Creating a Gear Amusement Park

Grades: K-2

Subject Areas: Computer Science, Engineering, Reading/Language Arts

CS Domains: Computing Systems (troubleshooting), Data Analysis (modeling), Algorithms & Programming (modularity)

CS Practices: Fostering an Inclusive Computing Culture, Collaborating Around Computing, Recognizing and Defining Computational Problems, Developing & Using Abstractions, Testing and Refining Computational Artifacts, Communicating About Computing

CS Standards: **2.CS.T.01** Recognize computing systems might not work as expected and identify and effectively communicate simple hardware or software problems and implement solutions (e.g., app or program is not working as expected, no sound is coming from the device, caps lock turned on) and discuss problems with peers and adults. **2.DA.CVT.01** With guidance, collect data and independently present the same data in various visual formats. **2.AP.A.01** With guidance, identify and model daily processes by creating and following algorithms (sets of step-by- step instructions) to complete tasks (e.g., verbally, kinesthetically, with robot devices, or a programming language).

Objective/Goal: Students will collaborate respectfully together, to accomplish the task of building a gear amusement park that turns, then write an algorithm describing their formation, trade algorithms with another group, test the algorithms, then reflect upon their work.

Materials: Funny Gears & Bricks Set, Algorithm Template, Reflection Page

Vocabulary: power brick, bricks/gears, record, design, detailed, algorithm, reflection

Anticipatory Set: Help! These bears and monkeys are SOOOOO bored! Work together with your group to create an amusement park for them to ride. BUT make sure you pay close attention, because you'll need to record your steps as you write a detailed algorithm so another group can follow your directions to make the exact same amusement park you did. Good luck!

Direct Instruction: Purposefully design groups, pass out materials, and demonstrate how to place a few bricks/gears together to build students' background understanding. Talk through the algorithm template so they know which picture goes where and how to make sure it's detailed enough to trade with another group.

Guided Practice: Let students get to work! Walk around and monitor progress. Guide work and answer questions as needed.

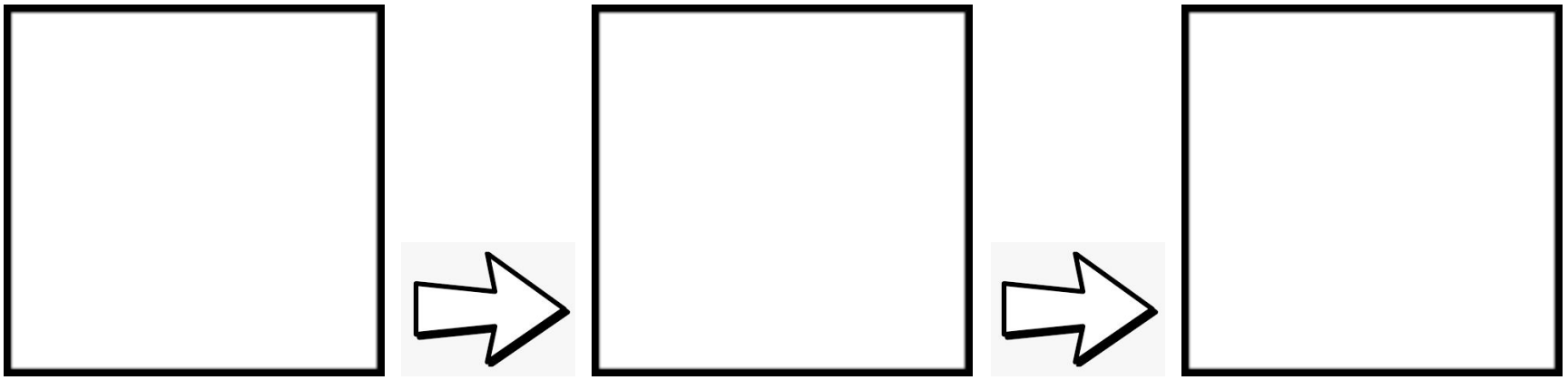
Independent Practice: Have students build, draw an algorithm, trade with another group, build again, reflect upon what went well/didn't and what they would do differently next time.

Closure: Have the groups come back together and discuss today's work together as a class. Begin with a turn & talk, then share out with everyone. This will help give students a good review, ideas, and vocabulary to use when completing their reflection.

Assessment: Teacher observation/notes, Group Algorithms, Student Reflections

Group Names_____

Draw your brick design. Draw your gear design. Draw your amusement park.



Now trade this paper with another group!

- Use their algorithm to see if you can build a matching gear amusement park!

- Was your algorithm clear enough for the other group to follow and match?

_____’s Self Reflection

My group built an amusement park and the gears turned.

We were able to follow the other group’s algorithm and correctly build their design.

The other group was able to follow our algorithm and correctly build our design.

Think about what went well today. Think about what didn’t go well today. Write about what you would do differently next time as you’re building and drawing your algorithm.

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