Geometry Similar Polygons Assignment

Part 1: Plan and Make a Model

You have been selected to design a stain glass window for the city. It must include the following:

1. The picture must have a design or theme.

2. You must choose (at least) 5 *different* polygons. (No curves allowed)
    - i.   Triangle
    - ii.   Quadrilateral
    - iii. Parallelogram
    - iv.   Trapezoid
    - v.   Square

    - i.   Rhombus
    - ii.   Pentagon
    - iii. Hexagon
    - iv.   Heptagon
    - v.   Octagon

3. Use graph paper (8.5 by 11 in) and a straight edge to sketch your model.

4. For each polygon
    - a.   Label the vertices.
    - b.   Measure the length of each side of each polygon. (You may need to use the distance formula to find the lengths.)

Part 2: Actual Measurements

After you complete your model, the city asked you to provide them with the actual measurements of your design. Since your final piece measures 255 inches by 330 inches, you need to provide the city with the exact measurements of your design and each figure so that the city can buy all of your materials. (Keep in mind that your original piece was on a standard sheet of 8.5 by 11 inch graph paper.) Create a table *for each polygon* with your data, showing all calculations.

The table should include:
1. All of the side lengths of the model.
2. The proportions and calculations that show your actual dimensions.
3. The actual dimensions of the stained glass window.
An example of the table is included below.

Example of Table: (This is done with the ratio of the model to the actual being 3 to 23. Your ratio is different.)

Polygon #1	**Model**	**Actual**
Name:	Pentagon	
Side 1:	5 in.	$\dfrac{3}{23} = \dfrac{5}{x}$ $3x = 115$ $x = 38.33$ 38.33 in
Side 2:	5 in	$\dfrac{3}{23} = \dfrac{5}{x}$ $3x = 115$ $x = 38.33$ 38.33 in
Side 3:	7 in	$\dfrac{3}{23} = \dfrac{7}{x}$ $3x = 161$ $x = 53.67$ 53.67 in
Side 4:	10 in	$\dfrac{3}{23} = \dfrac{10}{x}$ $3x = 230$ $x = 76.67$ 76.67 in
Side 5:	10 in	$\dfrac{3}{23} = \dfrac{10}{x}$ $3x = 230$ $x = 76.67$ 76.67 in
Perimeter:	5 + 5 + 7 + 10 + 10 = 37 in	$\dfrac{3}{23} = \dfrac{37}{x}$ $3x = 851$ $x = 283.67$ OR 38.33 + 38.33 + 53.67 + 76.67 + 76.67 = 283.67 in