

12.4 (continued).....Building Quadrilaterals

Quadrilaterals, especially rectangles, appear throughout buildings in which we live, work, and go to school. You see rectangles as the mortar around bricks, the frames of windows, and the outlines of large buildings. Most buildings stand up because of a rectangular frame of studs and beams. Rectangles have very different physical properties from triangles.

- Do quadrilaterals have the same relationship among their sides as triangles?
- What properties do quadrilaterals have that make them useful?

A. Build polystrip quadrilaterals with each of the following sets of numbers as side lengths. If you are able to build one quadrilateral with a set of side lengths, try to build two or more different figures using those side lengths. Write **1**, **many**, or **none** next to each set:

- | | |
|------------------|-------------|
| 1. 6, 10, 15, 15 | <u>many</u> |
| 2. 3, 5, 10, 20 | <u>none</u> |
| 3. 8, 8, 10, 10 | <u>many</u> |
| 4. 2, 20, 6, 9 | <u>none</u> |

If you have 4 side measurements (no angles), how many quadrilaterals can you construct?

many; there is no unique quadrilateral w/ just 4 sides given (you would need at least 2 angle measurements)

B. Choose your own set of four numbers (between 2-20). Use them as side lengths to try to build quadrilaterals. Record your results, then answer the questions below.

<u>Side Lengths</u>	<u>Yes or no??</u>
6, 7, 11, 4	yes
5, 6, 7, 8	yes
12, 8, 15, 9	yes
14, 8, 3, 2	no
20, 3, 8, 6	no
6, 19, 5, 7	no
4, 3, 2, 10	no

1. Is it possible to make a quadrilateral using any set of four side lengths? If not, how can you tell when you can make a quadrilateral from four side lengths?

The sum of the 3 shortest sides must be greater than the longest side

2. Can you make two or more different quadrilaterals from the same four side lengths?

yes ~ many w/ different angle measurements