

# DMT INSTITUTE

Developing Mathematical Thinking Institute (DMTI)



Professional  
Development



Curricular  
Resources



Assessment

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# About the DMTI Modules

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The DMTI modules are designed to guide classroom instruction and formative assessment for teachers implementing the DMTI curricular materials.

The lessons are not necessarily intended for a single day of instruction. Teachers are encouraged to use their professional judgement regarding pacing. A suggested number of weeks is provided.

# PMA – Grade 1

## Spatial Reasoning

# Spatial Reasoning

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## What's involved:

- Composing and decomposing space
- Orientation of objects
- Examining and describing 2 and 3 dimensional space
- Maneuvering space
  - Directional words (right, left, forward, back)
  - Transformational words (slide/translate, flip/reflect, turn/rotate)

## Why it matters:

- Builds initial ideas of measurement, proportional reasoning, graphing, statistics and data
- Connects concepts of spatial awareness to concepts of number
- Focuses on the structure of mathematics: decomposing and composing
- Highly predictive of success in math

# Spatial Reasoning: Compose the Square

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## Materials

- **Square Mats (3x3, 4x4) print**
- **Templates 1-10 (print and cut)**

## Terms

- **Composing** – to put together
- **Decomposing** – to take apart

# Spatial Reasoning: Compose the Square

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## Activity

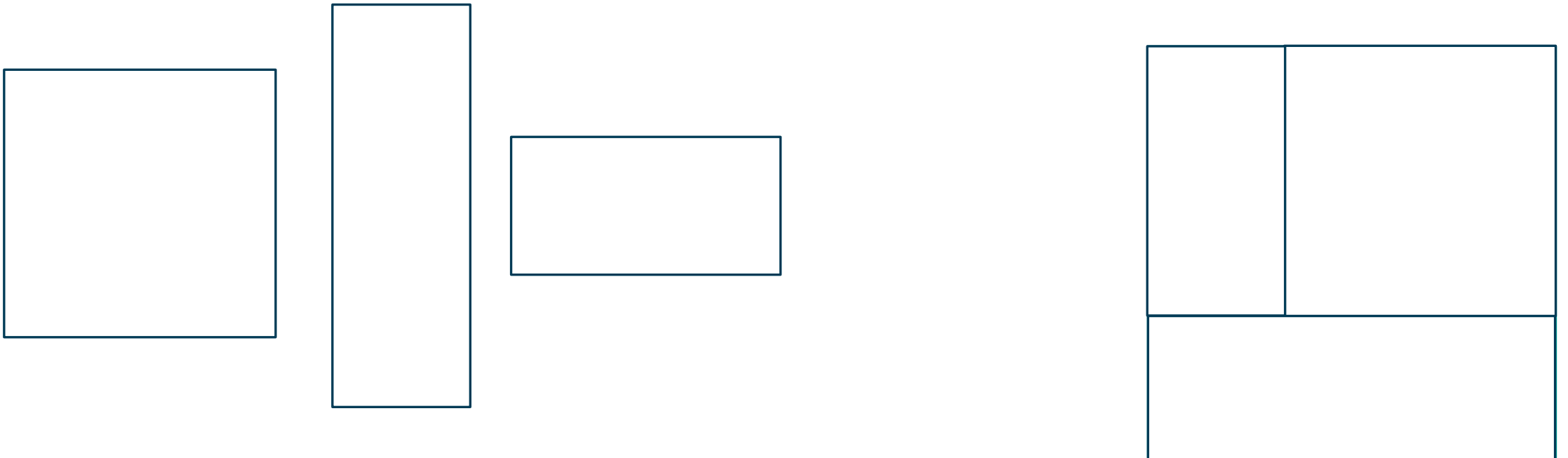
1. Take the shapes that make the square and randomly give the shapes to the child.
2. Ask the child to compose the shapes to fit on the square on the Mat.

# Spatial Reasoning: Compose the Square

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## Example

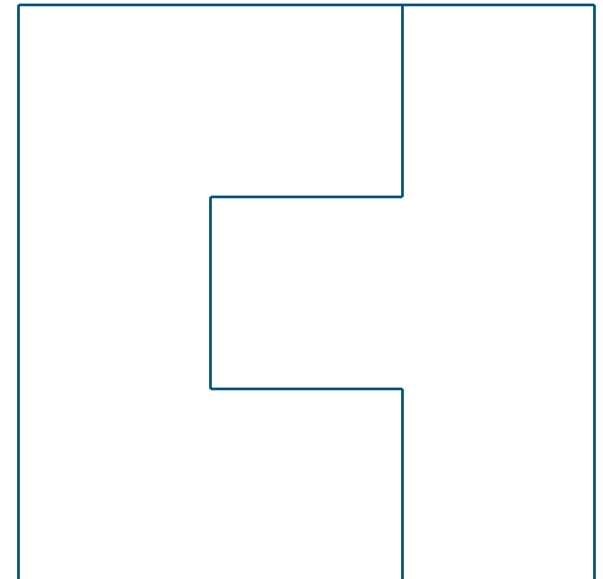
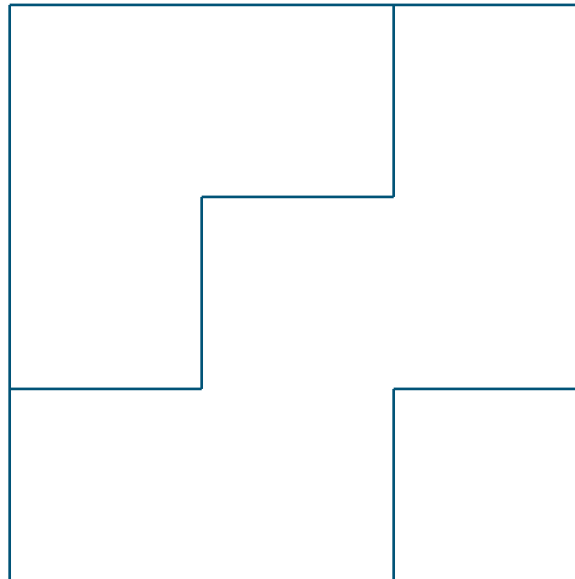
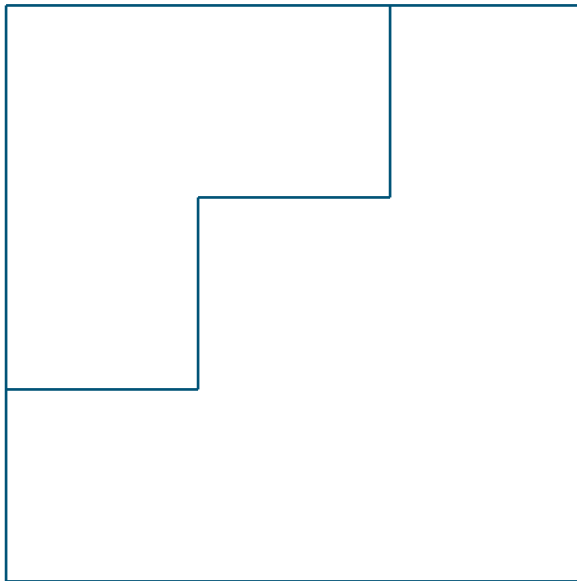
*These three shapes can compose this square.*



# Template 1: 3 x 3 Squares

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Cut out each shape within each square.

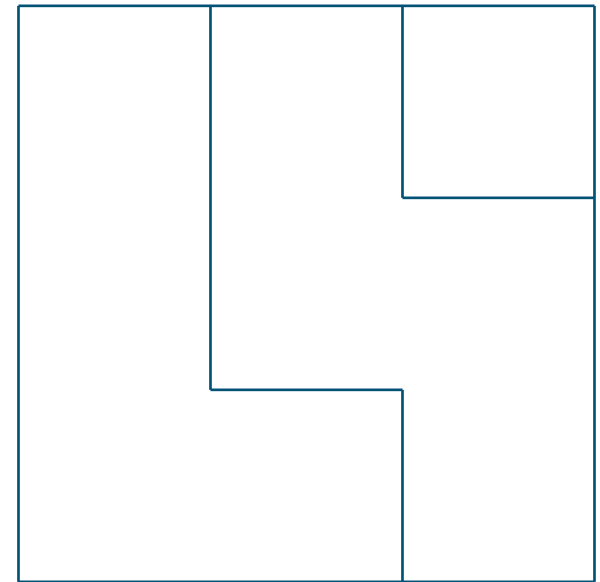
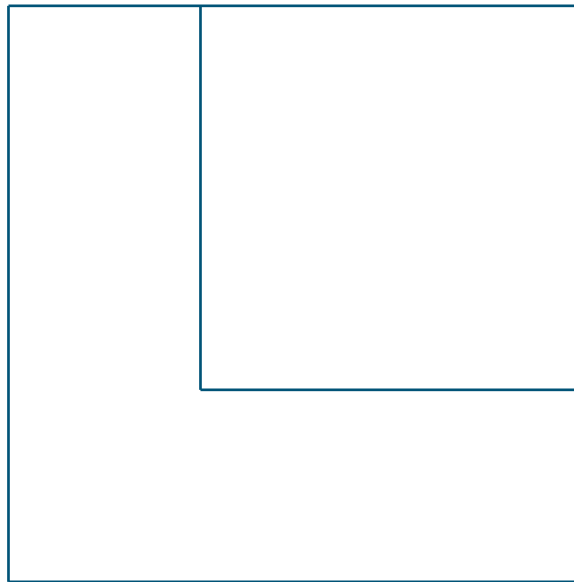
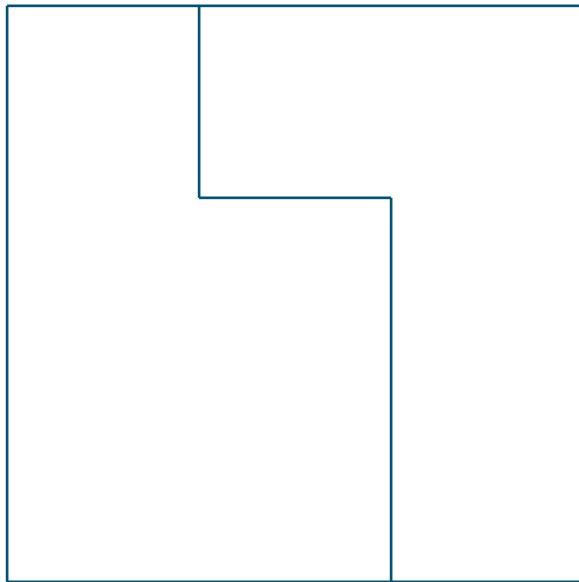




# Template 2: 3 x 3 Squares

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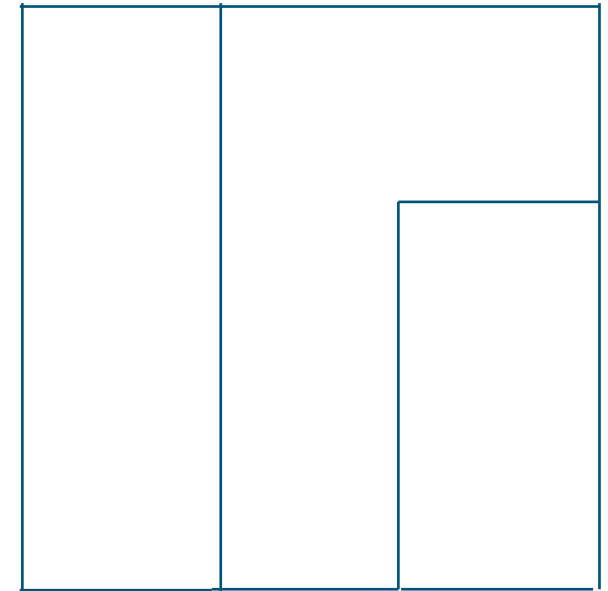
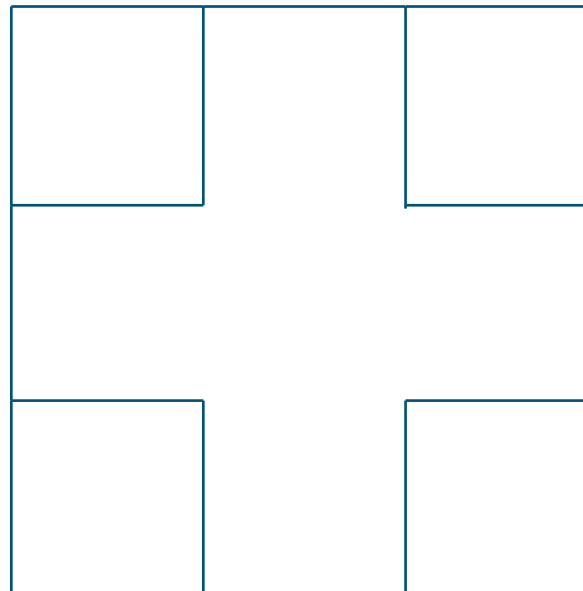
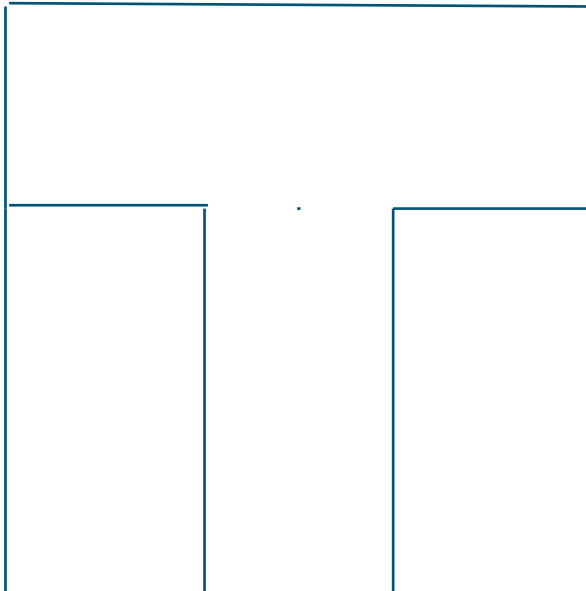
Cut out each shape within each square.



# Template 3: 3 x 3 Squares

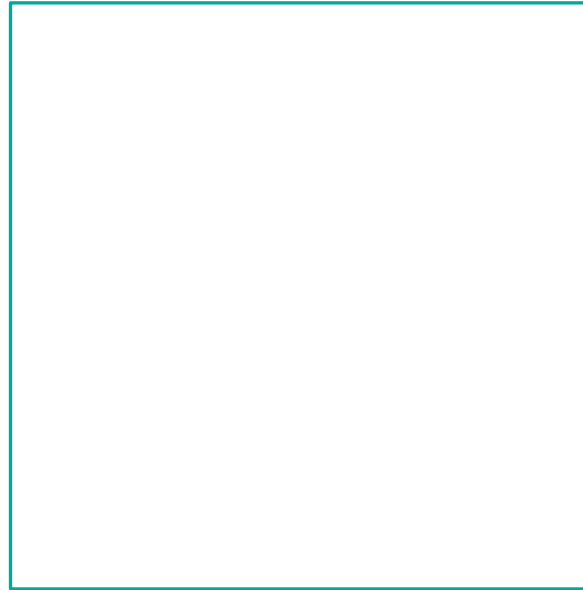
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Cut out each shape within each square.



# Mat: 3 x 3 Square

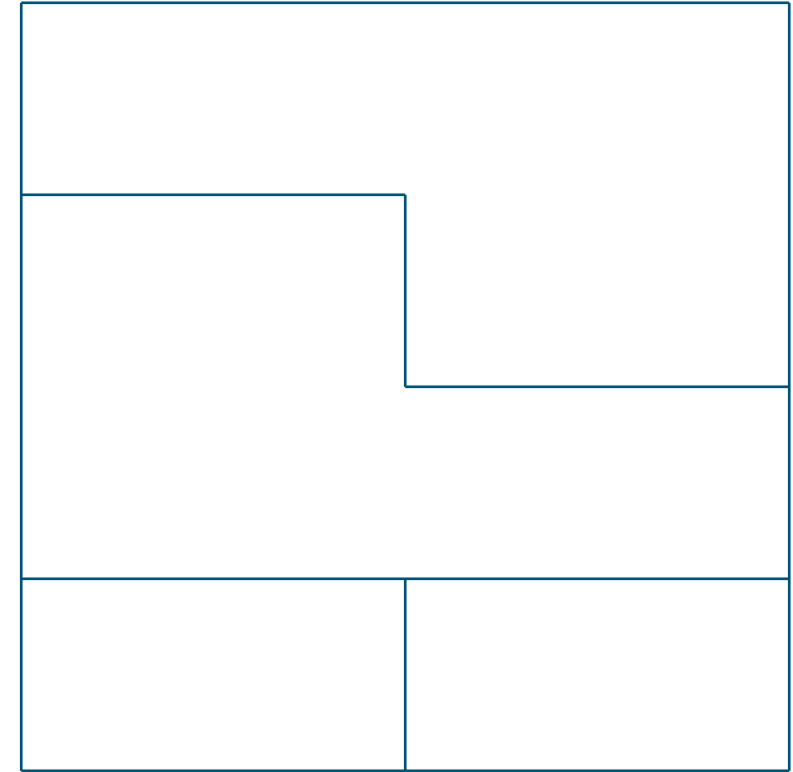
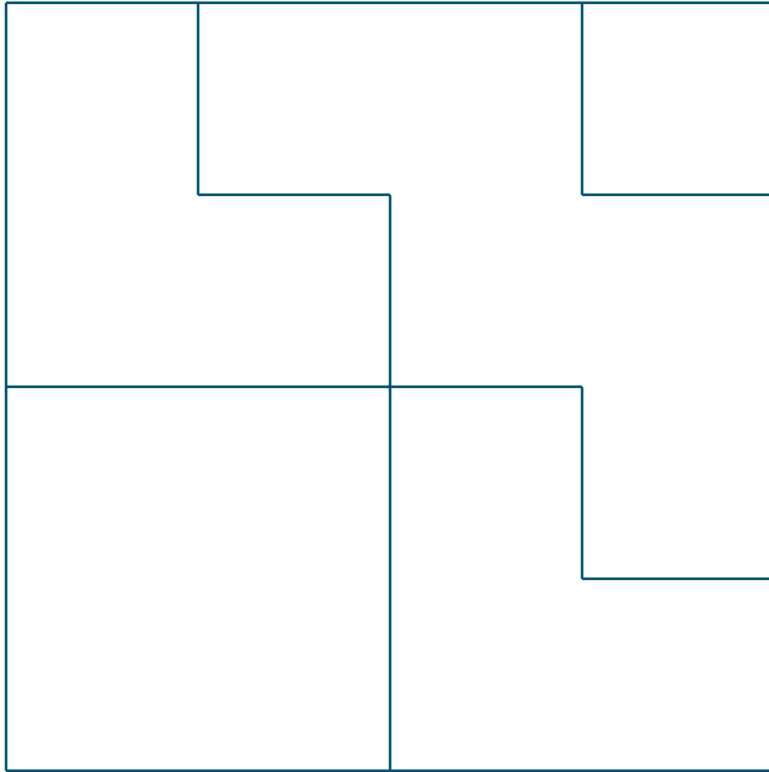
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# Template 4: 4 x 4 Squares

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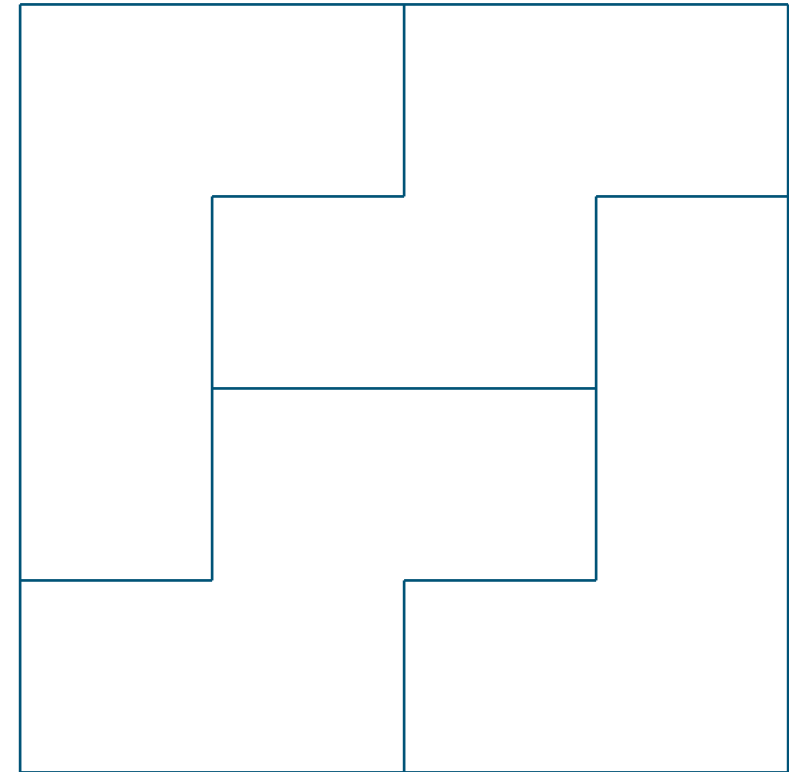
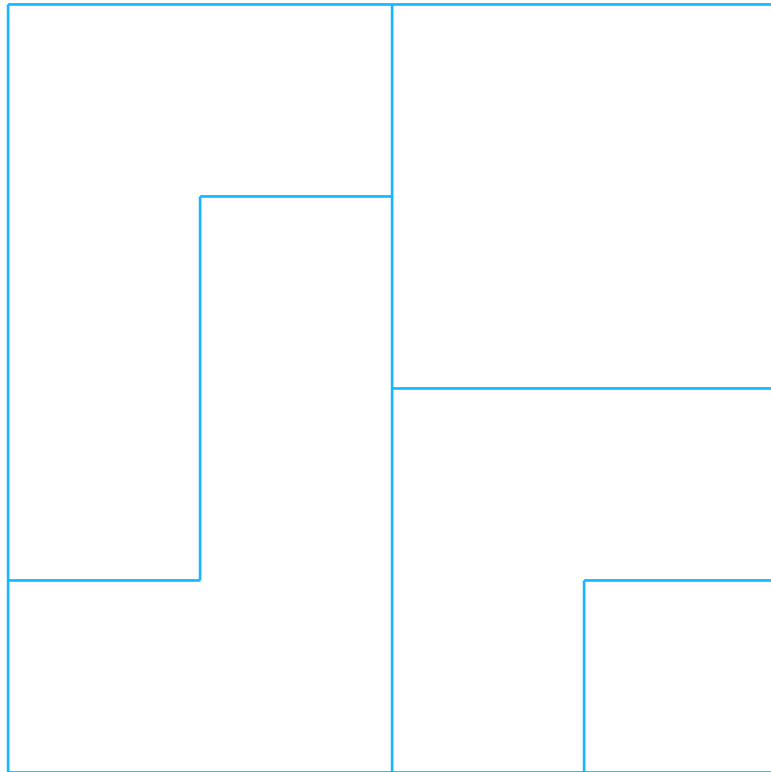
Cut out each shape within each square.



# Template 5: 4 x 4 Squares

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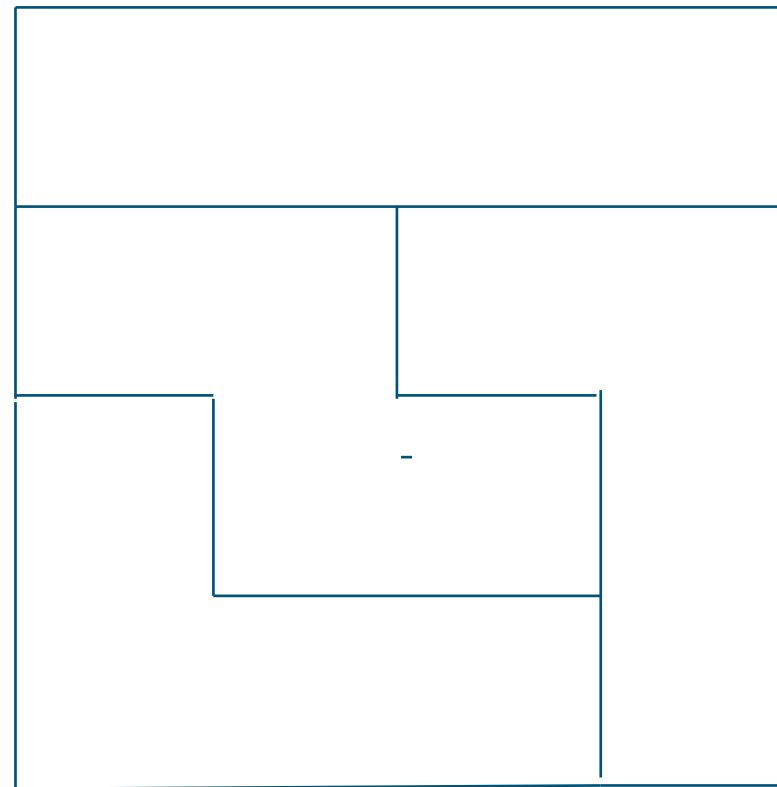
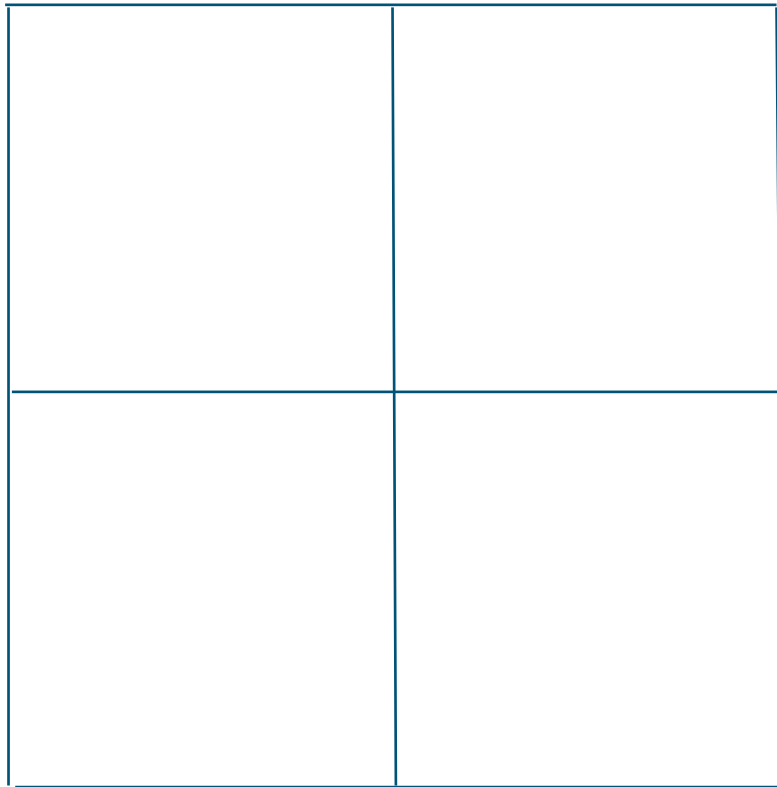
Cut out each shape within each square.



# Template 6: 4 x 4 Squares

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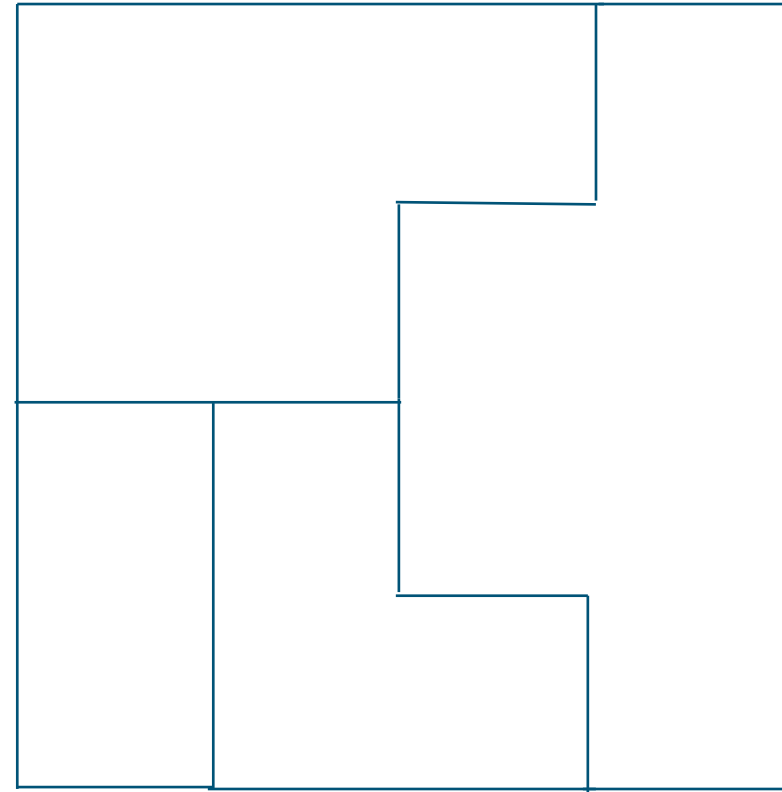
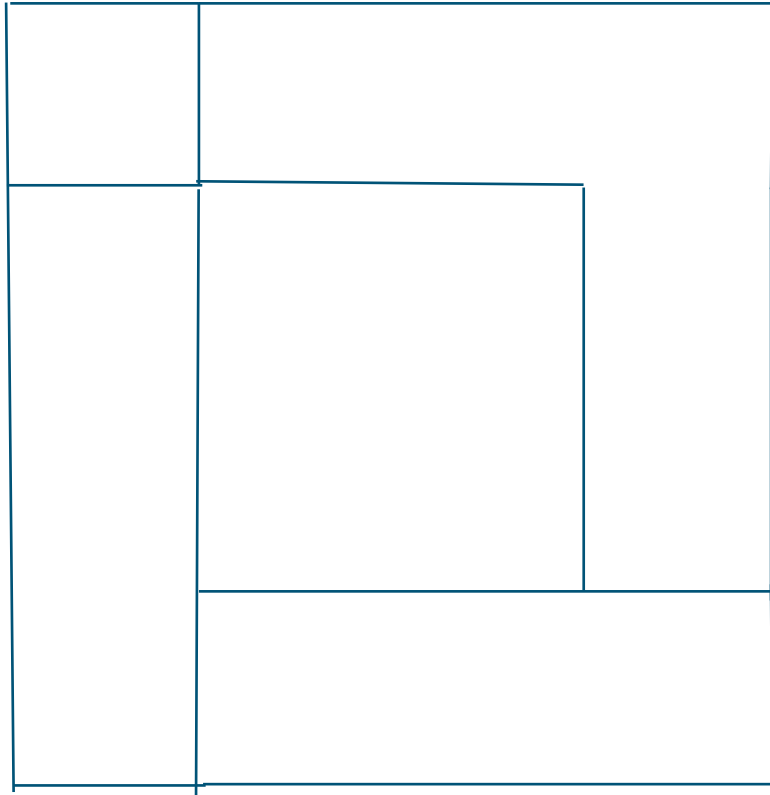
Cut out each shape within each square.



# Template 7: 4 x 4 Squares

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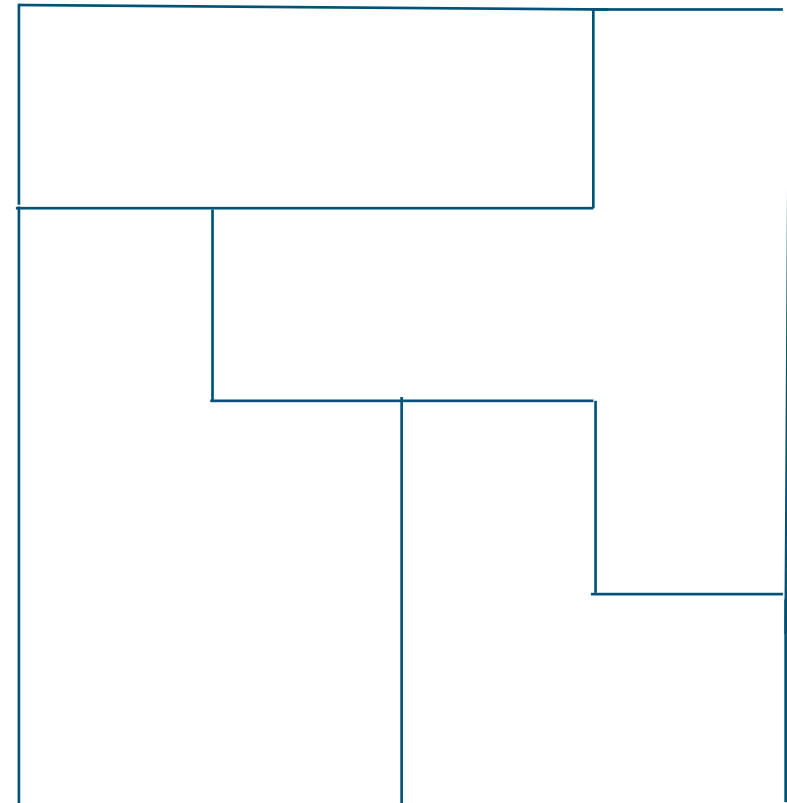
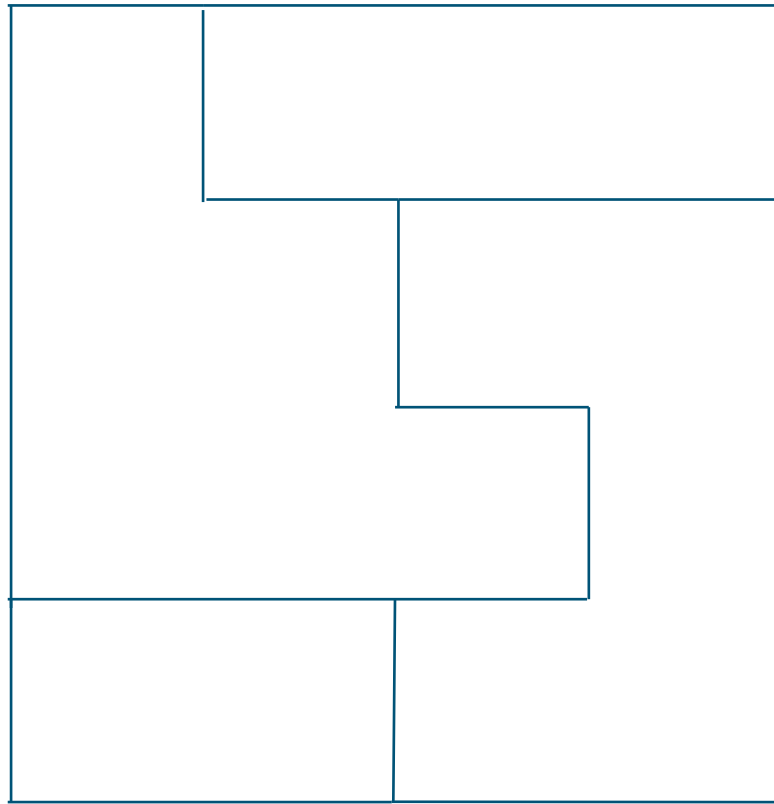
Cut out each shape within each square.



# Template 8: 4 x 4 Squares

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Cut out each shape within each square.

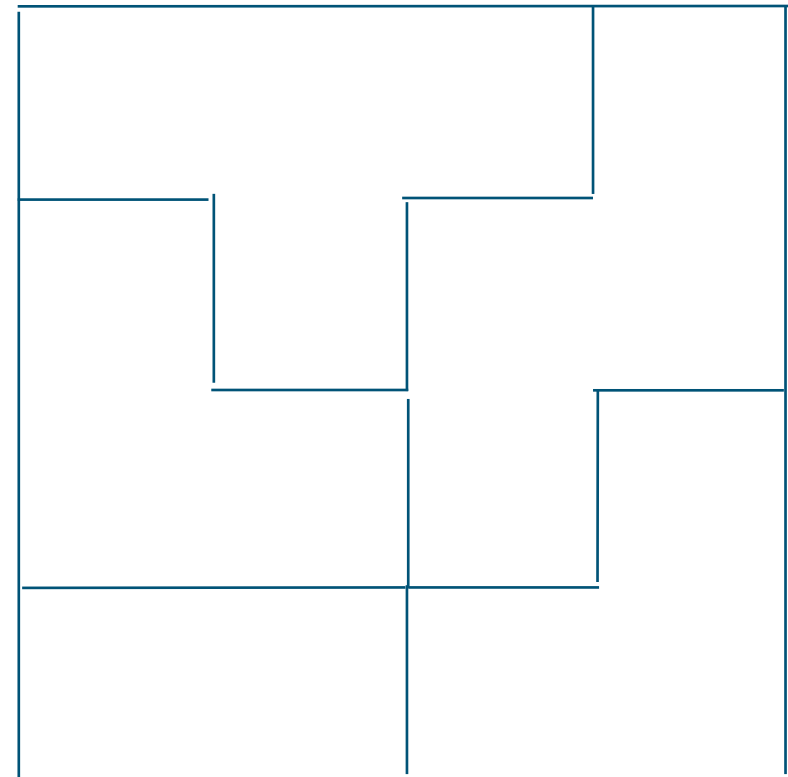
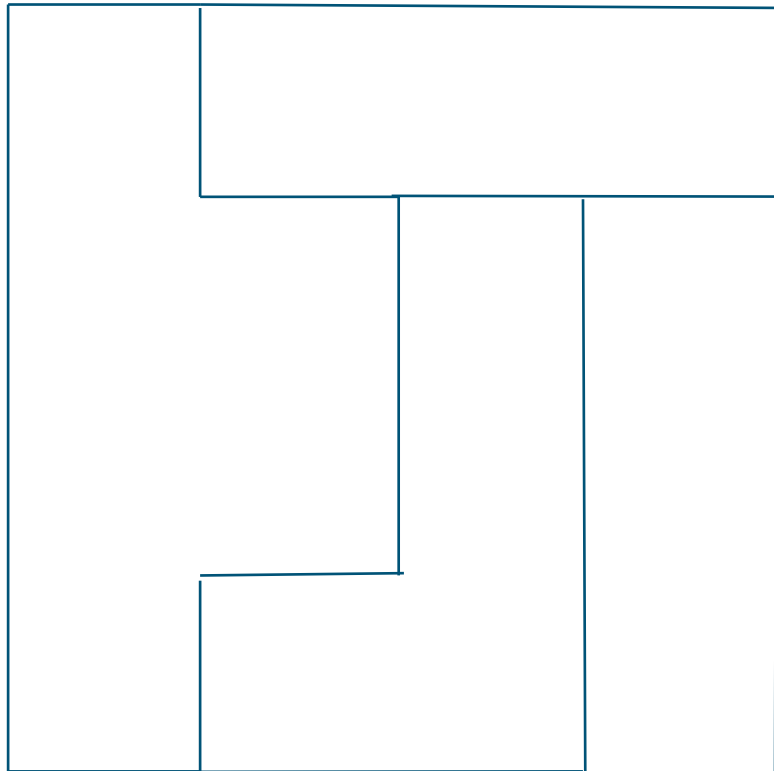




# Template 9: 4 x 4 Squares

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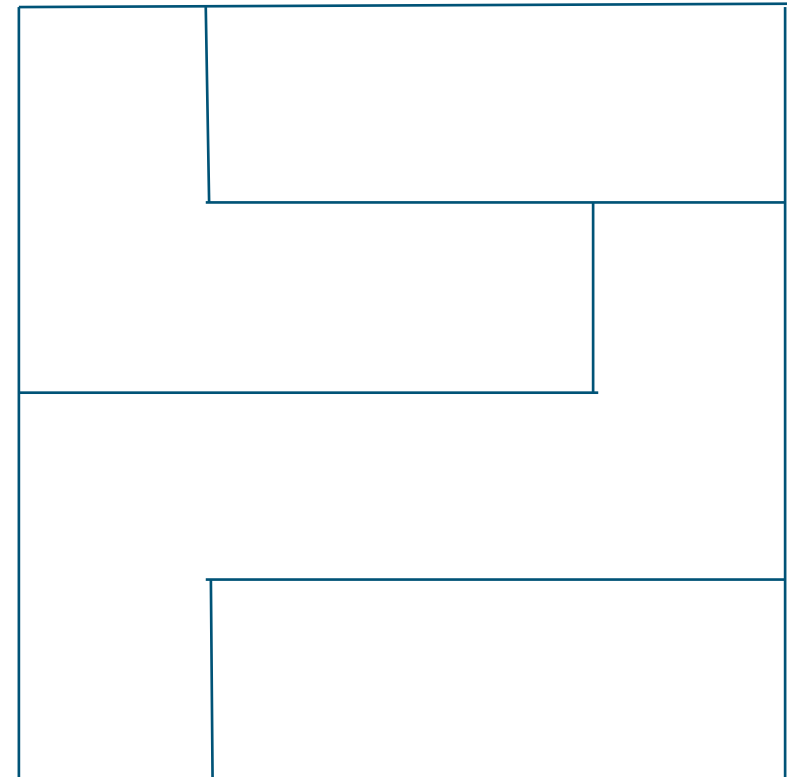
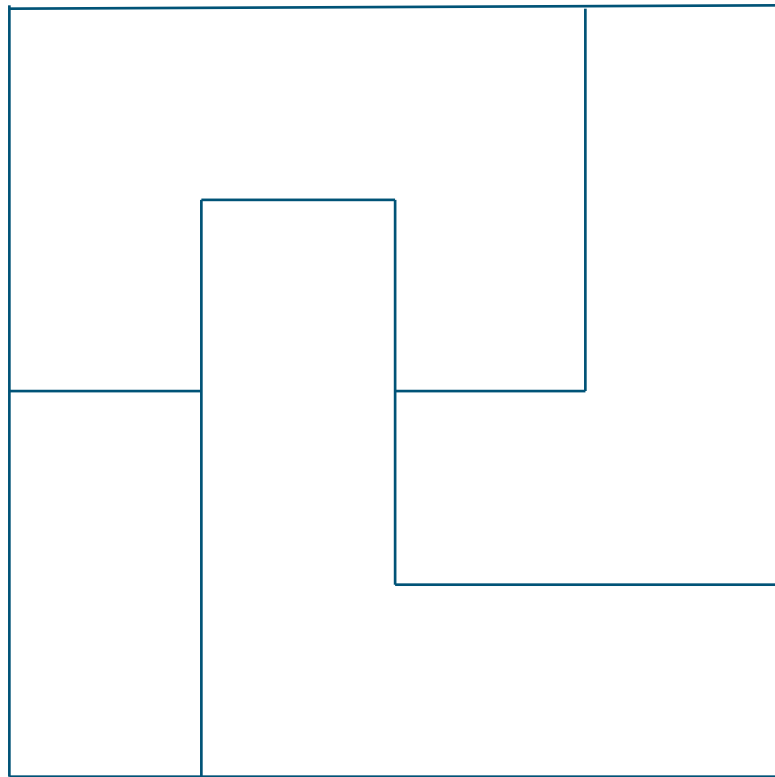
Cut out each shape within each square.



# Template 10: 4 x 4 Squares

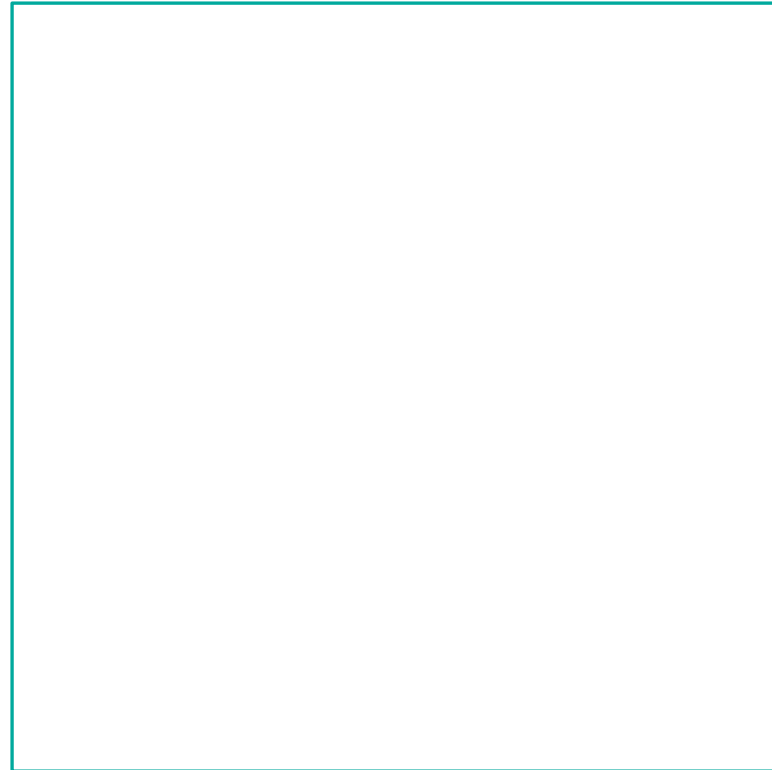
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Cut out each shape within each square.



# Mat: 4 x 4 Square

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“The Developing Mathematical Thinking Institute (DMTI) is dedicated to enhancing students’ learning of mathematics by supporting educators in the implementation of research-based instructional strategies through high-quality professional development, curricular resources and assessments.”

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