

# Spatial Thinking and Mathematics in Children with Down Syndrome

## New Insights on Learning and Development

Mathematics is an essential tool for helping children develop problem-solving, decision-making and other crucial skills, yet many children with Down syndrome struggle to foster these abilities. This study explores how spatial thinking—the ability to understand and visualize the position and relationships of objects—may play a key role in enhancing maths abilities for people with Down syndrome.

### About the Study

- ◆ **Participants:** 36 children and adults with Down syndrome (ages 9-35) and 132 typically developing children (ages 4-11 years) took part in the study.
- ◆ **Testing:** Participants completed different tasks related to maths (like arithmetic and geometry) and tasks that tested their ability to understand space and movement

1) Match each shape to its name.  
One has been done for you.



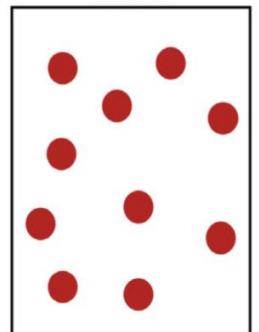
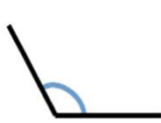
circle

rectangle

square

triangle

13) Circle the angles that are smaller than a right angle.



## Findings

The study revealed two main findings:

1. **Similar Development Pathways:** Mathematical development is delayed in children with Down syndrome but follows a similar pattern to typically developing children. This means that while children with Down syndrome may develop maths skills more slowly, their growth pattern/profile is similar to their peers.
2. **Spatial Skills and Maths Performance:** Stronger spatial skills were closely linked to better performance in arithmetic and geometry tasks for children with Down syndrome. This suggests that improving spatial thinking could be an effective way to enhance math abilities in children with Down syndrome.



These findings suggest that improving spatial skills, may help children with Down syndrome develop better math abilities, benefiting both schoolwork and everyday tasks. This research paves the way for future studies researching the effects of spatial training. We know that spatial skill training is effective in typically developing children but future research in people with Down syndrome could establish whether spatial training could offer parents and teachers a potential method to boost children's confidence and capabilities in mathematics.

The full research publication can be found at

[Exploring relative strengths in people with Down syndrome: Spatial thinking and its role in mathematics](#) by Su Morris, Emily K. Farran, Katie Gilligan-Lee

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