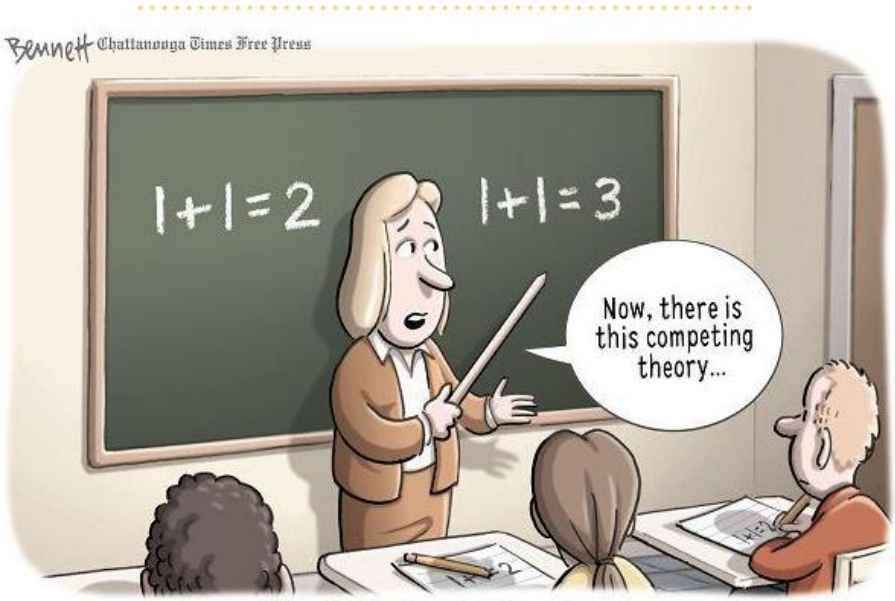
5.5 Triangle Inequality

Goals aligned to the Common Core State Standards:

- You will use the Triangle Inequality Theorem to identify possible triangles and to prove triangle relationships.



If math was taught like science.

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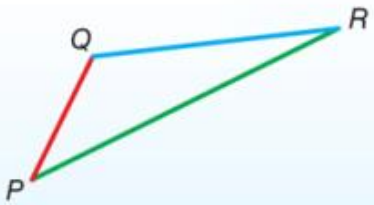
Theorem 5.11 **Triangle Inequality Theorem**

The sum of the lengths of any two sides of a triangle must be greater than the length of the third side.

Examples $PQ + QR > PR$
$QR + PR > PQ$
$PR + PQ > QR$



Ex. 1 Determine whether the given measures can be the lengths of the sides of a triangle. Write yes or no, explain.

a.) 5, 4, 3

$3+4>5$
$7>5$ yes

b.)5, 15, 10 $5+10>15$, $15 \not> 15$ (no)

c.) 30.1, 0.8, 31 $30.1+0.8>31$, $30.9 \not> 31$ (no)

d.)5.6, 10.1, 5.2 $5.6+5.2>10.1$, $10.8>10.1$ (yes)

Ex. 2 Find the range for the measure of the 3rd side of a triangle given the measures of the two sides.

a.) 7 and 12 $12-7=5$, $12+7=19$, $5<x<19$

b.)14 and 23 $23-14=9$, $23+14=37$, $9<x<37$

Homework:

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