

Round the Circle

Science for 3–5 year-olds



At SCIENCE WORLD we know that early childhood educators are already providing many opportunities for young children to explore their world. We hope that these resource materials complement what you are already doing and offer additional ideas to inspire further exploration.

The activities have been designed for experiential learning. The intent is for children to experience each concept rather than simply talking about it.

Each activity can serve as a starting point for further exploration.

The activities are divided into the following categories:

Introductions—These could be used to set the stage for the topic, or to find out how much the children already know. They're low-preparation, low-mess activities for a large group to do together.

Explorations—These require a bit more set-up and clean-up. They work best with small groups of children. They're intended to be open-ended, with a teacher or other adult available to pose questions and expand the activity as required.

Make This—These explorations result in a product that children could take home or display.

All Together—This big whole-group activity would make a great wrap-up to the topic.

Connections—Ideas for extending the topic in cross-curricular ways.

You know your group best! There is no perfect way to order or arrange these activities. They could be combined into a whole day on a theme, or taken one at a time over several weeks. Please pick and choose, expand or contract as makes sense for your group of children.

Topics

Now Available:

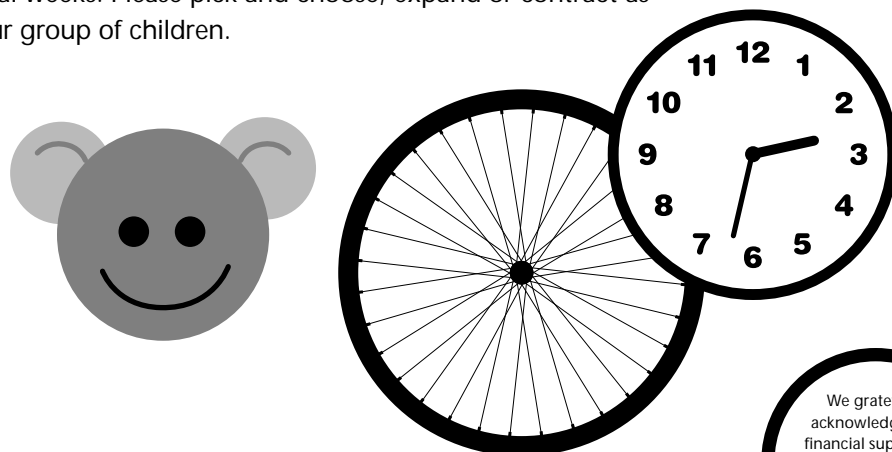
Round the Circle

Activities to explore round things, things that roll, and things that spin.

Wet & Dry

Activities to explore being wet and dry.

Check for more resource packages coming soon at www.scienceworld.ca/preschool.html



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Science World British Columbia

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We gratefully acknowledge the financial support of the Province of British Columbia through the Ministry of Education.

Round the Circle: Introductions



The flowchart shows you one possible way to put the activities together. We used it to create a one-hour workshop for 16 three- to five-year-olds in a Montessori classroom.

A path through 'Round the Circle'

Here's one possible way to put the activities in this resource together.

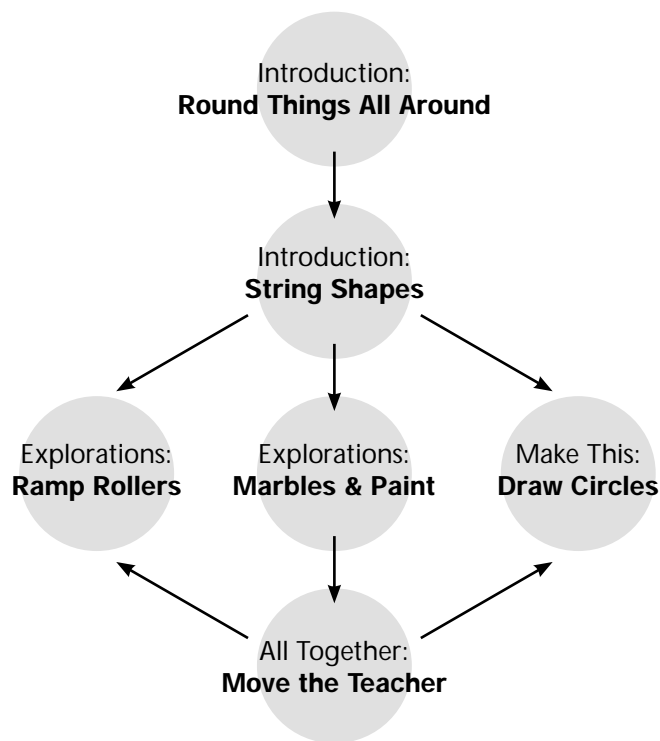
We did the **Introductions** at circle time in a large group.

The children tried out the **Explorations** and **Make This** in smaller groups at stations around the room.

We did the **Move the Teacher** all together just before the end of the school day.

Thank-you to Lise-Lotte Loomer who devised and tested the Big Science for Little Hands activities.

Thanks also to the staff and students of Reach for the Stars Montessori Learning Academy.



Share with us!

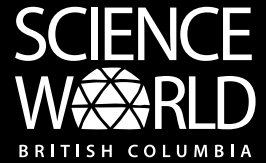
Please send us your feedback, suggestions and ideas.

Email bslh@scienceworld.ca

Or visit www.scienceworld.ca/preschool.html and fill in an online survey.



Round the Circle: Introductions



Round Things All Around

Circles and spheres are everywhere!

What you need

- Paper
- Photographs of round things
- Camera (optional)

Hands-on

- Look for round shapes in the classroom or playground, or on a walk in the neighbourhood.
- Take photos to make a display.



And/or

- Show photos of round things from everyday experience (apple, wreath, bicycle wheel, tree stump, buttons, open umbrella, balloon, door knob, pie, clock, CD, coins...). Have the children identify them and suggest others.

And/or

- Give each child a circle of paper and ask them to draw things that are round or circular.

Key Questions

What things do you see around you that are round?

Notes for next time

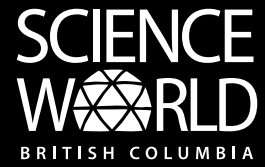
Hint

You could cut pictures of round things from old magazines or use the ones included on the following page.

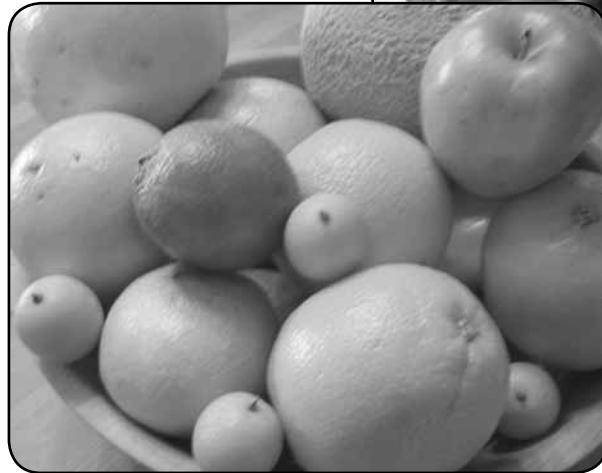
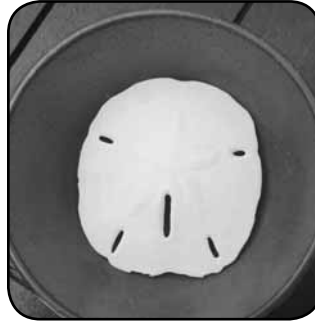
Where to next?

- INTRODUCTIONS
 - ▶ Round Things All Around
 - String Shapes
- EXPLORATIONS
 - Playground Balls
 - Ramp Rollers
- MAKE THIS
 - Marbles & Paint
 - Draw Circles
 - Build With Circles
- ALL TOGETHER
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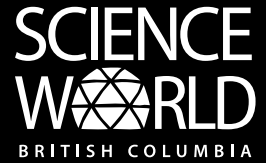
Round the Circle: Introductions



Round Things All Around



Round the Circle: Introductions



String Shapes

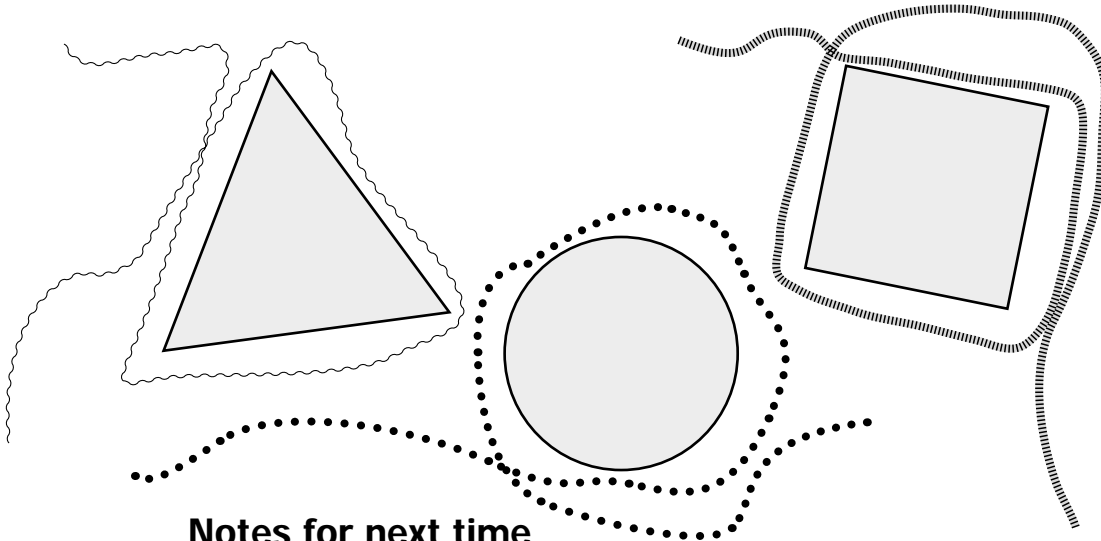
The same length of string can make many different shapes, including a circle.

What you need (for each child)

- one piece of string 25 cm long
- pre-cut shapes (see String Shapes Template)

Hands-on

- Ask the children to make a square, then a triangle, and then a circle with their string.
- They can place the string around the pre-cut shapes, then take the paper shape away to see the outline.



Notes for next time

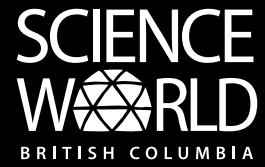
Hint

Instead of string you can use bathroom chain, or a garland of beads as for a Christmas tree.

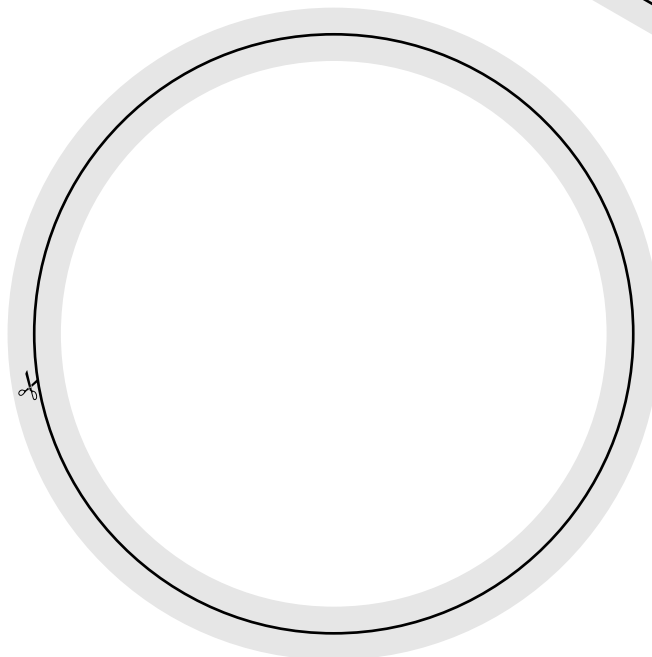
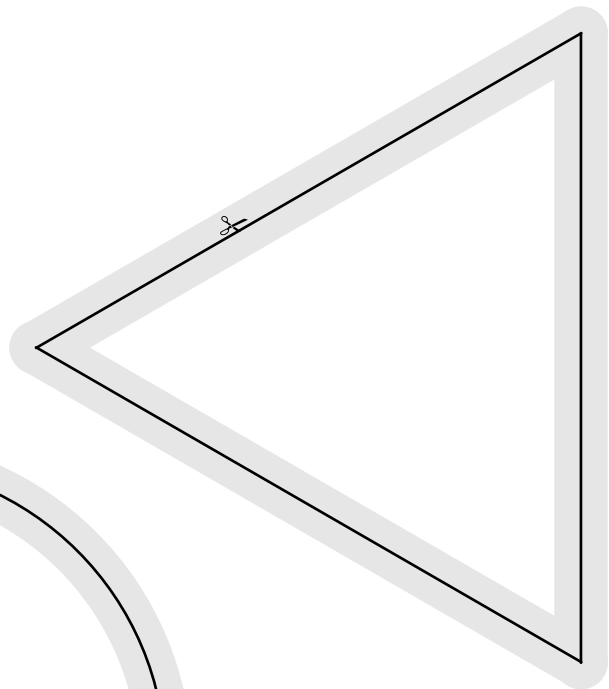
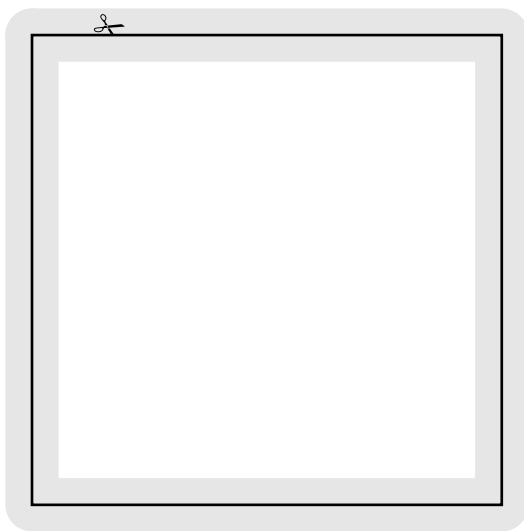
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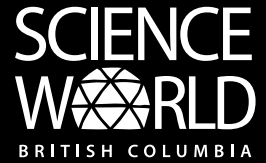
String Shapes: Template



These shapes all have a perimeter of 25cm. Use to photocopy and cut out for templates. Coloured papers work best.



Round the Circle: Explorations



Playground Balls

Although these balls are all round (spherical) they can behave quite differently. Heavier or larger balls are harder to get rolling, but roll farther and are likely easier to control.

What you need

- Many different kinds of balls
- Big open space
- Chalk or tape

Hands-on

- Create a target on the ground with chalk or tape.
- Roll balls toward the target.
- Describe how they move.

Key Questions

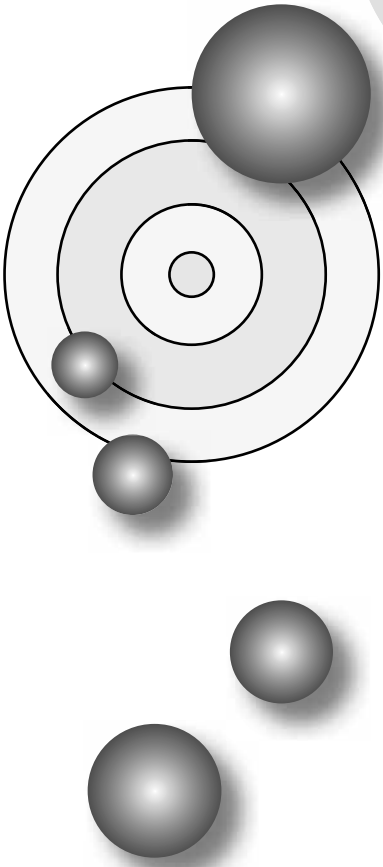
Which balls are easiest to roll?

Which ones are easiest to aim?

Notes for next time

Hint

Try a pilates ball filled with water, tennis ball, extra bouncy ball, marble, soccer ball, balloon...



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Round the Circle: Explorations

Big
Science
for Little Hands

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Ramp Rollers

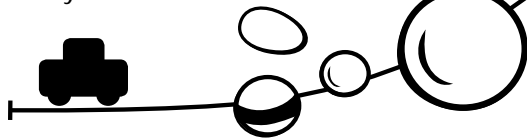
Round things will roll, square-ish things won't. We use wheels to help move things that aren't round.

Things roll and slide more slowly on a sticky or bumpy surface. (The sticky or bumpy surface has more friction.)

Things roll faster down a steeper ramp.

What You Need

- ramp*
- variety of small balls and cylinders
- rectangular, square, or triangular blocks
- empty (or full) plastic bottles
- toy cars or trucks



Hands-on

Set up a ramp and collect a variety of balls and blocks.

Roll and slide different things down the ramp.

Ask questions to encourage observation.

Questions to Ask

Can you make each object move from the top of the ramp to the bottom?

Which shapes move easily and which don't move so well?

Which shapes roll and which shapes slide?

What can you use to help a block move to the bottom?

What Next?

- What would happen if the ramp were steeper?
- What would happen if the ramp were bumpy/ fuzzy/ sticky? Cover your ramp with a towel, a rug, or a piece of non-slip carpet underlay and find out.
- Try a really big ramp—use the slide at the playground!



Hint

Plastic 'Easter' eggs or Kinder Egg containers can be used to make rollers with strange behaviour. Put a large marble or lump of Plasticine inside the egg and seal it shut. Bring out the toy cars after you have experimented with the other materials.

*Hint

Use a big piece of cardboard, a storage box lid, or a piece of wood. Prop up one end with blocks or cushions.

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Round the Circle: Make This



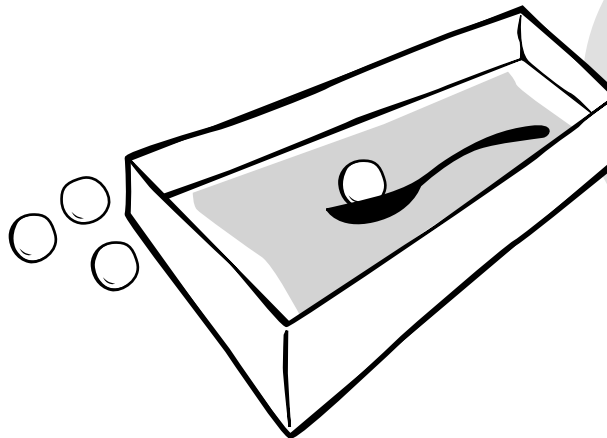
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Marbles and Paint

Make a record of where something has rolled.

What You Need

- liquid tempera paint
- marbles or small balls
- shallow box*
- paper
- spoon
- small bowl



Hint

Make a suitable box by cutting one of the large sides off a cereal box or use a rectangular cake pan.

Hands-on

1. Cut paper to fit the bottom of each box.
2. Pour a little bit of paint into the bowl. Drop a marble into the paint.
3. Scoop the marble out of the paint with the spoon and drop it into the box on top of the paper.
4. Tip the box to roll the marble around.

Questions to Ask

Where did the marble go? How do you know where it went?

Can you make a curved line?

Can you get the marble to the middle?

What Next?

- Use more than one colour of paint.
- Roll more than one marble at a time.
- Use small balls with textured surfaces instead of marbles.
- Use a rock dipped in paint instead of a marble.
- Start with a dry marble and put a blob of paint on the paper. Challenge your child to roll the marble through the paint.
- Use a bigger tray and have two children work together to steer the marble.
- Use toys with wheels to make wheel tracks in paint, play dough, or sand.

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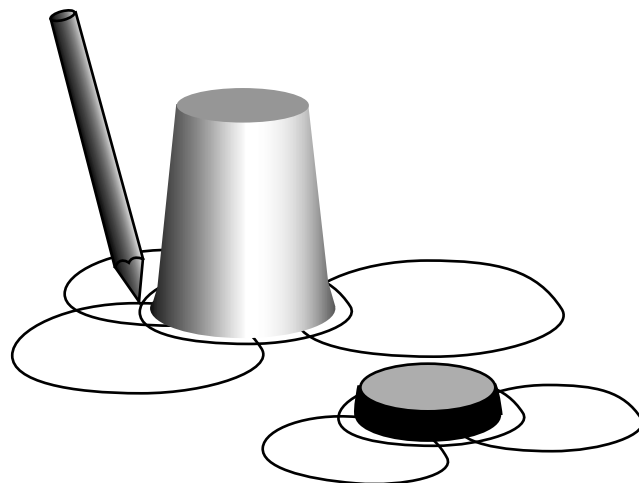


Draw Circles

There are many ways to draw a circle.

What you need

- Compass
- Pencil with string attached
- Assorted round containers or cups
- Paper
- Crayons or felt pens or pencils
- Paint or stamp pad



Hands-on

- Children can use the compass or trace around the round containers and lids to make circles.
- Children can dip round things in paint or press onto a stamp pad to make round prints.

What next?

Build with Circles (next *Make This* activity)

Use clip art or draw pictures of vehicles with no wheels. Children can trace or stamp the wheels onto the drawing.

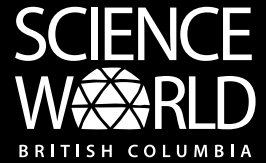
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Round the Circle: Make This



Build With Circles

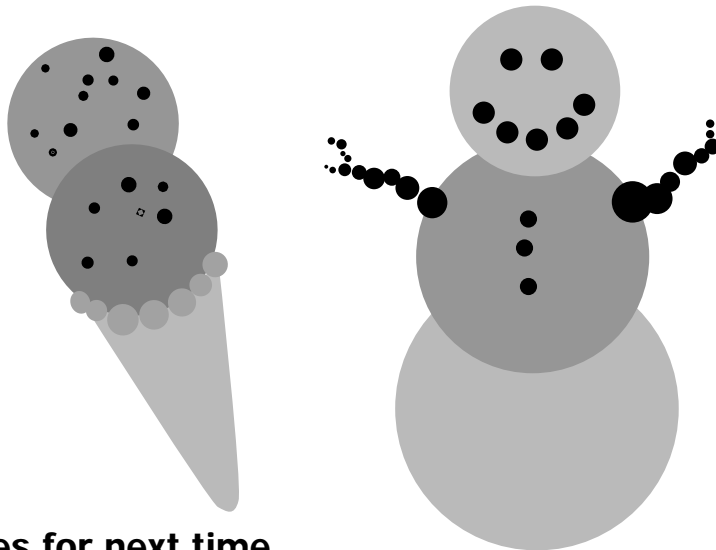
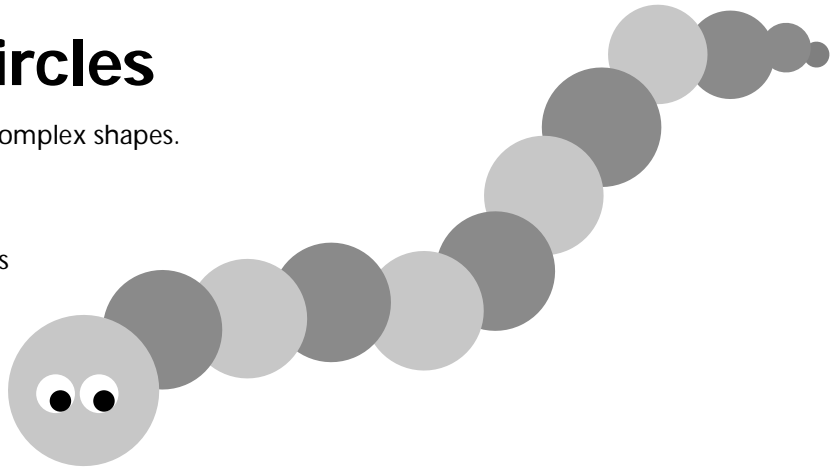
Circles combine to make more complex shapes.

What you need

- Coloured paper cut into circles
- Crayons
- Glue sticks

Hands-on

- Children can put together the paper circles to make snow people, caterpillars, or whatever their imagination suggests.



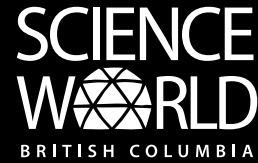
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Round the Circle: All Together



Move the Teacher

We use rollers or wheels to help move things. The sliding friction of the board against the floor is much greater than the rolling friction of the rollers on the floor.

What you need

- Sturdy board or overturned table
- Rope attached firmly to board or table
- Sturdy cylindrical dowels or pipes



Hands-on

- The teacher (or another adult) sits on the board. Children try to pull the board along the carpet or floor (it's hard to do!). How can the task be made easier?
- With the dowels or pipes under the board, it will roll smoothly and one child should be able to pull the teacher.
- The other children will need to take rollers from behind the board and move them to the front in order to keep rolling forward.

Key question

Which way was it easier to move the teacher?

Notes for next time

Hint

We used ABS pipe from Home Depot, cut into pieces a little longer than the width of our board. Home Depot will usually cut the pipe for you if you ask.

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Round the Circle: Connections



More Ideas

Round songs, rhymes, stories, circle games

- The Wheels on the Bus
- Ring Around the Rosie
- Round and Round the Garden Goes the Teddy Bear
- She'll be Comin' Round the Mountain
- Hokey Pokey
- Duck, Duck, Goose

Round snacks

- Cut sandwiches into round shapes (or use round bread)
- Round cookies or crackers
- Round slices of fruit or vegetables

Children's books about circles, wheels, and other round things

Round Is a Mooncake: A Book of Shapes by Roseanne Thong

Round and Around by James Skofield (Author), James Graham Hale (Illustrator)

What is Round? by Rebecca Kai Dotlich (Author), Rebecca Kai-Dotlich (Author), Maria Ferrari (Illustrator)

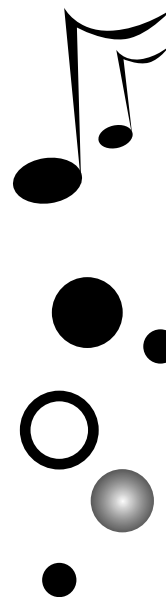
The Missing Piece by Shel Silverstein (Author)

Resources for teachers

Worms, Shadows and Whirlpools: Science in the Early Childhood Classroom by Karen Worth and Sharon Grollman

Exploring Water with Young Children by Ingrid Chalufour and Karen Worth

More Than Magnets: Exploring the Wonders of Science in Preschool and Kindergarten by Sally Moomaw and Brenda Hieronymus



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