

## Answer Key for City Modeling Activities

The blue text below gives answers to questions about the existing city in case you want to check student work or just give them this data to speed them onto other activities.

### Examine Existing Housing Patterns

1) Look at the map of the current housing neighborhoods in Astland. Complete the table below:

**Population by Housing Type**

Housing Type	Number of Squares	Population of Each Square	Total Population of Each Housing Type	Percent of Population in each Housing Type
High-rise Apartments	1	5,200 people	5,200 people	$5200/50,000 \times 100\% = 10.4\%$
3-Story Apartments	4	2,400 people	9,600 people	$9,600/50,000 \times 100\% = 19.2\%$
Row Homes	8	1,600 people	12,800 people	$12,800/50,000 \times 100\% = 25.6\%$
Detached Single Family Homes	56	400 people	22,400 people	$22,400/50,000 \times 100\% = 44.8\%$
			Total = 50,000 people	Total = 100 percent

3) Complete the table below:

**Residential Area by Housing Type**

Housing Type	Number of Squares	Percent of Residential Area by Housing Type
High-rise Apartments	1	$1/69 \times 100\% = 1.4\%$
3-Story Apartments	4	$4/69 \times 100\% = 5.8\%$
Row Homes	8	$8/69 \times 100\% = 11.6\%$
Detached Single Family Homes	56	$56/69 \times 100\% = 81.2\%$
Total Number of Housing Squares=	69	Total = 100 percent

### Public Buildings

Public buildings include government offices, schools, libraries, police and fire stations, hospitals and clinics, utilities and storm shelters. There is a large cluster of these at the center of Astland, representing the city and county governments. Other public buildings are scattered across the city so they can be close to the people who need their services.

1) Using your map, calculate the total area (in  $\text{cm}^2$ ) used for public buildings. Many of the public areas are squares of identical size, but some are oddly shaped and will require more work. Use the space below to show your calculations.

Type of block	Number of that type	Area of that type
Squares of $2.5 \text{ cm} \times 2.5 \text{ cm} = 6.25 \text{ cm}^2$	12	$75 \text{ cm}^2$
Community college, $3 \times 6.25 \text{ cm}^2 = 18.75 \text{ cm}^2$	1	$18.75 \text{ cm}^2$
City center, $12.5 \text{ cm}^2 + (1.5 \text{ cm} \times 2 \text{ cm}) = 15.5 \text{ cm}^2$	1	$15.5 \text{ cm}^2$
Next to oval park, $2.5 \text{ cm} \times 4 \text{ cm} = 10 \text{ cm}^2$	1	$10 \text{ cm}^2$
Angled block, $(2.5 \text{ cm} \times 1.5 \text{ cm}) + \frac{1}{2}(2.5 \text{ cm} \times 2.5 \text{ cm}) = 6.88 \text{ cm}^2$	1	$6.88 \text{ cm}^2$
<b>Total Area of Public Buildings</b>		<b>About <math>126 \text{ cm}^2</math></b>