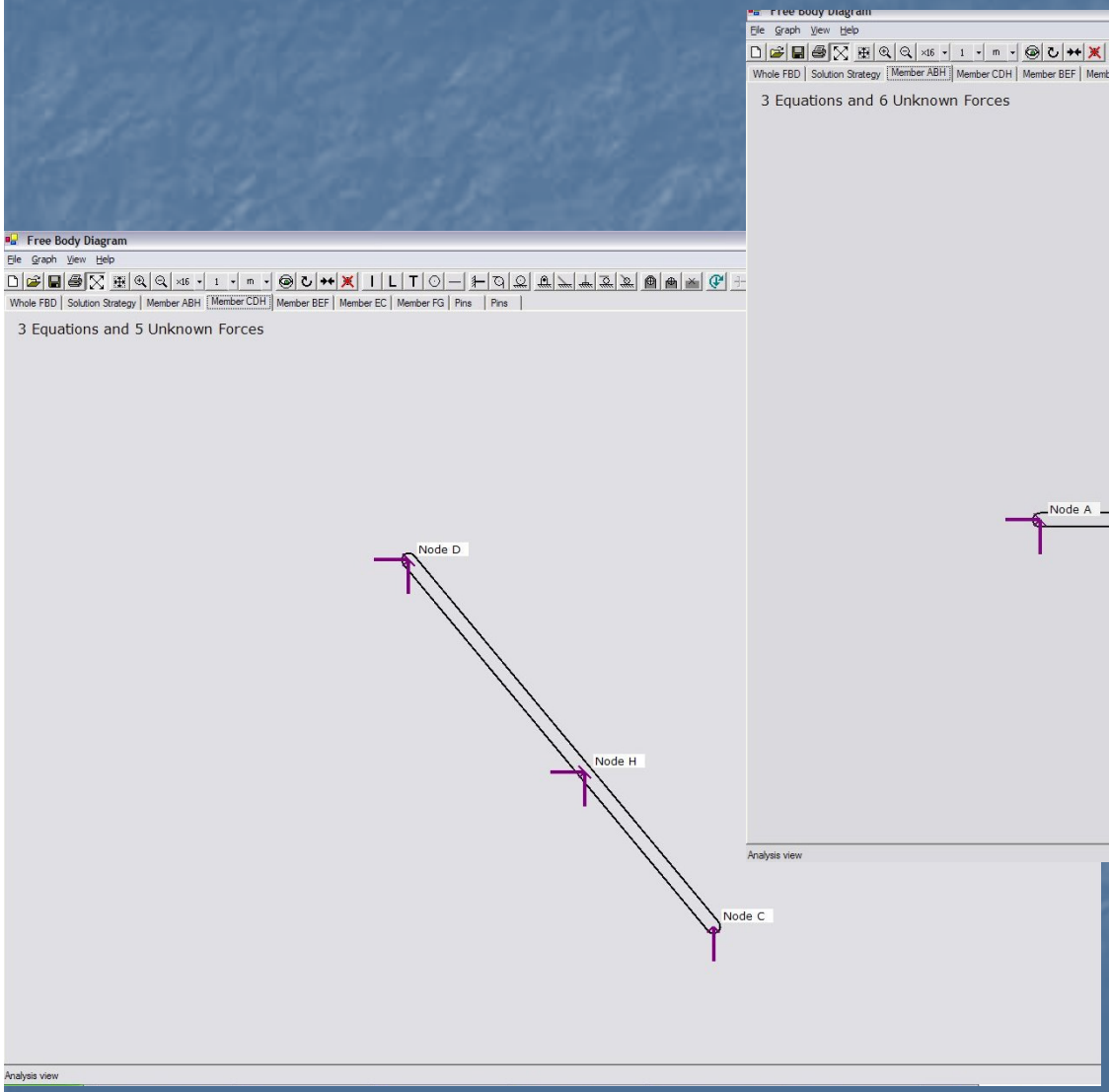

| | Number | Type | # Pins | Name | Length | Width | Radius |
|---|---|---|---|---|---|---|---|
| ▶ | 0 | Beam | 2 | ABH | 25.25002 | 1 | 0 |
| | 1 | Beam | 2 | CDH | 34.618 | 1 | 0 |
| | 2 | Pin Support | 1 | A | 0 | 0 | 0 |
| | 3 | Pin Support | 1 | D | 0 | 0 | 0 |
| | 4 | Wheel | 3 | BEF | 3.000001 | 0 | 3 |
| | 5 | Cable | 2 | EC | 11.28902 | 0.5 | 0 |
| | 6 | Cable | 2 | EG | 7.687754 | 0.5 | 0 |

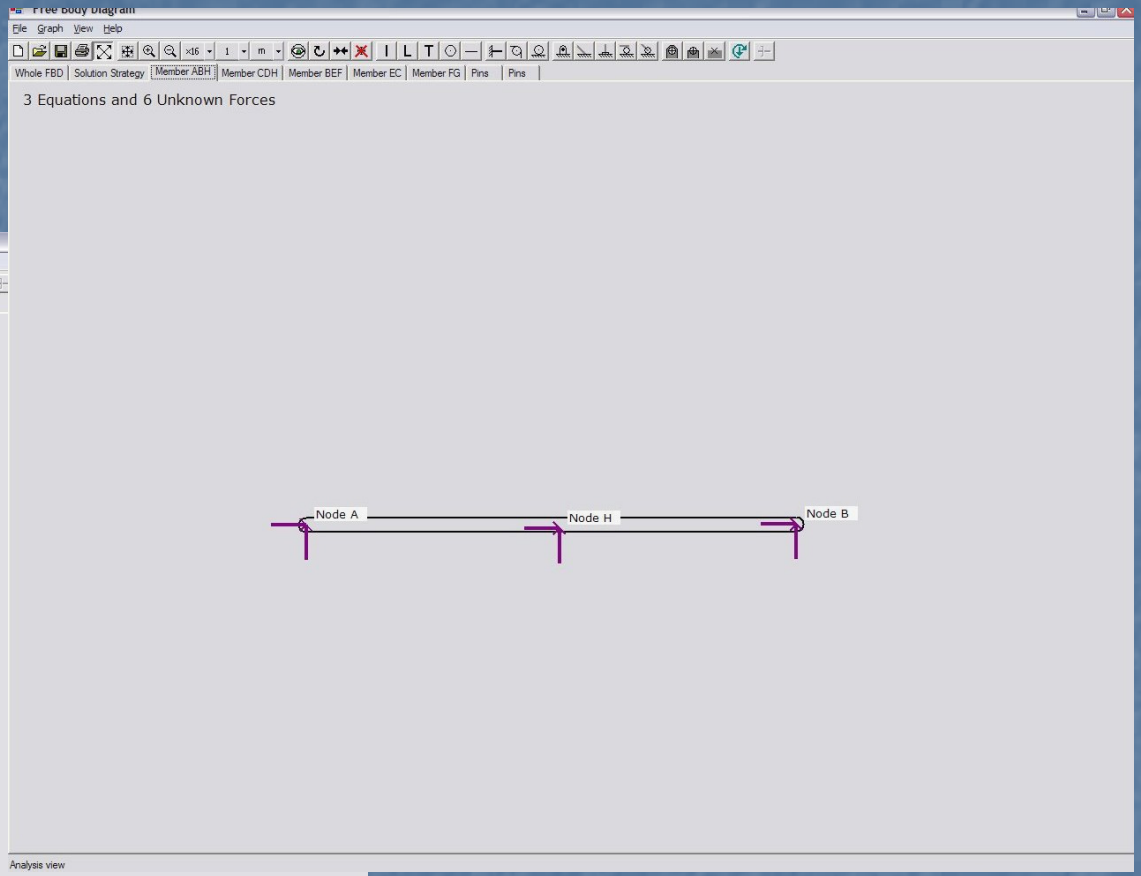
| | Name | X | Y |
|---|---|---|---|
| ▶ | A | 24.875 | 21.46875 |
| | B | 50.125 | 21.5 |
| | C | 47.25 | 10.0625 |
| | D | 25.125 | 36.6875 |
| | E | 47.07024 | 21.28463 |
| | F | 47.125 | 10 |
| | G | 40.25 | 35.8125 |

# Software Draws FBDs
# Frame-2



# FBDs Frame-2


Free Body Diagram
File Graph View Help
Whole FBD | Solution Strategy | Member ABH | Member CDH | Member BEF | Member EC | Member FG | Pins | Pins
3 Equations and 5 Unknown Forces
Node D
Node H
Node C
Analysis view


Free Body Diagram
File Graph View Help
Whole FBD | Solution Strategy | Member ABH | Member CDH | Member BEF | Member EC | Member FG | Pins | Pins
3 Equations and 6 Unknown Forces
Node A
Node H
Node B
Analysis view

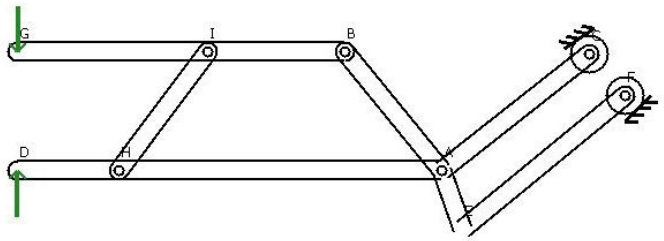
# Machine

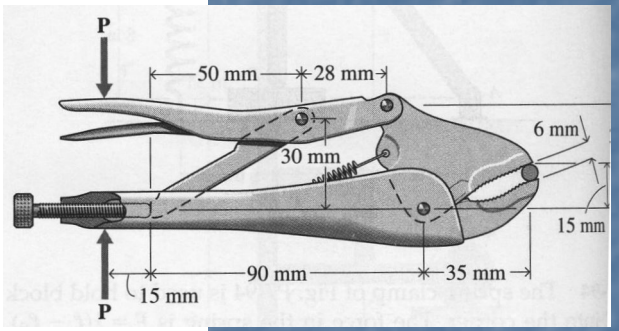
Free Body Diagram

File Graph View Help

draw FBD

1 square = 1 m
Zoom: 16X

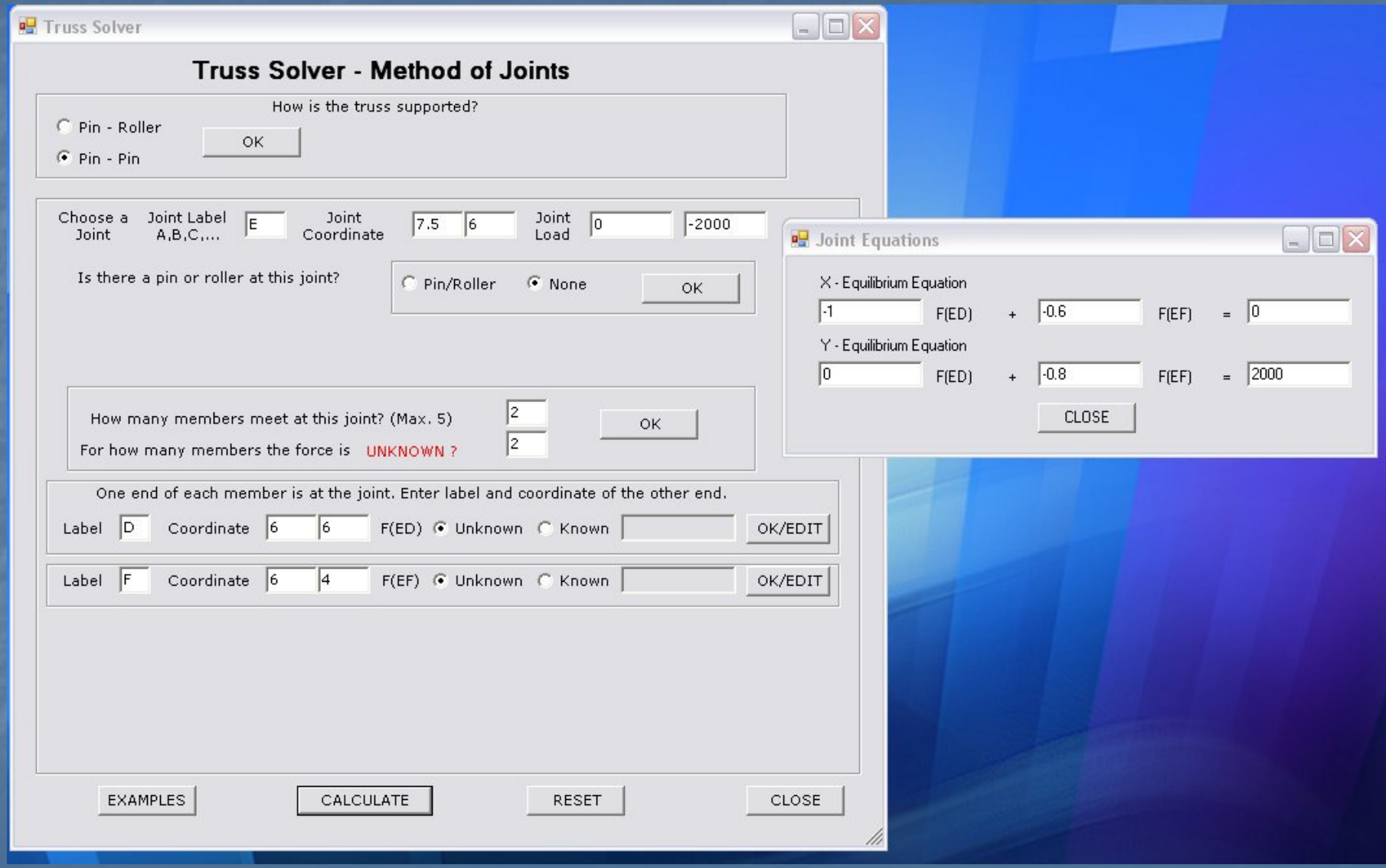



| | Number | Type | # Pins | Name | Length | Width | Radius |
|---|---|---|---|---|---|---|---|
| ▶ | 0 | Beam | 2 | AB | 8.306859 | 1 | 0 |
| | 1 | Beam | 2 | AC | 10.19057 | 1 | 0 |
| | 2 | Beam | 2 | ADH | 23 | 1 | 0 |
| | 3 | Beam | 2 | EA | 3.380204 | 1 | 0 |
| | 4 | Beam | 2 | EF | 11.41151 | 1 | 0 |
| | 5 | Beam | 2 | BGI | 17.75 | 1 | 0 |
| | 6 | Beam | 2 | HI | 8.087654 | 1 | 0 |

| | Name | X | Y |
|---|---|---|---|
| ▶ | A | 35.5625 | 20.6875 |
| | B | 30.3125 | 27.125 |
| | C | 35.5 | 20.6875 |
| | D | 12.5625 | 20.6875 |
| | E | 12.5625 | 20.84375 |
| | F | 36.6875 | 17.5 |
| | G | 30.375 | 27.0625 |

# Screen Shot - Truss Problem

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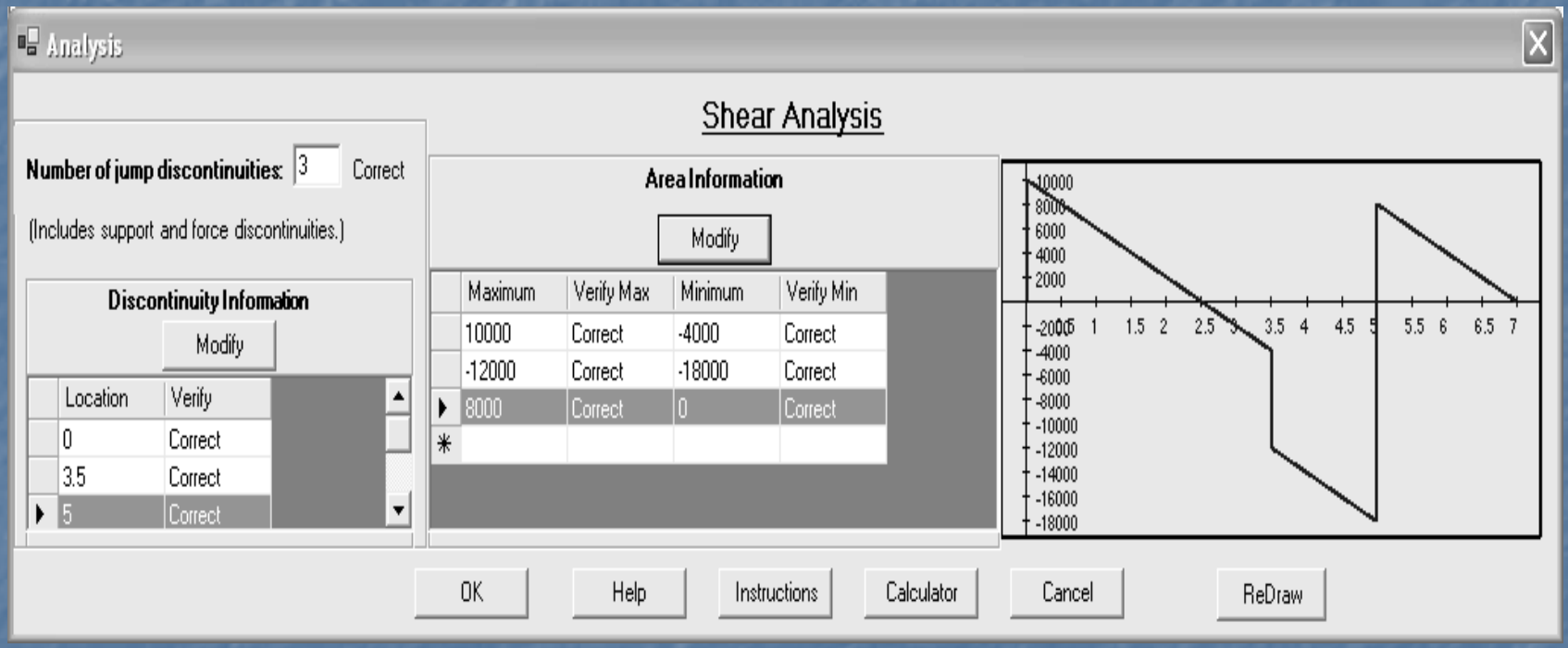
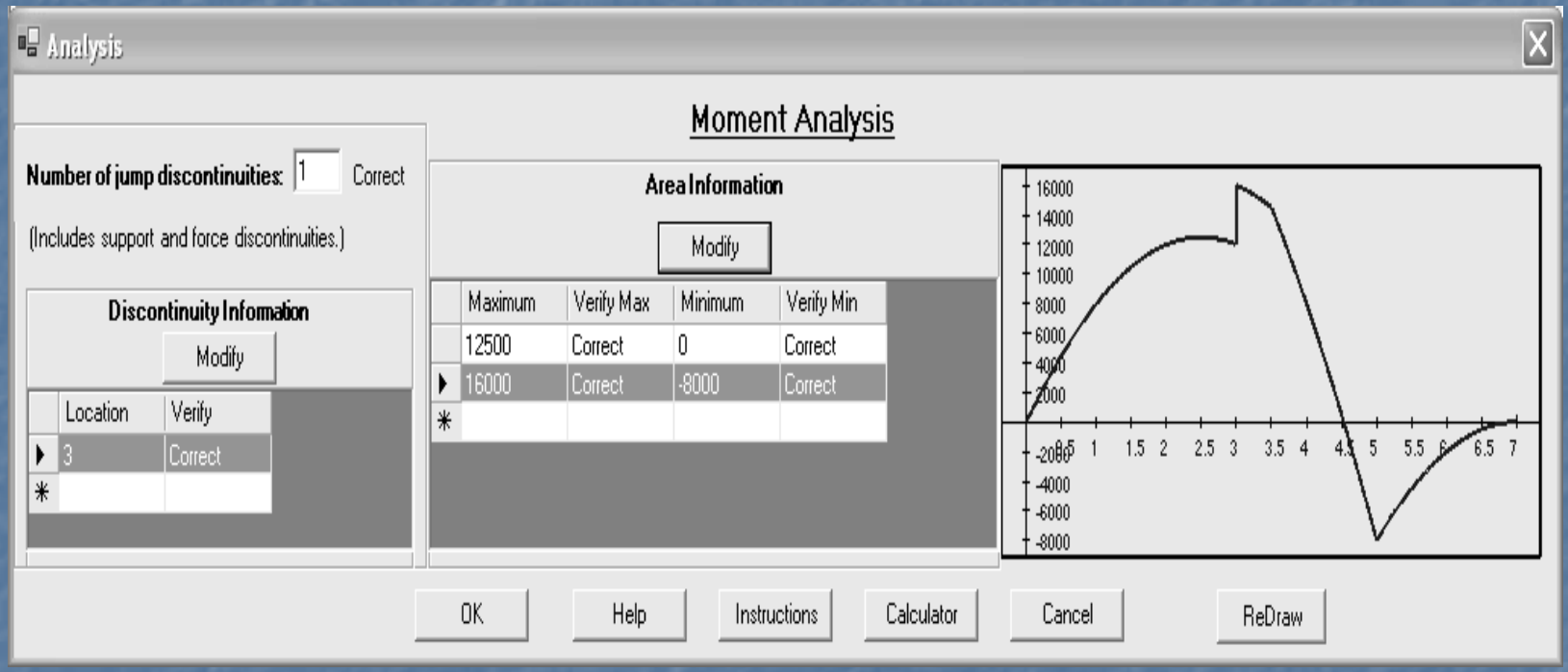
# Screen Shot
# Shear-Bending Moment Application



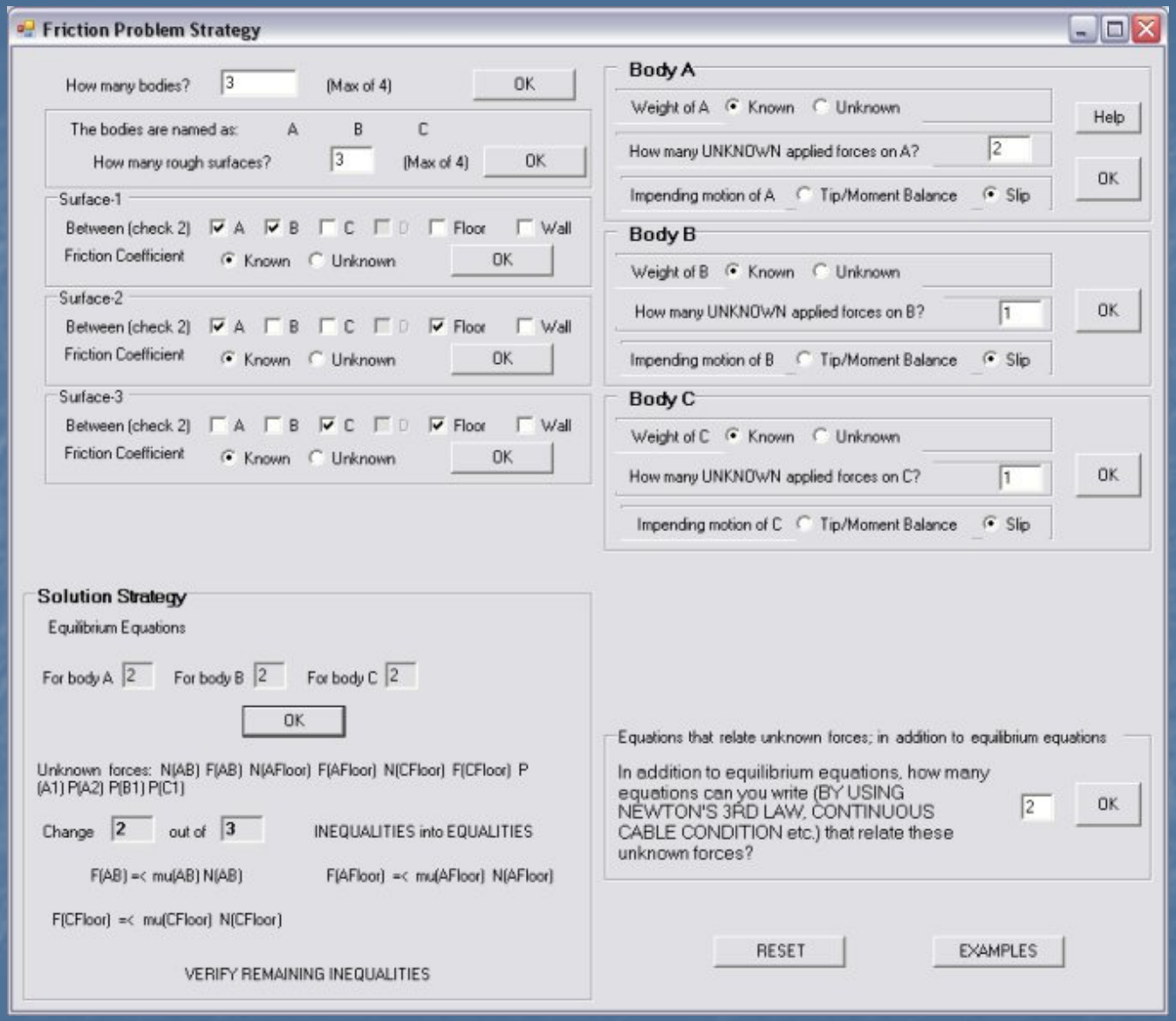

Software prompts the user for responses and guides the user through the shear-force-analysis

# Screen Shot
# Shear-Bending Moment Application



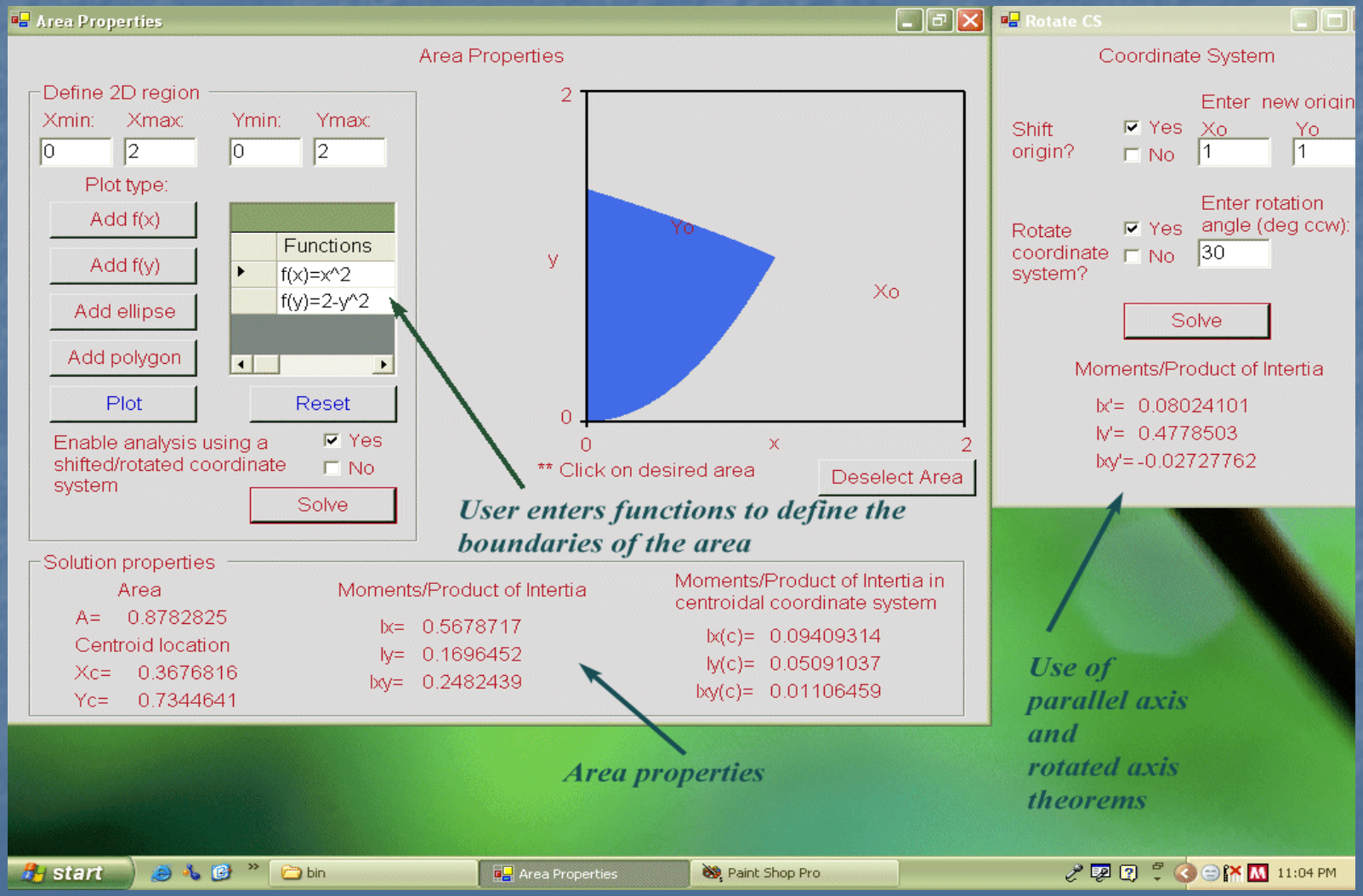

Software prompts the user for responses and guides the user through the bending-moment-analysis

# Screen Shot - Friction Application




Software prompts the user for responses and guides the user through the friction problem

# Screen Shot
# Area Properties Application

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# Screen Shot
# Area Properties Application