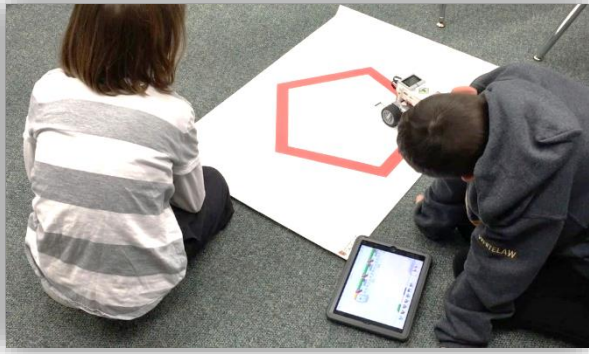


Polygon Task

Task Description

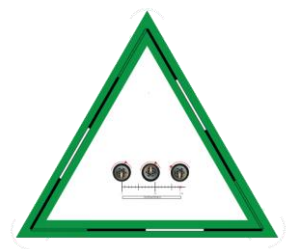
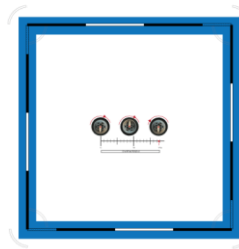
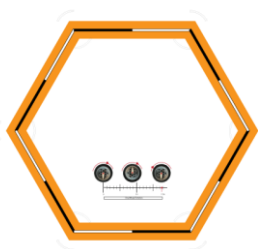


The challenge is to program the robot to trace the polygon. Programming the robot to follow a regular polygon reinforces understanding of the properties of 2D shapes and incorporates measurement of distance and angles in terms of wheel rotations, which requires multiplication and proportional thinking. It also helps with learning number sense.

Materials Needed

- You can use **tape** for marking a polygon on floor
- Basic **EV3 robot** built from the instruction manual (no sensors needed)
- Alternatively, use **Polygon**

Mats. We have four different shapes available. We recommend printing the mats on smooth vinyl, using a 3' x 3' format. Estimated cost: CAD 50 per mat.



- Please find copies of the mats in **standard resolution** available for download [HERE](#):

[Mat 1](#), [Mat 2](#), [Mat 3](#) and [Mat 4](#),

and **high-resolution** copies [HERE](#) (7.5 MB each):

[Mat 1](#), [Mat 2](#), [Mat 3](#) and [Mat 4](#)

Key Understandings

- Relates length of polygon side to robot's wheel rotations by estimating measurement and movement
- Relates angle of polygon to robot's wheel rotations by estimating measurement and movement
- Translates measurements into programming code to move a robot a specific distance and turn a specific angle

Advanced Understanding of Programming Code

Students start using a loop program for the robot to trace out a regular polygon.

If you would like any further information on number sense and how it can be learnt using robots, please read¹:

Francis, K., & Poscente, M. (2016). Building number sense with Lego® robots. *Teaching Children Mathematics*, 23(5), 310–314. <https://doi.org/10.5951/teacchilmath.23.5.0310>

¹ Note: An older version of the EV3 software was used in the article.