

Theorem 8

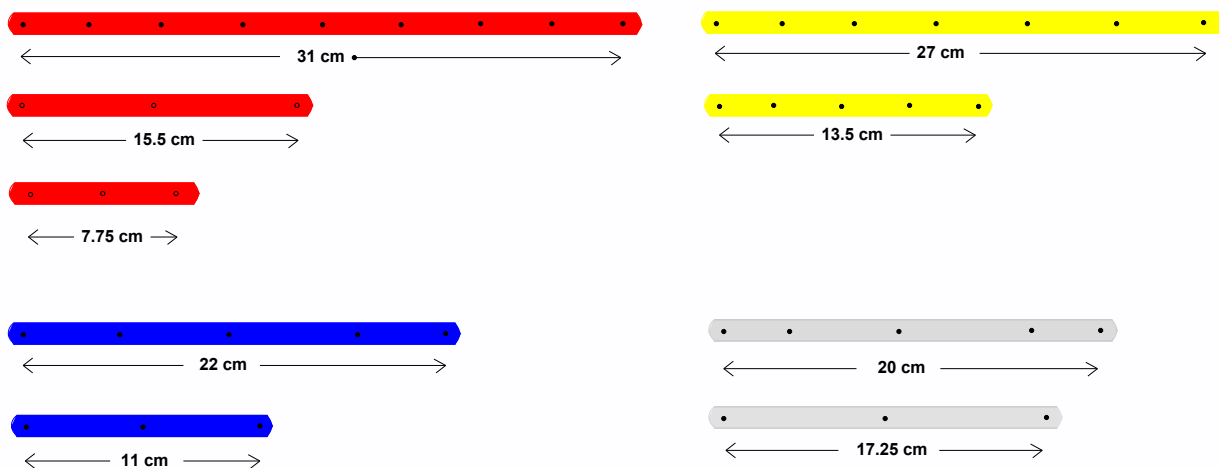
Two sides of a triangle are together greater than the third.

Equipment: Set of Geostrips, paper-fasteners and rulers.

Target Students: Leaving Cert. Ordinary level students.

Prior Knowledge: Knowledge of Junior Cert. theorems and constructions.

Prior to Lesson: The following diagram shows the colours and lengths of the various Geostrips in a pack.



Before class make up 10 sets of Geostrips as follows.

Set 1: 3 different lengths of reds. *x*

Set 2: 1 long red, 1 long yellow and 1 long white. *✓*

Set 3: 1 long red, 1 long white and 1 short yellow. *✓*

Set 4: 1 long red, 1 long white and 1 short red. *x*

Set 5: 1 long blue, 1 long white and 1 short yellow. *✓*

Set 6: 1 short blue, 1 short white and 1 short red. *✓*

Set 7: 1 long white and 2 short red. *x*

Set 8: 1 short red, 1 short blue and 1 long yellow. *x*

Set 9: 1 short white, 1 short blue and 1 long white. *✓*

Set 10: 3 short yellow. *✓*

Note: *✓* indicated which sets forms a triangles. *x* indicates which sets do not form triangles.

Lesson: Divide the class up into ten groups and ask someone in each group to pick one set of Geostrips from the ten sets already made up. Hand out some paper-fasteners to each group. Ask the groups to form triangles with the set of Geostrips they have chosen. Allow time for experimentation. Ask which groups formed triangles. Hand out a plastic ruler to each group and ask them to measure the lengths of each Geostrip in their set. Hand out the Activity Sheet and ask each group to complete part 1 of the activity sheet. Have a short discussion on the conclusions reached after completion of part 1 of the Activity Sheet. When all groups have reached the conclusion that, “two sides of a triangle are together greater than the third”, ask the groups to complete part 2 of the Activity Sheet. Discuss the answers and the thought processes that went into answering part 2.

Theorem 8 Activity Sheet.

Part 1

1. Did the Geo Strips you choose form a triangle? _____
2. Measure the lengths in cm of the Geo Strips you have. (Measure from the centre of the end hole on one side of the Geo Strip to the centre of the end hole on the other side.)
Length 1 _____
Length 2 _____
Length 3 _____
3. Add Length 1 and Length 2 = _____
Is this answer (i) greater than (ii) less than (iii) equal to, Length 3? _____
4. Add Length 1 and Length 3 = _____
Is this answer (i) greater than (ii) less than (iii) equal to, Length 2? _____
5. Add Length 2 and Length 3 = _____
Is this answer (i) greater than (ii) less than (iii) equal to, Length 1? _____
6. What conclusion can you make about two sides of a triangle compared to the third side?
Conclusion _____

Part 2

Discuss as a group, using your Geo strips as an aid to answer the following question.

Question. Two sides of a triangle measure 12 cm and 8 cm respectively. What is the range of values for the third side of the triangle.

Answer _____