



Solids of Revolution (BeetleBlocks)

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Project Goal:

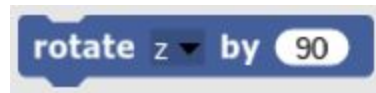
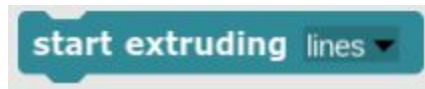
Students will understand the structures of curved shapes as being products of revolution around an axis.

Standard:

[CCSS.MATH.CONTENT.HSG.MG.A.1](#)

Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

Blocks:



[Student Guide](#)



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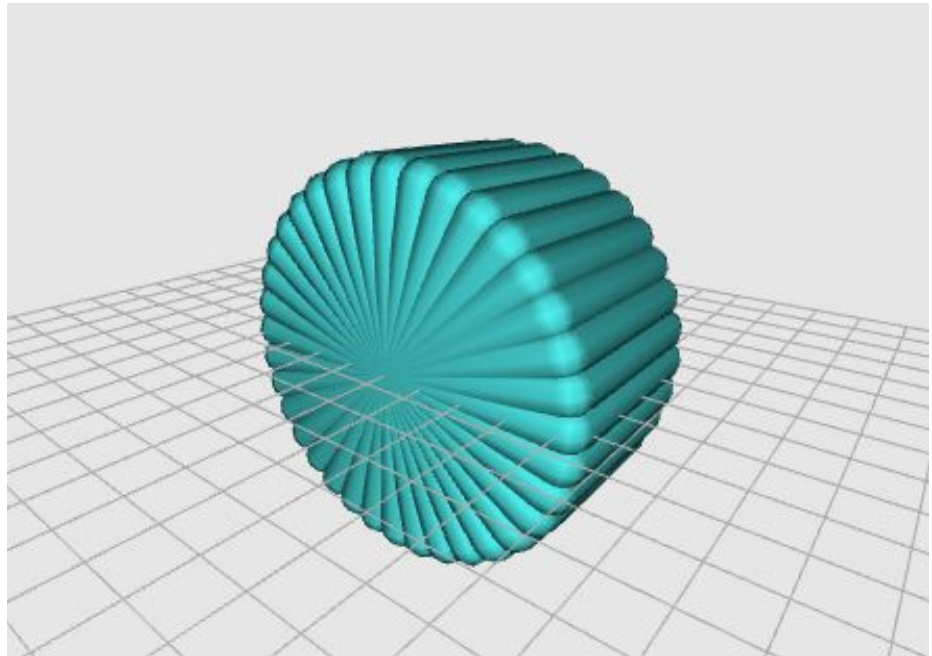
Teacher Guide:

We highly recommend you program the cylinder using the student handout, and explore your own solid of revolution prior to the lesson with students so that you're better able to help troubleshoot :)

Cylinder Possible Solution:

```

when clicked
  reset
  start extruding lines
  repeat 36
    repeat 4
      move 4
      rotate z by 90
    rotate y by 10
  
```

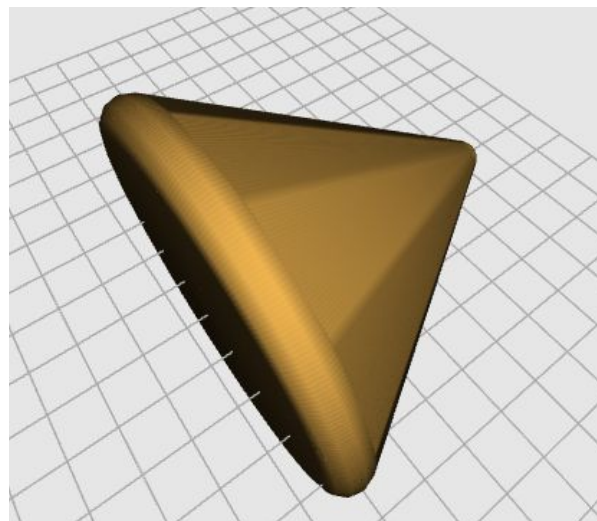


*Note that the outer repeat loop and the rotation around the y-axis should result in a product of 360 to close a full rotation. The smaller the rotation of the y-axis, the smoother the solid becomes.

Possible Code for Cylinder:

```

when clicked
  start extruding lines
  set hue to orange
  repeat 360
    move 4
    go to x: 0 y: 7 z: 0
    go to x: 0 y: 0 z: 0
    rotate y by 1
  
```



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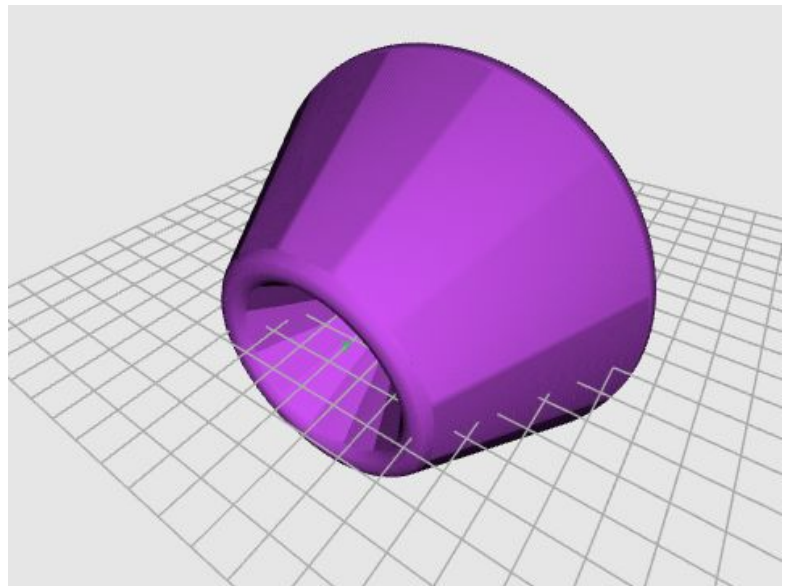
Note that for a cone, a triangle is the 2D shape being rotated so it may be difficult for students to close the triangles using the move and turn blocks without higher mathematics.



I have found it easiest to try and make the final side of the shape travel down the y-axis back to (0,0,0) so that the rotation style used in the investigation works as intended.

Sample Code for Truncated, Shelled Cone:

```
when clicked
  start extruding lines
  set hue to orange
  repeat 360
    repeat 3
      rotate z by 120
      move 6
    rotate y by 1
```



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