WELCOME!!!!

Collaborative activity

TRIGONOMETRY

Right triangles and congruency

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COOPERATIVE LEARNING LESSON PLAN I

- TITLE: **Right triangles and congruency**
- DATE: **FIRST CLASS OF UNIT 3**
- SUBJECT AREA: **TRIGONOMETRY**
- GRADE LEVEL: **MATH 3**
- LESSON SUMMARY: **Finding sine, cosine, and tangent of congruent triangles.**

INSTRUCTIONAL OBJECTIVES

- Define concepts such as: congruent triangles, opposite side, adjacent side, and hypotenuse.
- Define the ratios for sine, cosine, and tangent for both right triangles.

SOCIAL SKILLS OBJECTIVES

- Setting or calling attention to time limits.
- Offering procedures on how to do a task most effectively.
- Asking for help or clarification (among the members, not to the teacher).
- Offering to explain or clarify within team mates.
- Seeking accuracy by correcting and /or adding to summaries.

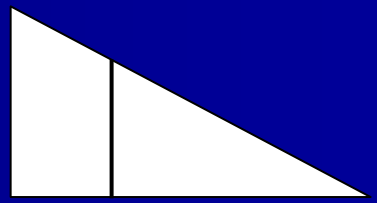
MATERIALS

Students need:

- Protractor.
- Ruler.
- Calculator.
- Charts 1, 2, and 3.

Teacher needs:

- Tape.
- 2 congruent triangles pear team



- TIME REQUIERED: 60 minutes.
- GROUP SIZE: Teams of 4 people.
- The activity is divided into 2 parts. Students work with different teams in each.

THE LESSON

1. In the previous class, the teacher asks students to draw a large right triangle having two more congruent triangles for Homework (take a look to the figure at the left to understand what congruent triangles are). Students have to use a protractor to measure the acute angles in the congruent triangles. This drawing is made individually. **NOTE: If more convenient, the teacher can draw the triangles and bring them to class**.

2. During class, use a creative way to group students in teams of 4 people. Next, collect the triangles that they did for HW and define the adjacent side, opposite side, and hypotenuse in a right triangle.

3. Now, have students to complete chart 1 by measuring the opposite side, adjacent side, and hypotenuse of the first two congruent triangles. Tell them to use their rulers to find these measurements.
4. Then, have students to complete chart 2 by determining the ratios for sine, cosine, and tangent: opp/hyp, adj/hyp, and opp/adj.

5. Now, have students to give a written conclusion individually. Tell them to explain in their own words what they observe in chart 2.
6. Next, make new groups of 4 people. Give a new triangle to this new group. That triangle has an angle of either 30°, 45°, or 60°. Next, tell them to fill charts 3 and 4. Finally, they are asked to give a group conclusion in a Chart 5.

7. Each team posts on the walls of the room their group conclusion in chart 5.
8. Next, the teacher takes about 3 minutes to make a final conclusion with the group using the charts on the board.
9. Finally, the teacher makes a group processing by asking questions such as “How do you feel with this technique?”, “Did you understand all concepts?” “Was there tolerance while you were working?”, etc. (5 minutes).

CRITERIA FOR SUCCESS: Higher quality decision making to find the correct solutions.

EXPECTED BEHAVIORS: cooperation, tolerance, and active communication.

ASSIGNMENT FOR GROUPS IN PART 1

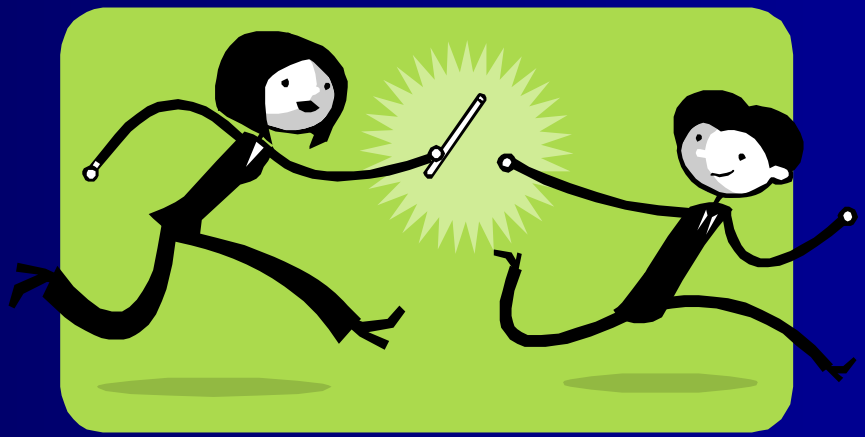
- Each team gets a drawing having two congruent right triangles.
- Each team uses a protractor to measure the inner angles of the triangle. Next, each team uses a ruler to measure the three sides of the congruent triangles in their drawing.
- Put these measurements in the corresponding blanks on charts.

ASSIGNMENT FOR GROUPS IN PART 2

- Students get together in new groups of 4 people.
- Measure new triangles having acute angles of 30°, 45°, and 60°.
- Make a group conclusion and post it on the walls of the room.

ELEMENTS OF EFFECTIVE COOPERATION

- POSITIVE INTERDEPENDENCE: when they find conclusions in the groups and maximize their own productivity and the productivity of the other members.

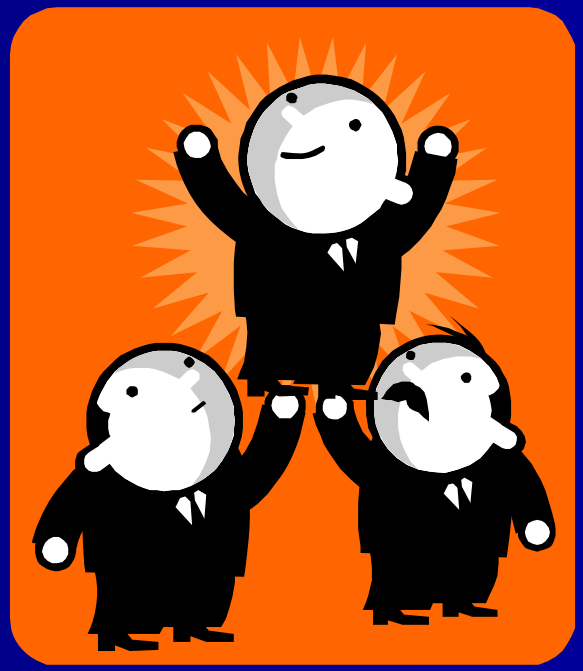


ELEMENTS OF EFFECTIVE COOPERATION

- INDIVIDUAL ACCOUNTABILITY: when they give their individual opinion about the results to find a group conclusion.

ELEMENTS OF EFFECTIVE COOPERATION

- PROMOTIVE (FACE-TO-FACE) INTERACTION: when the group members challenge each other's conclusions and reasoning in order to reach a higher quality decision making.



ELEMENTS OF EFFECTIVE COOPERATION

- GROUP PROCESSING: when they evaluate their classmates on whether working together was effective or not in contributing to achieve the group's goals.

MONOTORING, PROCESSING, AND ASSESING

- The teacher monitors good comprehension, good social behaviour, punctuality.
- The teacher intervenes in when someone is not working or if there is a conflict among the members of a group.

THANK YOU