

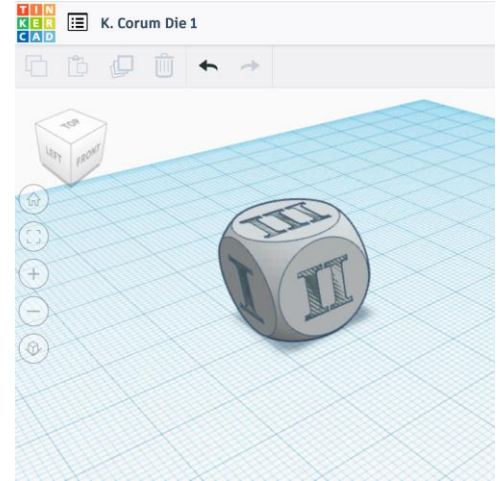
Integrating Making into Instruction: Mathematics

Dice Problem

Design a pair of six-sided dice such that when you roll the two dice together, you can roll any of the sums from 1-12 (and only the sums from 1-12) and all of the sums have the same probability (e.g., the probability of rolling a 7 is the same as the probability of rolling a 12). There are no restrictions on what values you can put on each die.

Students can fabricate their dice using TinkerCAD and a 3D printer. With the physical dice, they can then compare the theoretical probability with the empirical probability.

This task can be used to introduce students to computer-aided design and 3D printing.



Aligned Common Core Standards

- Investigate chance processes and develop, use, and evaluate probability models (MATH.CONTENT.7.SP.C)
- Make sense of problems and persevere in solving them (MATH.PRACTICE.MP1)
- Reason abstractly and quantitatively (MATH.PRACTICE.MP2)

Applicable Maker Technology

- Computer-Aided Design (CAD)

<http://www.tinkercad.com>

TinkerCAD is a free web-based CAD program with several built-in tutorials.

- 3D Printing

Observations from the Field

This task was first implemented in SEMS 250 (Perspectives in Science and Mathematics), which is a required course for students in the UTeach program. The task was presented over the course of two 50-minute class meetings. In the first session, students learned about the history of dice and the development of dice over time and solved the problem described above. In the second session, students were introduced to TinkerCAD through the use of a self-paced tutorial developed by the course instructor. As students finished their 3D designs, they emailed the .STL file to the instructor to be 3D printed. Many students were excited to translate the dice they designed into physical models. In fact, several students continued to “tinker” with TinkerCAD after the class ended to get their designs just right!



Scan the QR code to download activity materials!

Want more information? Please contact:
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Integrating Making into Instruction: [Content]

[Task Title]

[Brief description of the task/station]

Add Picture

Aligned Common Core Standards

- [Add aligned content standards]

Applicable Maker Technology

- [List technologies used]

Observations from the Field

[Brief description of experience when implementing the task with students]

Add QR Code

Scan the QR code to download activity materials!

Want more information? Please contact

[Name, Title]

[email address]