Basic Building Components

v3.0

Kid Spark Basics | Curriculum Packet

Overview:

In this lesson, students will become familiar with the basic building components that are included in Kid Spark STEM Labs. Students will learn how to connect and disconnect building components, as well as how to add strength to a design. Then, students will work as a team to create a custom design.

Click here **to explore the entire Kid Spark Curriculum Library.**

Learning Objectives & NGSS Alignment:

- Locate, observe, and organize basic building components.
- Practice connecting and disconnecting basic building components.
- Add strength to a design using basic building components.

Scientific/Engineering Practice - Asking questions & defining problems
Crosscutting Concept - Structure and function

Activity Time:
60 Minutes

Targeted Grade Level:
2 - 8

Student Grouping:
Teams of 2

Additional Lesson Materials:
- Teacher Lesson Plan
- Student Engineering Workbook

Kid Spark STEM Lab:
STEM Pathways

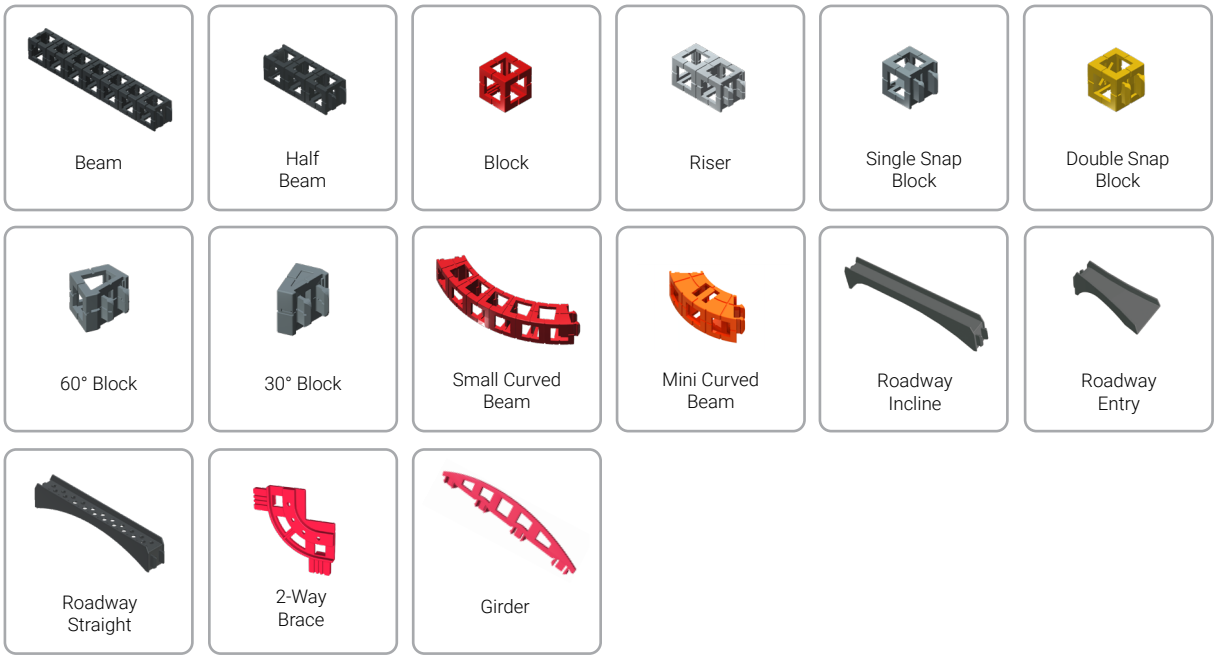
Note: *Two teams can share the engineering materials from one lab.*

Convergent Learning Activity:

1. **Explore Basic Building Components**

Basic building components are used to create the structural framework of a design, or to add strength to a design.

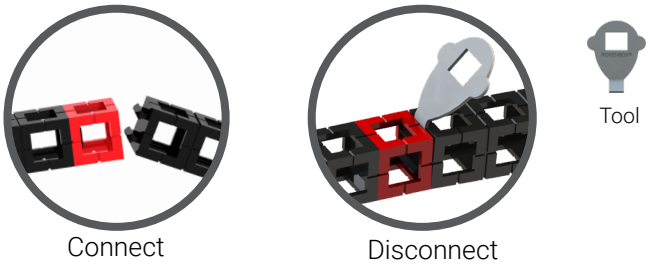
Instructions: Locate each of the following basic building components in the Kid Spark STEM Lab.



2. Practice Connecting and Disconnecting Basic Building Components

Kid Spark engineering materials use a tab and opening system to connect. Tabs can be snapped directly into openings or across openings.

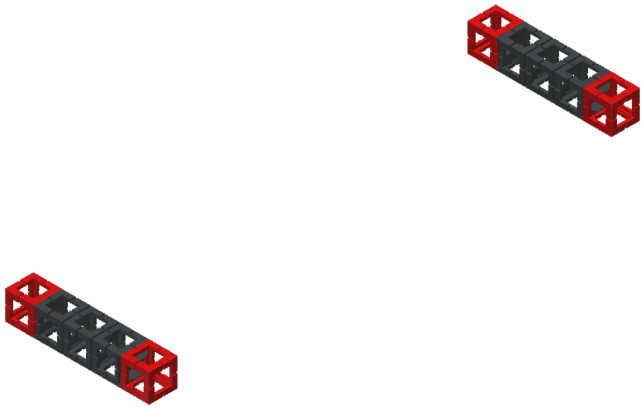
Instructions: Practice connecting and disconnecting basic building components. To connect, angle tabs into opening (as shown below), then snap into place. To disconnect, insert tool into slot and twist.



Instructions

Follow the step-by-step instructions to assemble a simple structure.

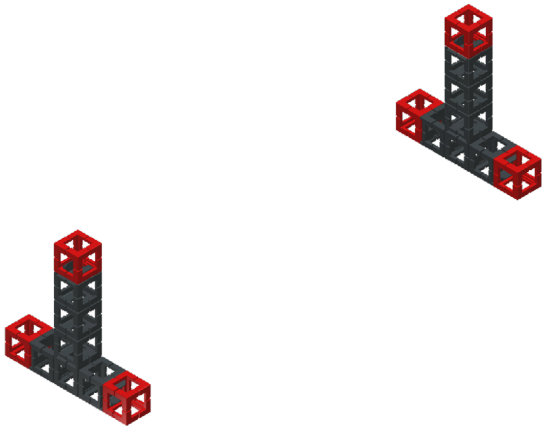
1



2x
Half Beam

4x
Blocks

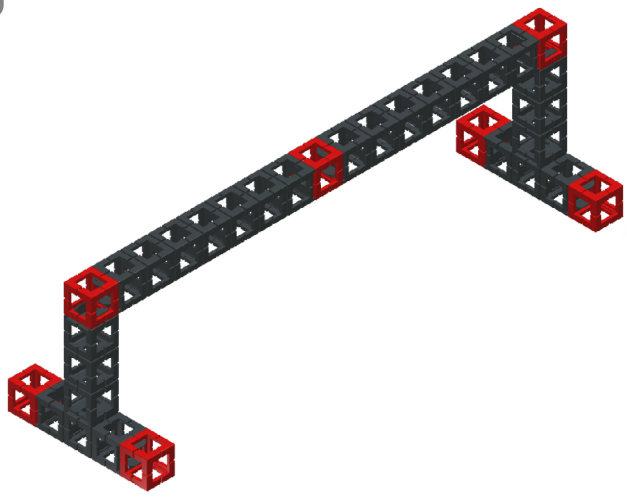
2



2x
Half Beam

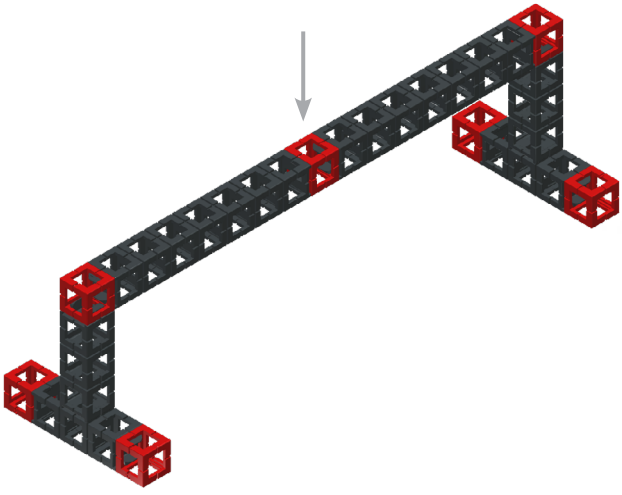
2x
Blocks

3



2x
Beam

1x
Block

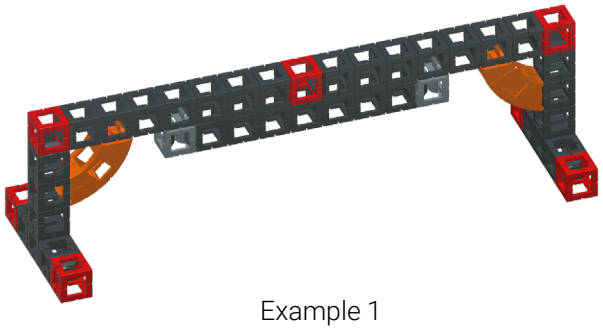


Instructions:

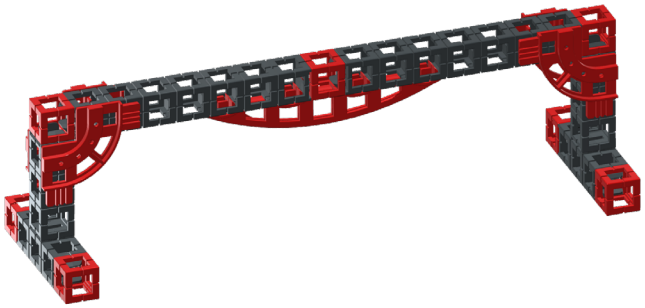
Place pressure on the middle of the structure until it breaks. Then, put the structure back together again.

3. **Using Basic Building Components to Add Strength to a Design**

Instructions: Using only basic building components, explore some ways to add strength to the structure (see examples below). Place pressure on the middle of the structure to test if it is stronger.



Example 1

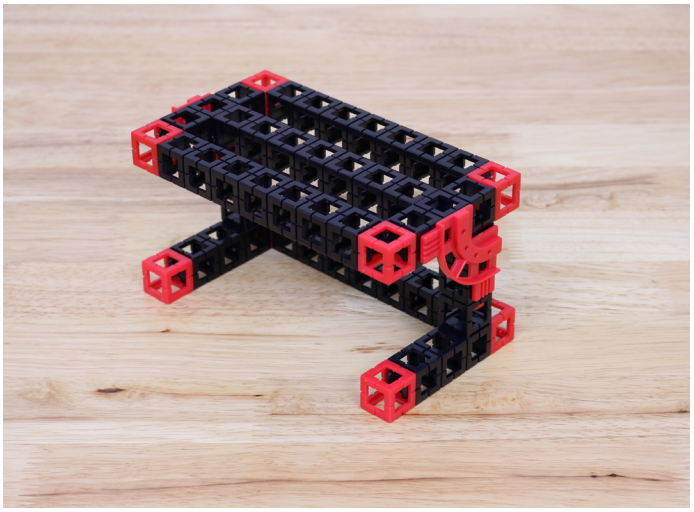


Example 2

Divergent Learning Activity:

1. **Free build**

Instructions: Spend 5 - 10 minutes creating a simple design using only basic building components. Look for opportunities to make the design strong and sturdy. Be prepared to share your design with the rest of the class. See examples below.



Example 1 - Small Desk/Table

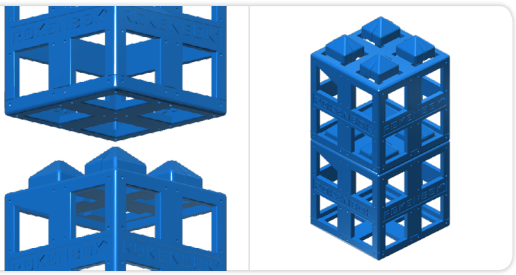
Example 2 - Glasses/Spectacles

Building Basics

The following tips will be helpful when using Kid Spark engineering materials.

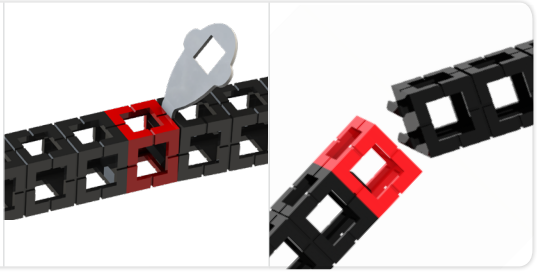
Connecting/Separating ROK Blocks:

ROK Blocks use a friction-fit, pyramid and opening system to connect. Simply press pyramids into openings to connect. To separate blocks, pull apart.



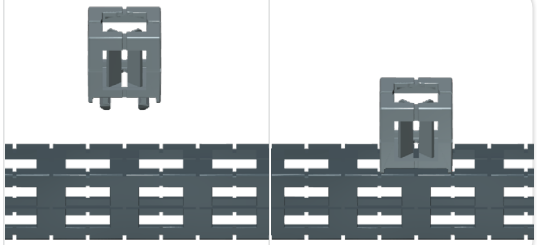
Connecting/Disconnect Smaller Engineering Materials:

Smaller engineering materials use a tab and opening system to connect. Angle one tab into the opening, and then snap into place. To disconnect, insert key into the engineered slot and twist.



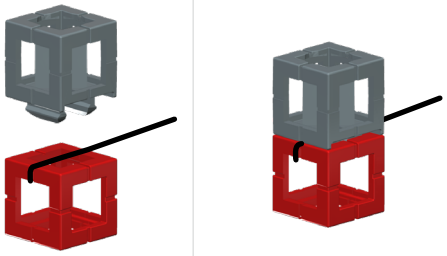
Snapping Across Openings:

Materials can be snapped directly into openings or across openings to provide structural support to a design. This will also allow certain designs to function correctly.



Attaching String:

In some instances, string may be needed in a design. Lay string across the opening and snap any component with tabs or pyramids into that opening. Be sure that the tabs are perpendicular to the string to create a tight fit.



Measuring:

The outside dimensions of a basic connector block are 2 cm on each edge. This means the length, depth, and height are each 2 cm. To determine the size of a project or build in centimeters, simply count the number of openings and multiply by two. Repeat this process for length, depth, and height.