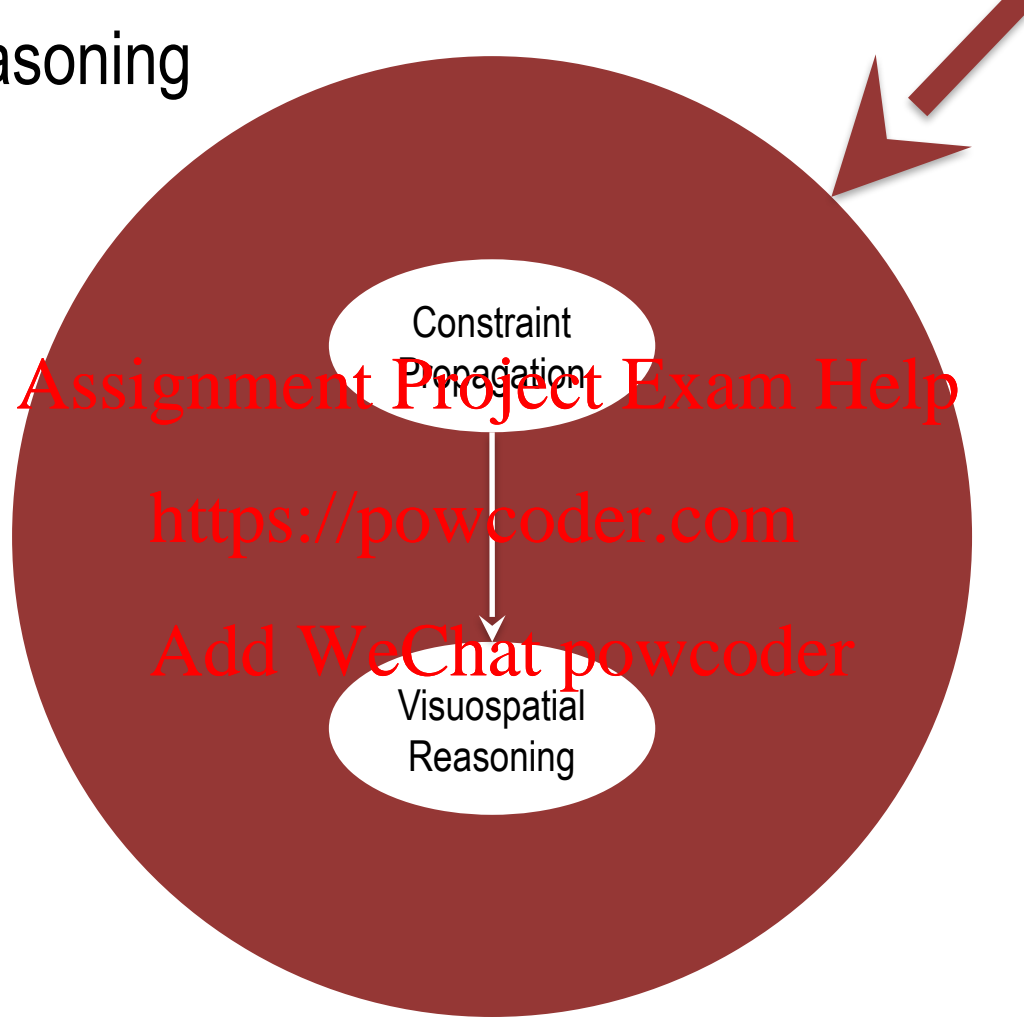


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Constraint  
<https://powcoder.com>  
Propagation  
Add WeChat powcoder

# Visuospatial Reasoning



# Lesson Preview

- Definition
  - Image processing
  - Natural language understanding
  - Advanced problems
- Assignment Project Exam Help
- <https://powcoder.com>
- Add WeChat powcoder

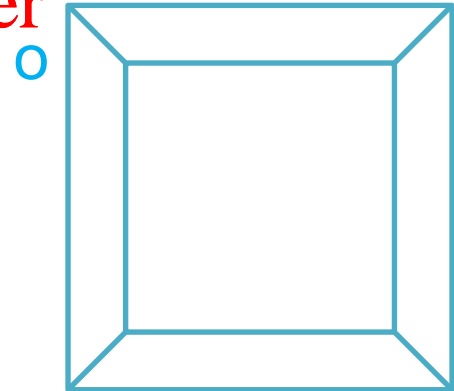
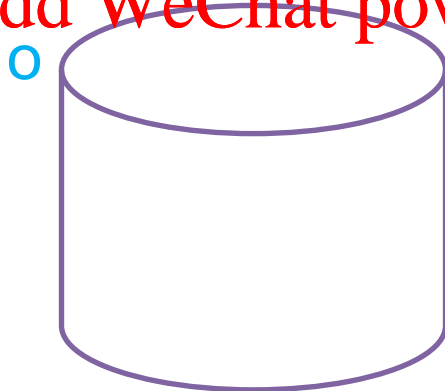
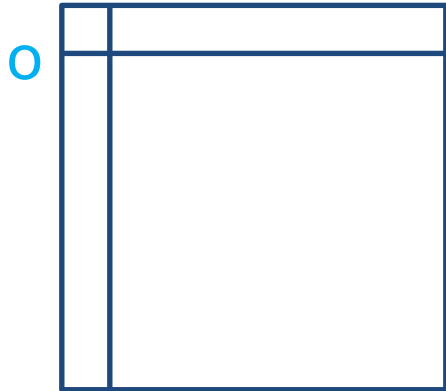
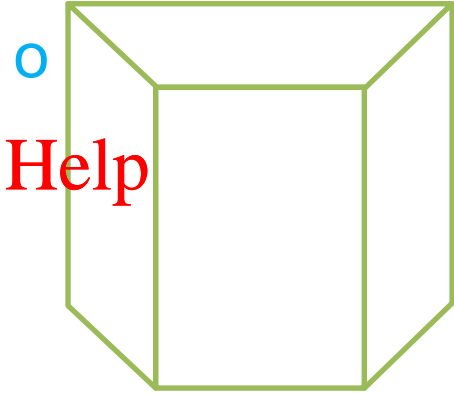
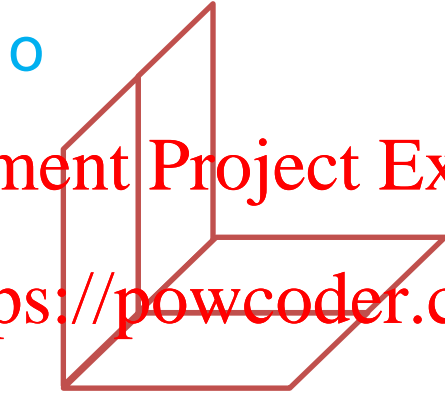
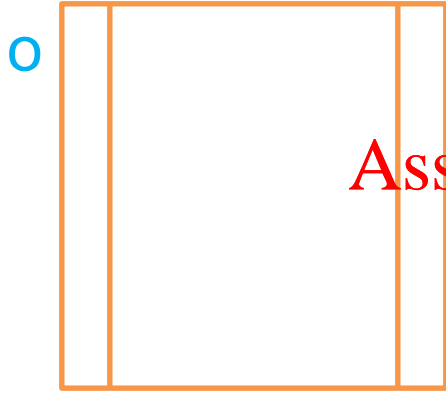
An orange wireframe cube is centered on the page. The text is overlaid on the front face of the cube.

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Which of these wireframes depicts a 3D figure that could exist in the real world?



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## Which of these sentences are grammatically correct?

- Colorless green ideas sleep furiously.
- Soft drinks due from thank bills insurance.
- The treating physician persons the following excluded tasty.
- Wall decor notifies business cards of nonsensical whims.
- Tuesday brought a sharp-edged suite of pumpernickel.
- Go search or revoke to writing this present understand.

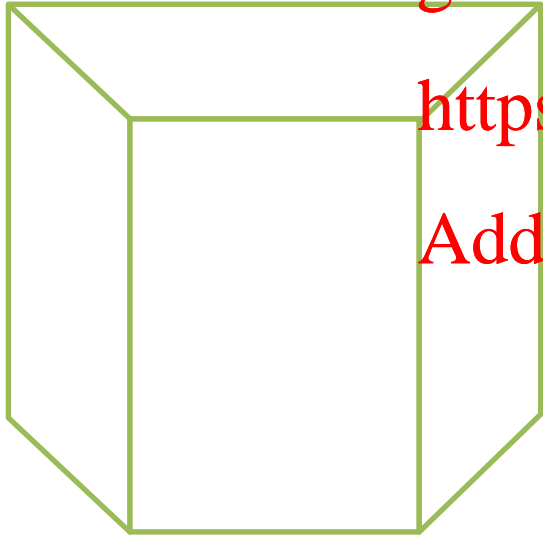
**Constraint propagation:** a method of inference that assigns values to variables characterizing a problem in such a way that some conditions (called constraints) are satisfied.

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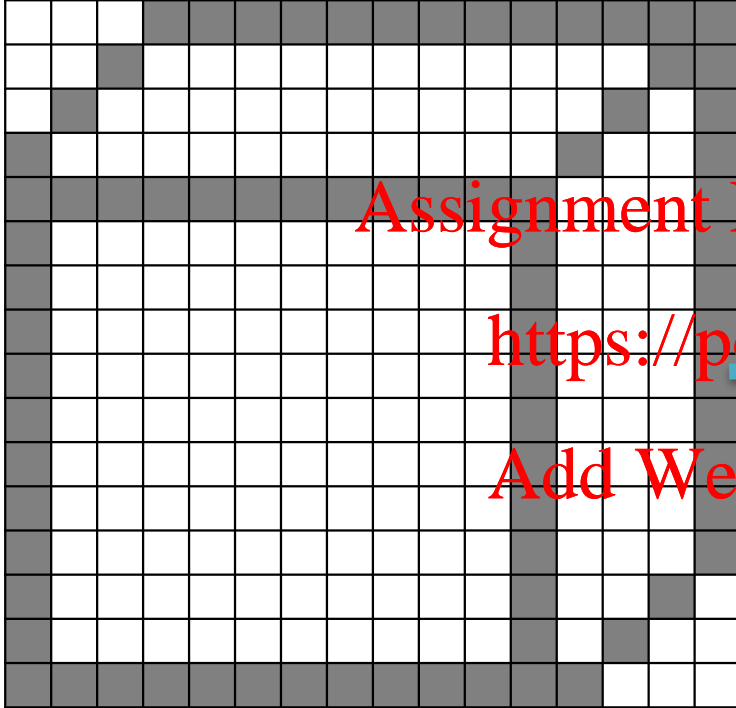
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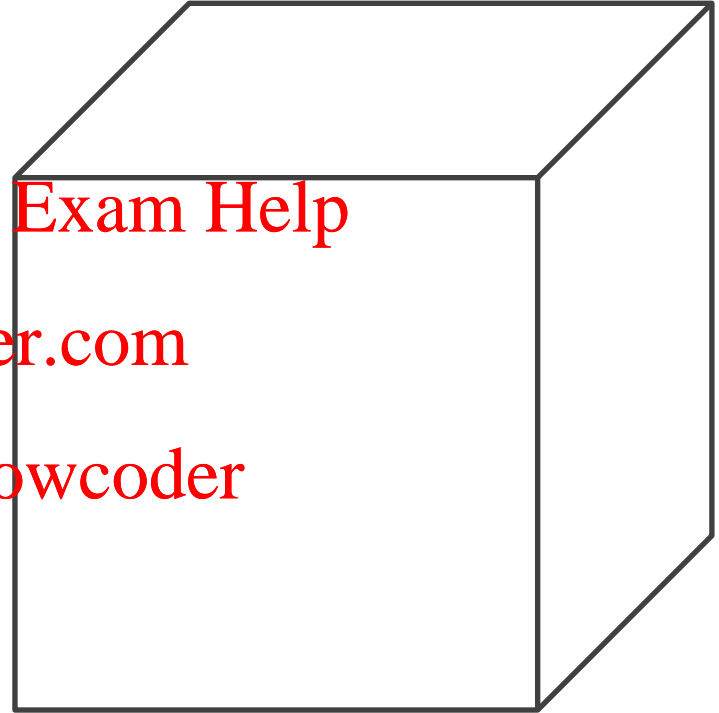
Colorless green ideas  
sleep furiously.



Pixels



Lines



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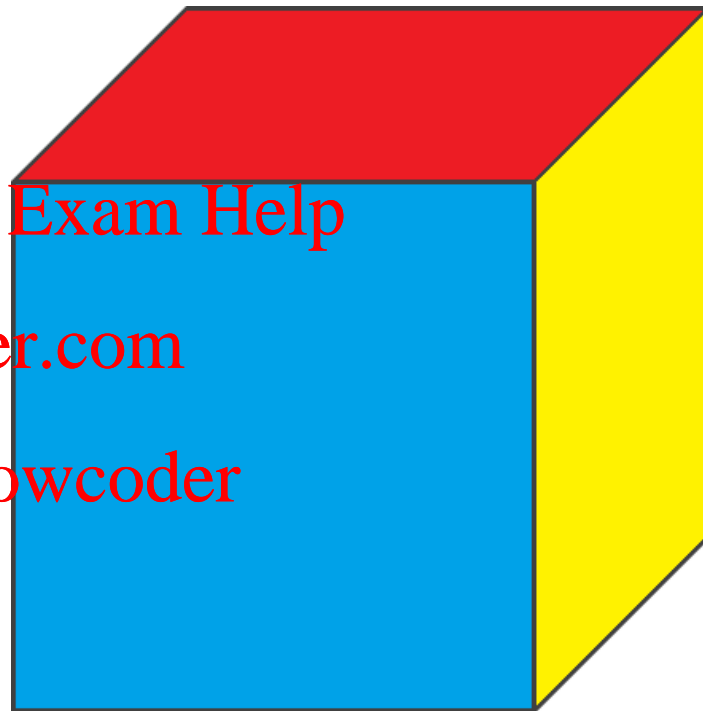
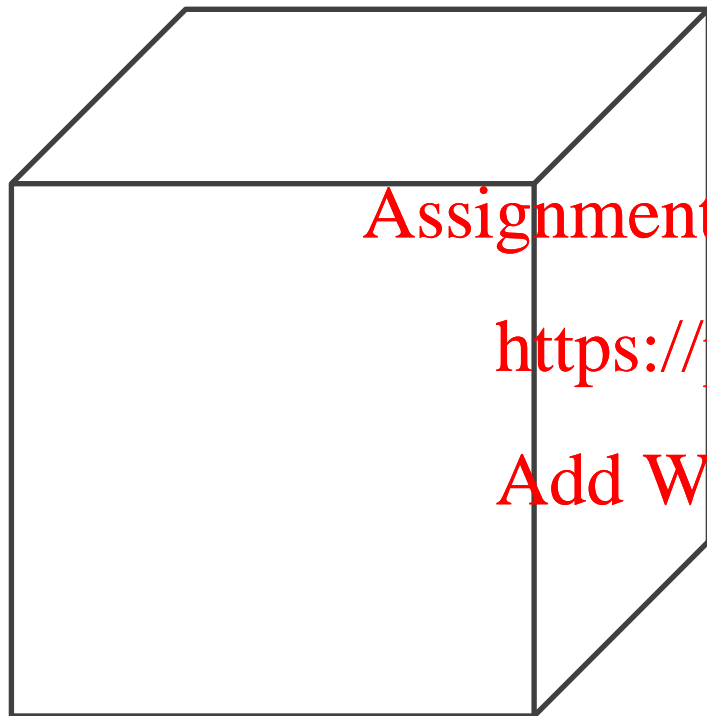
<https://powcoder.com>

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Lines

Surfaces



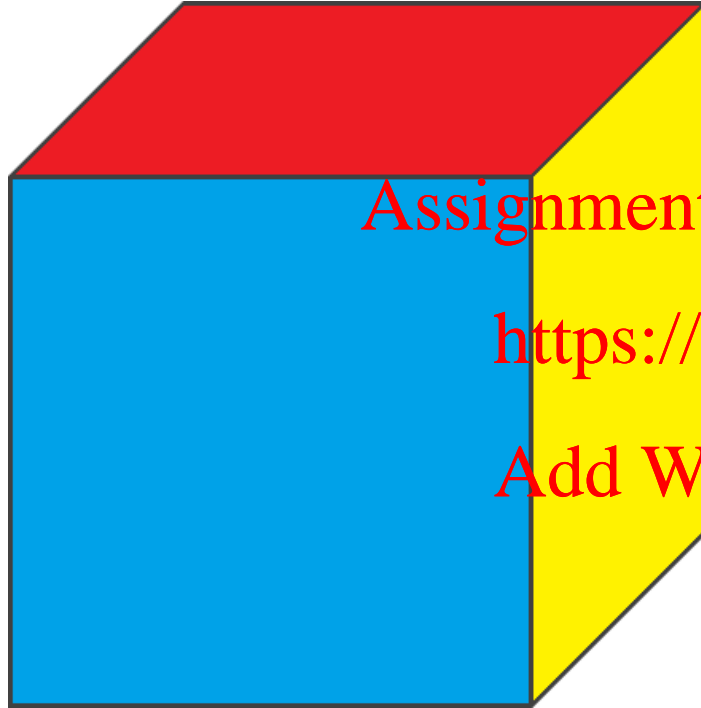
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<https://powcoder.com>

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Surfaces

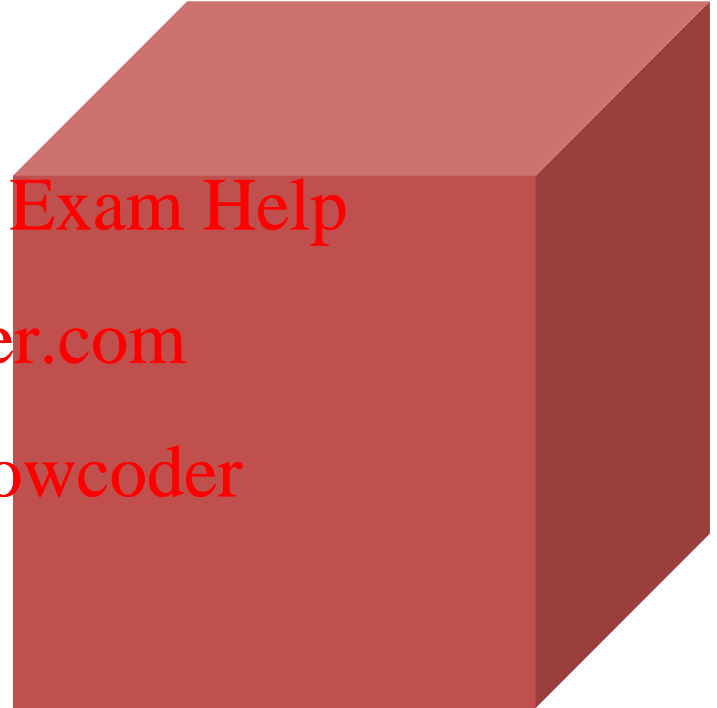
3D



Assignment Project Exam Help

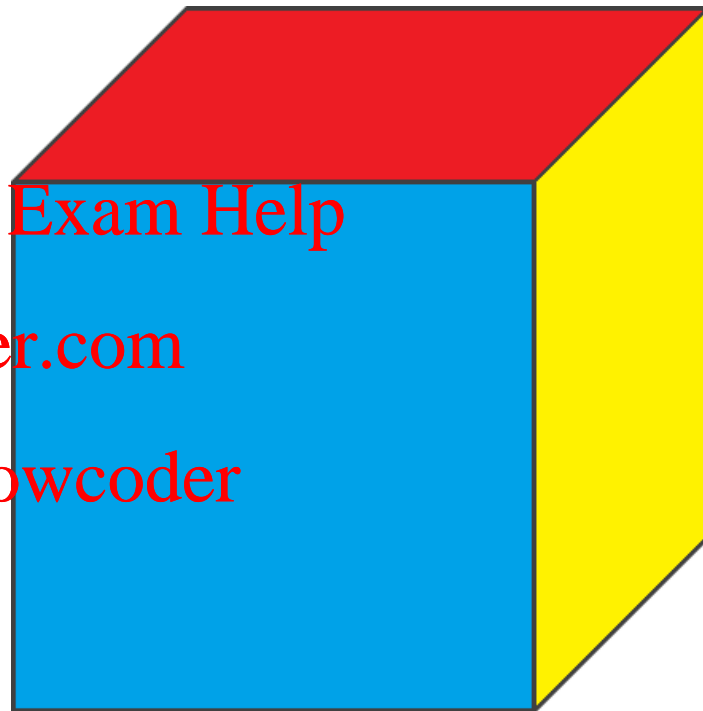
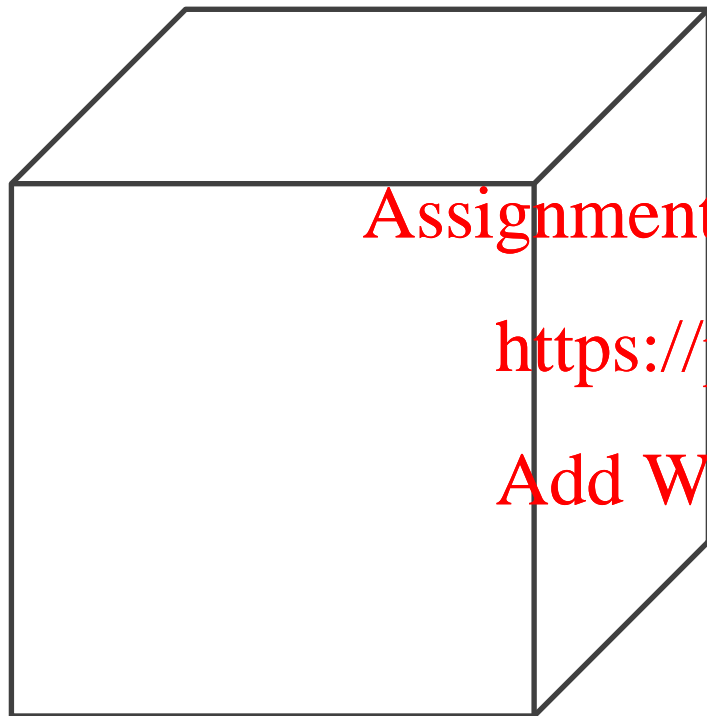
<https://powcoder.com>

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Lines

Surfaces



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<https://powcoder.com>

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# Constraints

Y-Constraint

W-Constraint

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L-Constraint

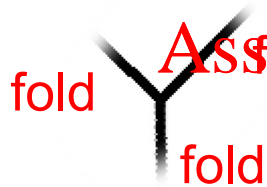
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T-Constraint

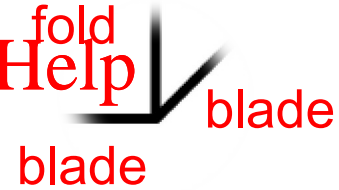


# Constraints

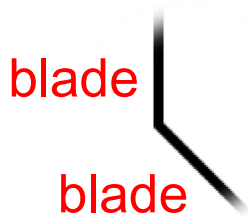
Y-Constraint



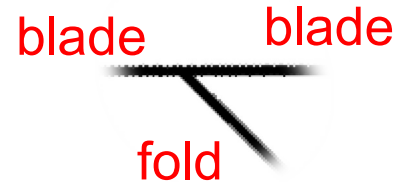
W-Constraint



L-Constraint



T-Constraint

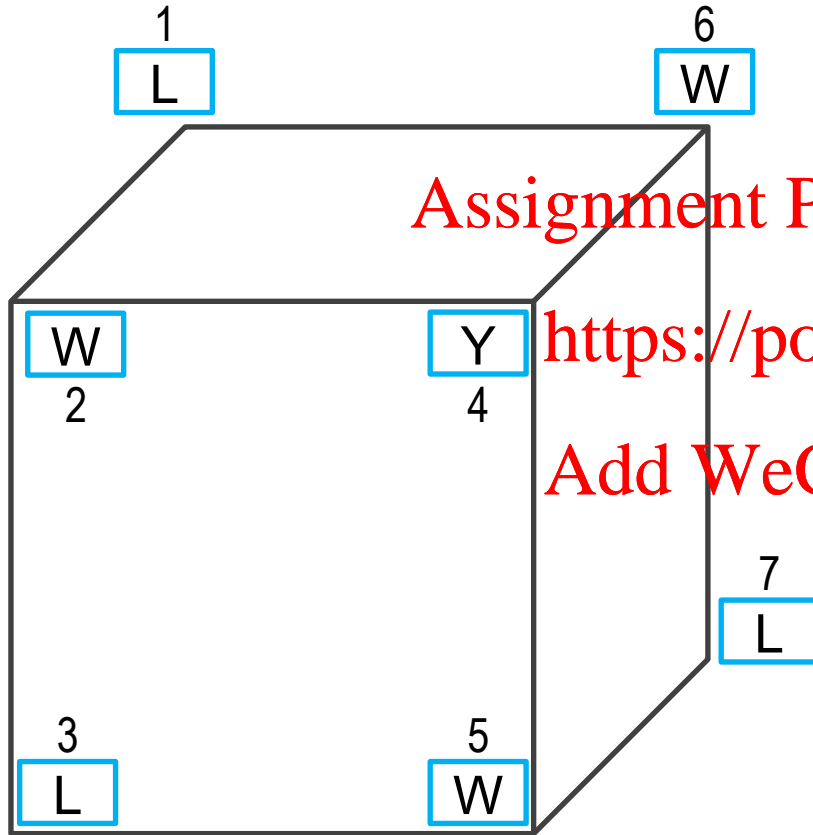


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Label each intersection according to the applicable constraint on the right.



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Y-Constraint



W-Constraint



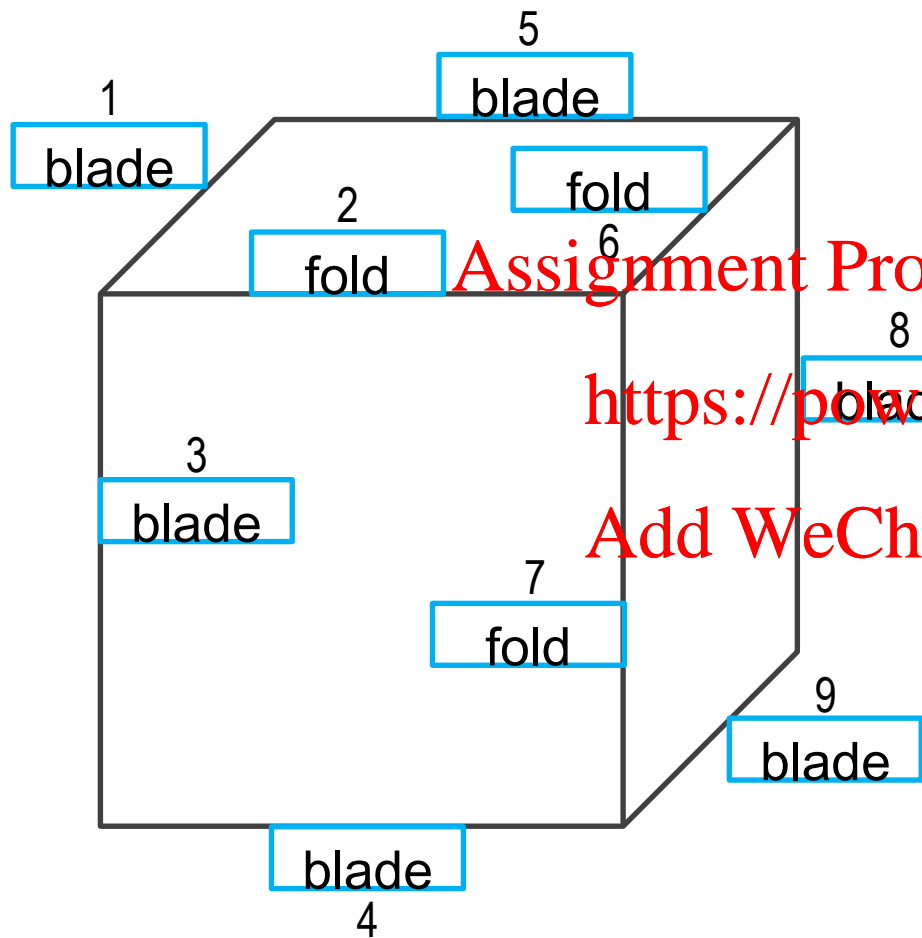
L-Constraint



T-Constraint



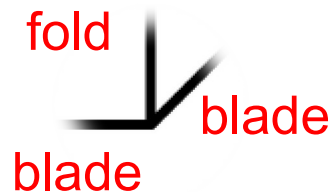
Label each line according to the constraint on the right.



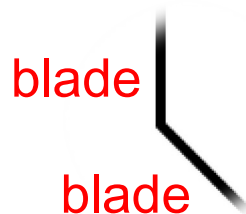
Y-Constraint



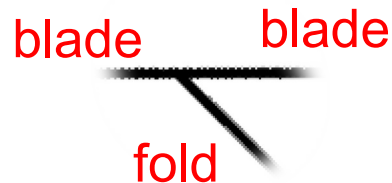
W-Constraint



L-Constraint



T-Constraint

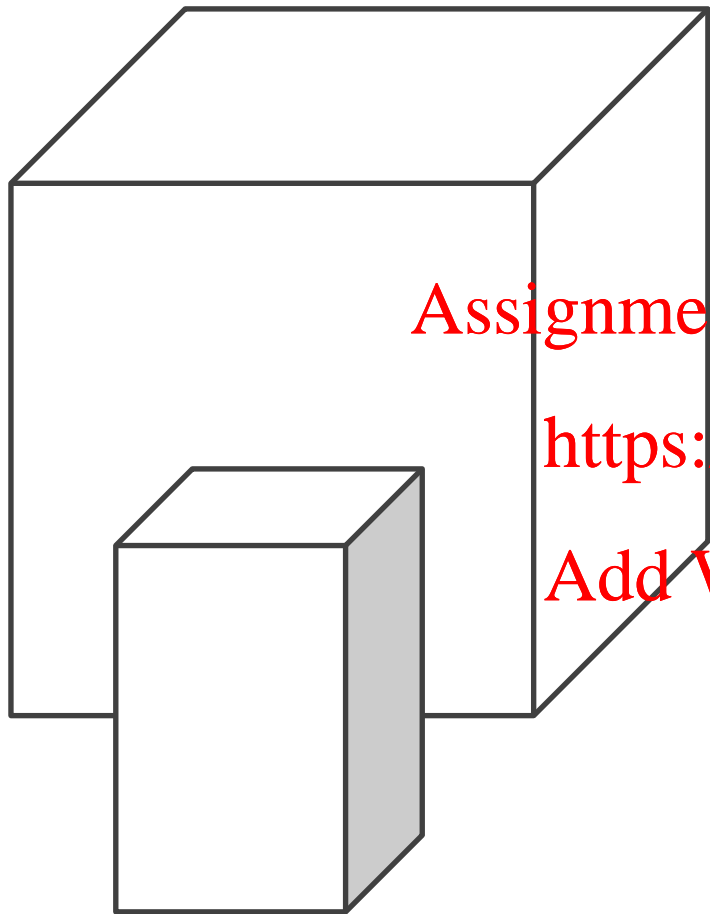


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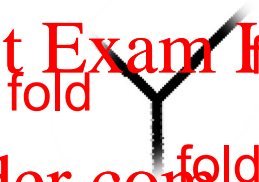


Assignment Project Exam Help

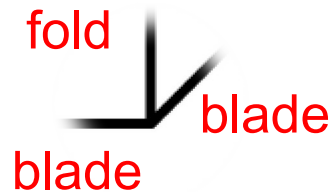
<https://powcoder.com>

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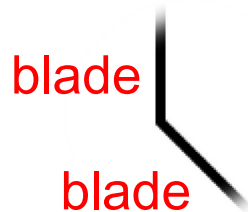
Y-Constraint



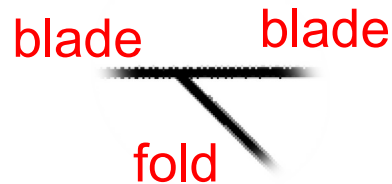
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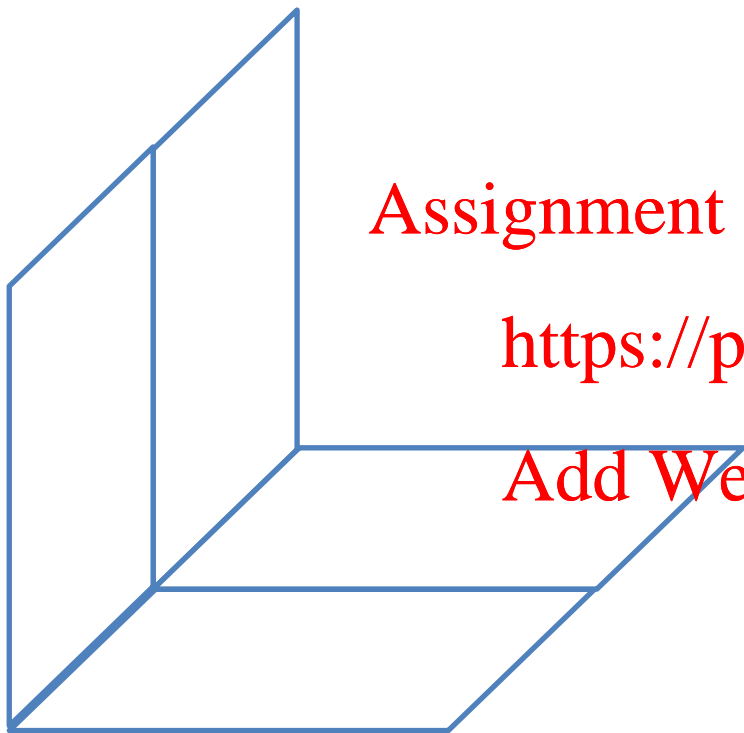


L-Constraint



T-Constraint



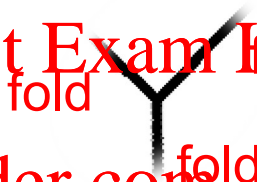


Assignment Project Exam Help

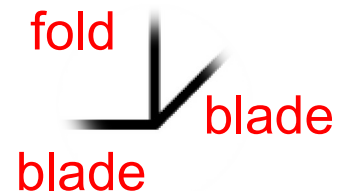
<https://powcoder.com>

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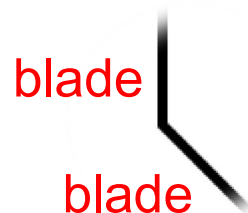
Y-Constraint



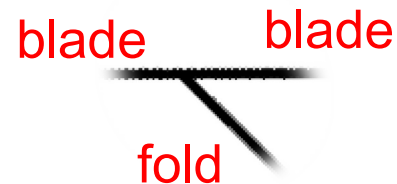
W-Constraint

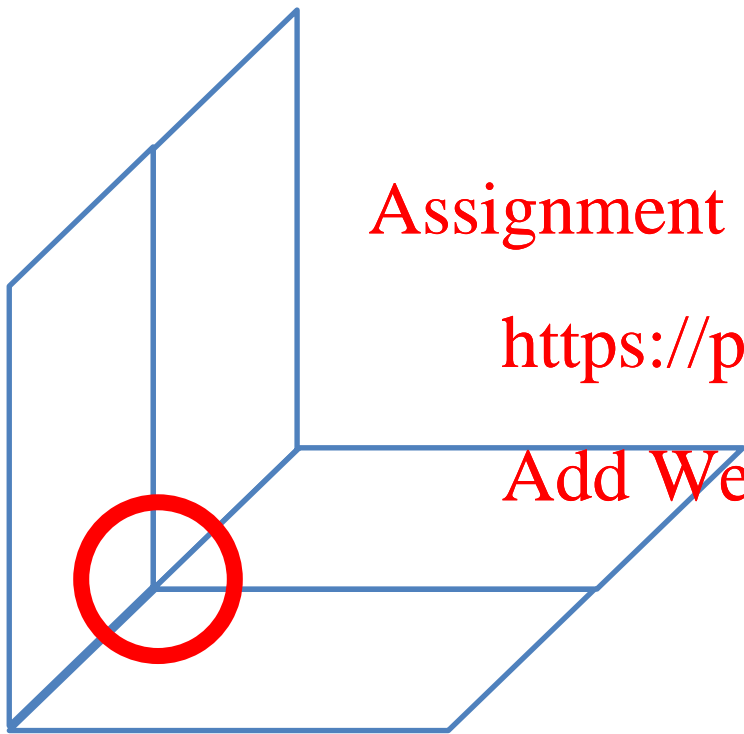


L-Constraint



T-Constraint



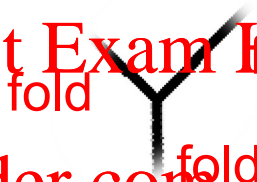


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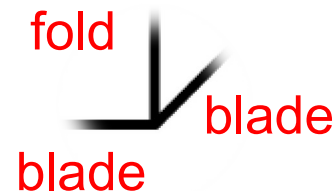
<https://powcoder.com>

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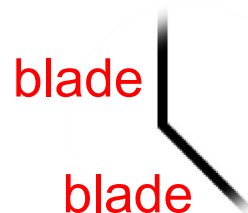
Y-Constraint



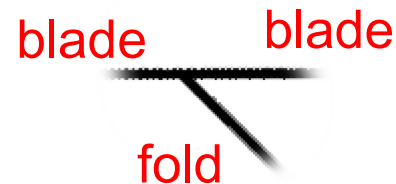
W-Constraint

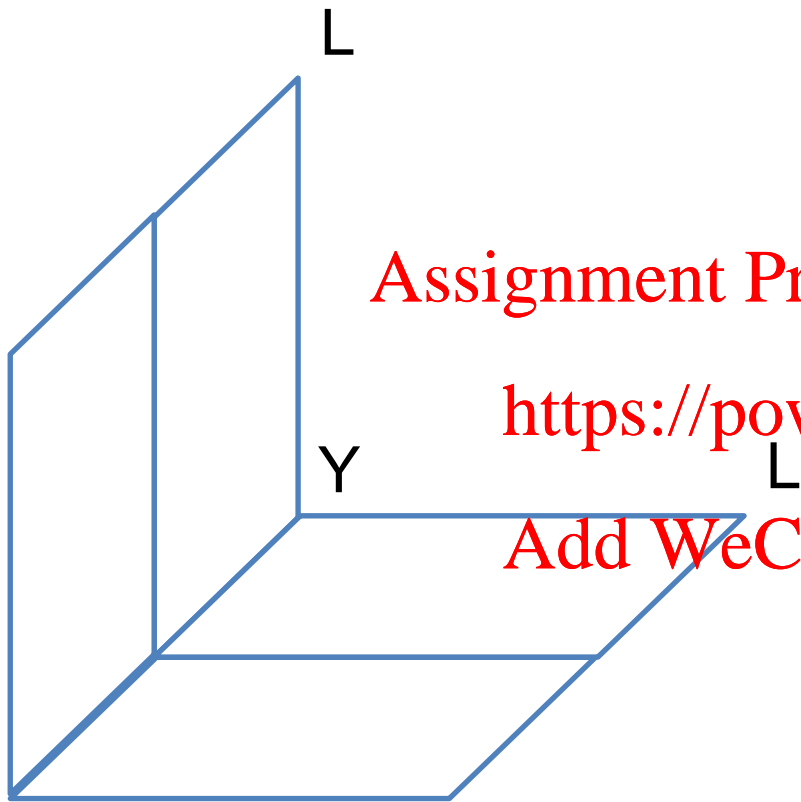


L-Constraint



T-Constraint



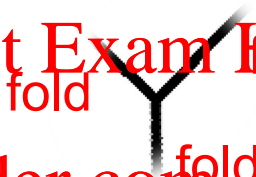


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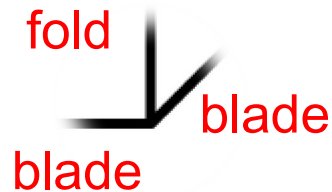
<https://powcoder.com>

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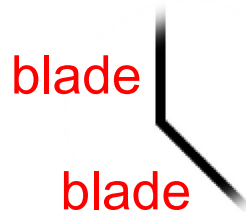
Y-Constraint



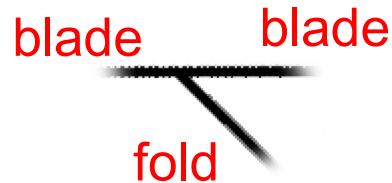
W-Constraint

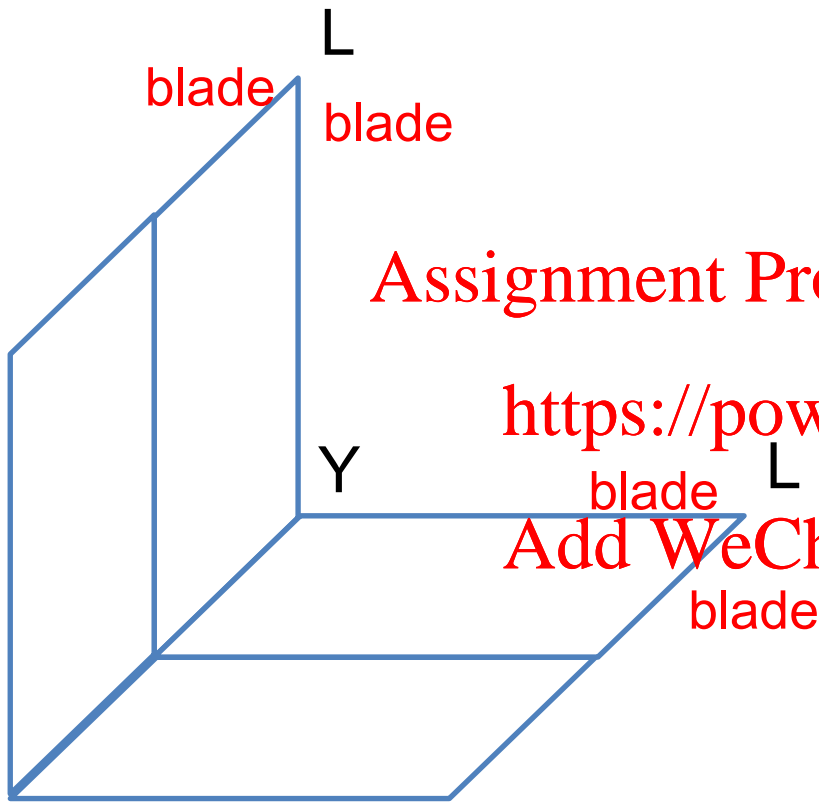


L-Constraint



T-Constraint



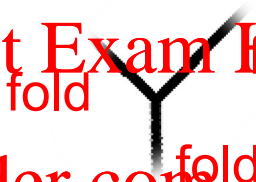


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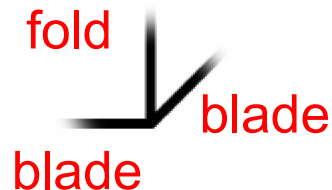
<https://powcoder.com>

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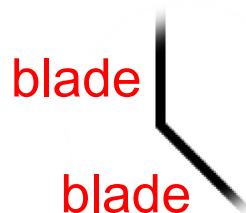
Y-Constraint



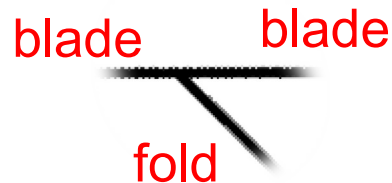
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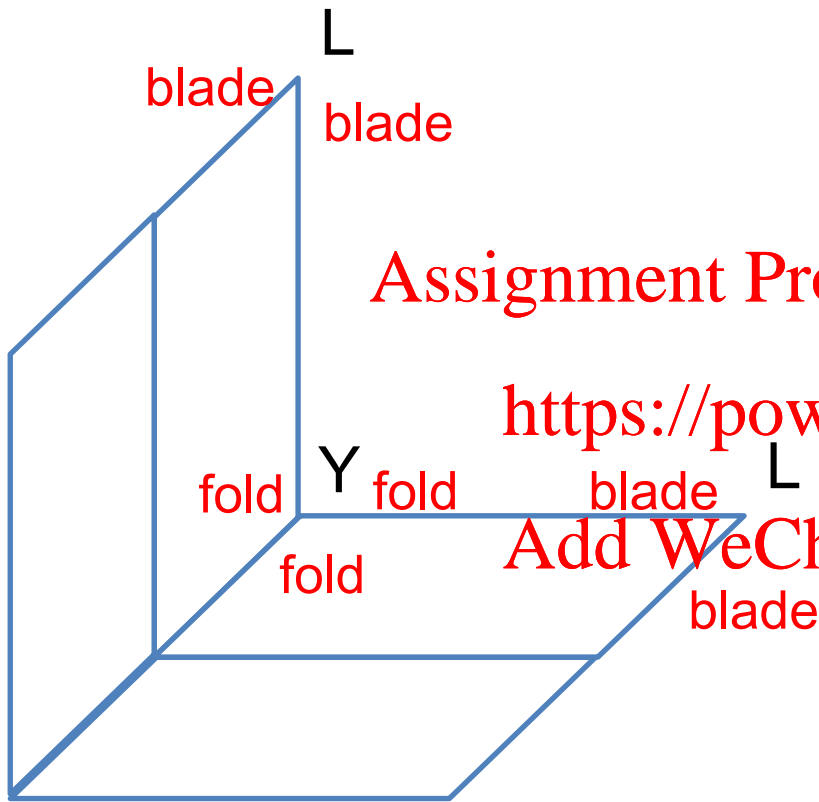


L-Constraint



T-Constraint



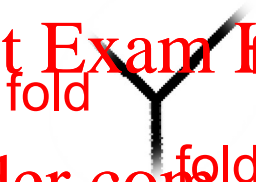


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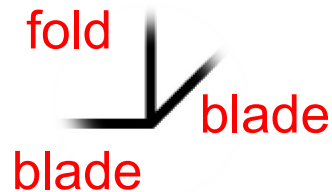
<https://powcoder.com>

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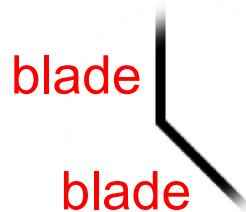
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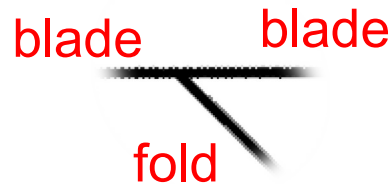
W-Constraint



L-Constraint

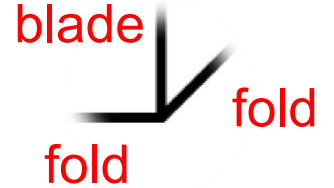
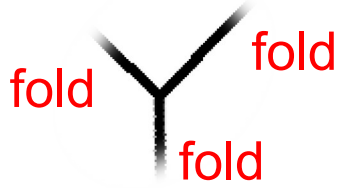


T-Constraint





Y-Constraint



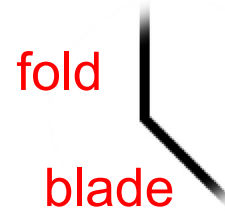
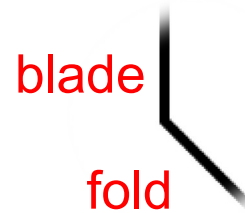
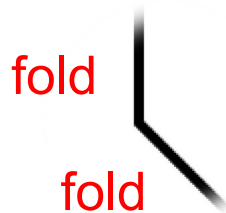
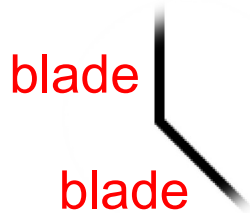
W-Constraint

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L-Constraint





Colorless green ideas sleep furiously.

Noun Phrase

Verb Phrase

Colorless green ideas

sleep furiously.

Adjectives

Noun

Verb

Adverb

Colorless green

ideas

sleep

furiously

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### Constraints:

Sentence = Noun Phrase + Verb Phrase

Noun Phrase = [Adjectives] + (Noun or Pronoun)

Verb Phrase = Verb + [Adverb]

Soft drinks due from thank bills insurance.

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### **Constraints:**

Sentence = Noun Phrase + Verb Phrase

Noun Phrase = [Adjectives] + (Noun or Pronoun)

Verb Phrase = Verb + [Adverb]

# **Assignment**

How would you use constraint propagation to design an agent that could answer Raven's progressive matrices?

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## To recap...

- Definition
  - Image processing
  - Natural language understanding
  - Advanced problems
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