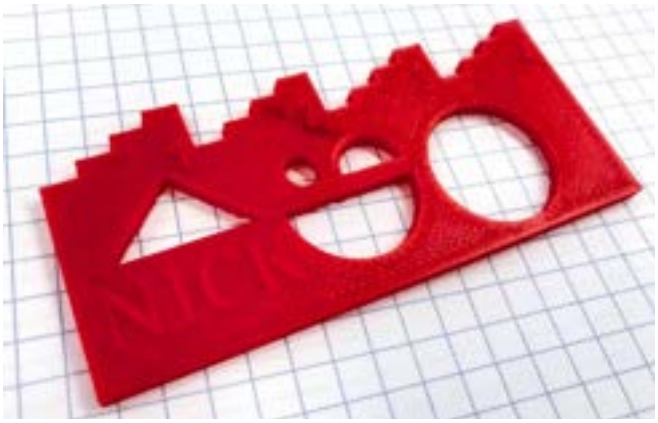
Personalized Rulers

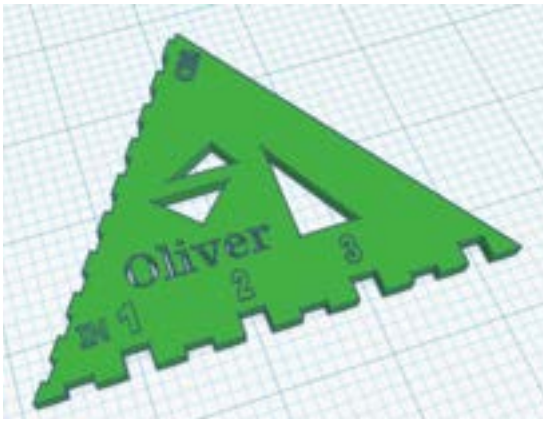
Shared by: MIT K-12 Maker Lab Team

Specialized tools and materials used:	**Experience level required:**
Tinkercad.com or similar modeling software	Beginner
3D Printer, slicer, and filament ***Or*** laser cutter or craft/vinyl cutter	Beginner

Grade Level and Subject (of this example): Grade 5 Math

Topic/Content Standards (for this example): Use appropriate tools strategically [5.5], Convert like measurement units within a given measurement system [5.MD-A]

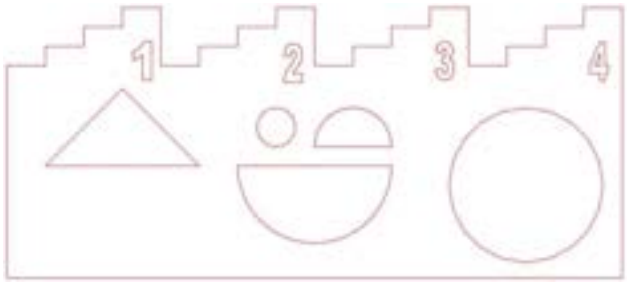


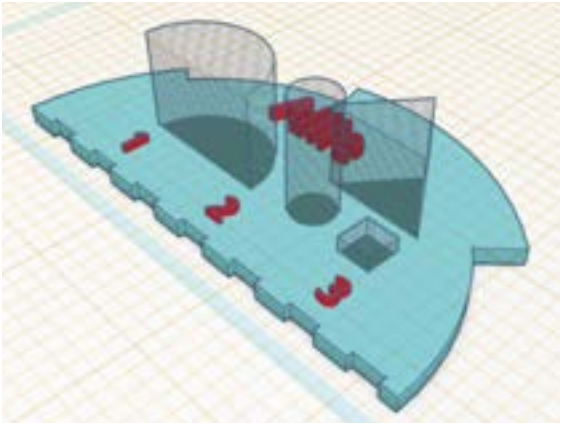


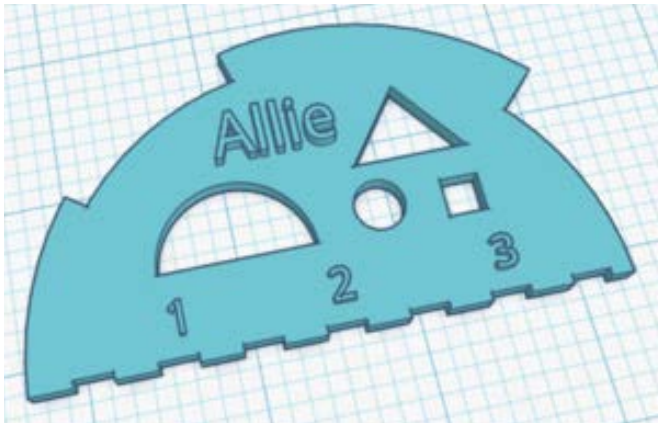
Summary of Project:

Students use Tinkercad to design their own rulers with custom units and features. The rulers can be designed for fabrication on a 3D printer, a laser cutter, or vinyl or craft cutter. In the example above, Fifth Grade math students were asked to create a 3D design that included a unit of measurement with subdivisions, and three or more shapes. This student opted to incorporate inches and quarter inches along the top, and several cut out shapes in the center, some of which suggest a smiley face.

Begin by examining existing rulers and measuring tools. Have students sketch or document the ones that they like, taking note of qualities that ruler or device is used to measure. Then, brainstorm several ideas for custom rulers. Students may create custom units of measurement and features, or use an existing system. Prototype with physical materials, or jump into modeling in Tinkercad. When students are ready to fabricate their custom rulers, Tinkercad can export the file as an STL file suitable for 3D printers, or an SVG file suitable for laser cutters or vinyl cutters.







Suggested resources

- Personalized Rulers Instructable with detailed step by step instructions and tutorial videos
- Tinkercad.com modeling platform or similar

Possible Content explorations [example MA Content Standards]

- **SEL:** Create representations of a growth mindset [Self Awareness]
- **History & Social Science:** Timelines, migration routes, or important dates