THE
REIMAGINED
CLASSROOM

NAME _____     DUE DATE _____

**Performance assessment: 7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.**

# SKYSCRAPER CITYSCAPE

You are the newest architect to be invited to design and build a skyscraper for a new city! Your skyscraper needs to be composed of at least 6 different cubes or right prisms. You may use food packaging boxes, shoe boxes or other random pre-made boxes, or you can make your own 3D figures out of any material you would like. For each skyscraper, the dimensions of each piece must be measured and recorded, a net or 2D rendering must be drawn, and the surface area and volume must be calculated for each part. Then, the total surface area and volume must be calculated for your entire building. Your skyscraper must be built and decorated. You may use anything you can think of to decorate your skyscraper (aluminum foil, sand, cereal, paint, markers, stickers, etc.)

## STEPS:

1. **Design plan.** You must make a preliminary design of your building with a 2D rendering. Decide what types of shapes/materials you might use to build your skyscraper.

2. **Measuring your shapes.** After your cubes or right prisms have been acquired or constructed, you must measure your cubes or right prisms to the nearest cm, record your measurements on the net or 2D rendering of your shape (does not need to be to scale), and find the volume and the surface area of each shape.

3. **Connect your prisms and pyramids and decorate your skyscraper.** The more creative you are, the better the final product will turn out. Your skyscraper must be able to stand on its own.

4. **Find the volume and surface area of your completed skyscraper.** Your volume will be all of your volumes added together, but your surface area might be something different. Remember that surface area is only the area that is on the surface. If a side of a rectangular prism is attached to another shape and is not on the surface, you do not include that side in the final surface area.

5. **The minimum dimensions of your skyscraper are as follows:**

- The area of your base of your skyscraper must be at least 225 cm$^2$ but no larger than 900 cm$^2$

- The height of your skyscraper must be at least 50 cm tall, but no taller than 120 cm.

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PIECE 1 _____

(Type of shape)

| VOLUME | SURFACE AREA |
|--------|--------------|
|        |              |

PIECE 2 _____

(Type of shape)

| VOLUME | SURFACE AREA |
|--------|--------------|
|        |              |

PIECE 3 _____

(Type of shape)

| VOLUME | SURFACE AREA |
|--------|--------------|
|        |              |

PIECE 4 _____

(Type of shape)

| VOLUME | SURFACE AREA |
|--------|--------------|
|        |              |

PIECE 5 _____

(Type of shape)

| VOLUME | SURFACE AREA |
|--------|--------------|
|        |              |

PIECE 6 _____

(Type of shape)

| VOLUME | SURFACE AREA |
|--------|--------------|
|        |              |

## SKYSCRAPER TOTALS:

| PIECE NUMBER | VOLUME | SURFACE AREA |
|--------------|--------|--------------|
| 1            |        |              |
| 2            |        |              |
| 3            |        |              |
| 4            |        |              |
| 5            |        |              |
| 6            |        |              |
| TOTAL        |        |              |

SHOW YOUR WORK: