

# LEARNING ACTIVITY MATHEMATICS KNOWLEDGE & SKILLS

# PRACTICE AND PLAN TO MATHEMATIZE

# What does it mean to "mathematize?"

When teachers mathematize they bring out the math in what children are doing by commenting or questioning.

# Did you know?

- Preschool teachers' math talk correlates with children's gains in math knowledge over a school year.
- When teachers mathematize, they are helping children acquire "the language of mathematics," which also affects their mathematical skills.

#### What are some ways to start mathematizing?

- Ask problem-solving questions. Asking children to solve practical problems that emphasize mathematical thinking promotes their higher-order thinking skills and enlists them as contributing members of the classroom. An example of a problem-solving question might be, "What do you think will help you fill your bowl with yogurt the fastest, this small spoon or this medium-sized ladle? Which one do you want to use?"
- *Have back-and-forth exchanges.* When children offer their mathematical ideas, use back-and-forth exchanges to understand their thinking, encourage their language skills, and clarify their

understanding of certain concepts. An example of a mathematical back-and-forth exchange might be:

Sara: Teacher Carrie! Look! I made a house.

**Teacher Carrie:** You constructed a house using the blocks! It looks very sturdy. How would you describe your house? What shape is it?

Sara: Well, it's kind of squarish, and tall, and pointy at the roof.

Teacher Carrie: What makes this house squarish?

Sara: Its sides go like this: one, two, three, four (tracing each of the four sides), like a big square.

• *"Revoice" children's ideas.* Revoicing means saying a phrase or idea back to a child using similar language and asking the child if that is correct. An example of revoicing might be, "So you're saying that when we add all the apples together, we have eight?" Revoicing children's ideas can help teachers check their understanding of what children are saying and can also help children explain more clearly.





#### How can I practice mathematizing?

Look at each of the following pictures. How would you mathematize this moment with a child? Think of the domain elements of Mathematics Knowledge & Skills—Number Concepts & Quantities, Number Relationships & Operations, Geometry & Spatial Sense, Patterns, and Measurement & Comparison—and then whether you would use a problem-solving question, back-and-forth exchange, and/or "revoicing" to extend the child's math learning. Write down a few ideas about how you might mathematize in each situation.



Problem-solving questions, back-and-forth exchanges, and/or revoicing children's ideas:

1.

2.

3.





Problem-solving questions, back-and-forth exchanges, and/or revoicing children's ideas:

1.

2.

3.



### Planning to mathematize!

Think of three areas of the room where you will look for opportunities to mathematize with children:

1.

2.

3.

What materials will you add to these areas to help children engage in play and exploration that also includes mathematical ideas?

1.

2.

3.

# References

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- Klibanoff, R. S., Levine, S. C., Huttenlocher, J., Vasilyeva, M., & Hedges, L. V. (2006). Preschool children's mathematical knowledge: The effect of teacher "math talk." *Developmental Psychology*, 42(1), 59–69.



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