

Project 20

Brick Blow-up

Objective: Child will understand that resizing something involves scaling through multiplication.

Essential Question(s): How do you make something bigger or smaller while maintaining its proportions?

Special Materials: Laptop and projector with an image in a word processing program

Bricks Required: 1x2 bricks, 2x4 bricks, 4x4 plates, 8x8 plates, 16x16 plates

Project Structure:

Engage/Explain:

1. Ask if child has resized pictures before, and if so, how they've done it.
 - a. Show a picture in a word processing program and ask what would happen if the sides or top and bottom were lengthened (it would distort the picture).
 - b. Ask what happens when a corner is pulled out (it keeps the same scale). Connect the idea of scale to the idea of resizing, emphasizing that if you want to make something bigger or smaller, you need to make it bigger or smaller in all directions, not just one.

Explore/Explain:

1. Hand out 1x2 bricks and 4x4 plates and ask child to make a small creation, using 10-16 bricks. The base should be a foundation for the creation.

2. Once child has made the creation out of 1x2 bricks, pass out 8x8 plates and 2x4 bricks and ask if they know what is similar about the 1x2 and 2x4 bricks (and the 4x4 and 8x8 plates). Child may notice that they have similar proportions.
 - a. Following the brick placement on their original design, child uses the 2x4 bricks in the same placement as the 1x2 bricks.
 - i. Child can use the same quantity and placement of bricks on the horizontal axis (2x4s are already doubled in that direction), but will need to double the height of the bricks.
 - b. Ask child to notice that everything is doubled on their new model, both height and width.
 - i. Challenge child to triple their original creation, asking what they will need to keep in mind (triple height and width of 1x2 bricks; be careful to multiply size correctly since there aren't any bricks that are three times the size of a 1x2).

