## Unit 2 Lesson 1: Let’s Make a Box

### 1 Which One Doesn’t Belong: Boxes (Warm up)

#### Student Task Statement

Which one doesn’t belong?

A.

length: 4 cm

width: 8 cm

height: 10 cm

B.



C.



D.



### 2 Building Boxes

#### Images for Launch



#### Student Task Statement

Your teacher will give you some supplies.

1. Construct an open-top box from a sheet of paper by cutting out a square from each corner and then folding up the sides.
2. Calculate the volume of your box, and complete the table with your information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| side length of square cutout (in) | length (in) | width (in) | height (in) | volume of box (in3) |
| 1 |   |   |   |   |
|   |   |   |   |   |
|   |   |   |   |   |

### 3 Building the Biggest Box

#### Student Task Statement



1. The volume $V(x)$ in cubic inches of the open-top box is a function of the side length $x$ in inches of the square cutouts. Make a plan to figure out how to construct the box with the largest volume.
* Pause here so your teacher can review your plan.
1. Write an expression for $V(x)$.
2. Use graphing technology to create a graph representing $V(x)$. Approximate the value of $x$ that would allow you to construct an open-top box with the largest volume possible from one piece of paper.



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