

Calculator City and Mr. Tex Instruments

by – J. Marvel

Activity overview

Students help Calculator City determine where to place the statue of Mr. Tex Instruments by finding the circumcenter and incenter of a triangle.

Concepts

Incenter and Circumcenter of a Triangle.

Teacher preparation

Students should have a basic understanding of triangles, angle bisectors and perpendicular bisectors. A basic overview of incenter and circumcenter may be helpful as well.

Classroom management tips

Students can attempt the activity(or part of it) on paper. This may show them how difficult it is to precisely calculate the incenter and circumcenter.

TI-Nspire Applications

Incenter and Circumcenter_Calc.tns

Step-by-step directions

Students should open Incenter and Circumcenter_Calc.tns file and read the introduction

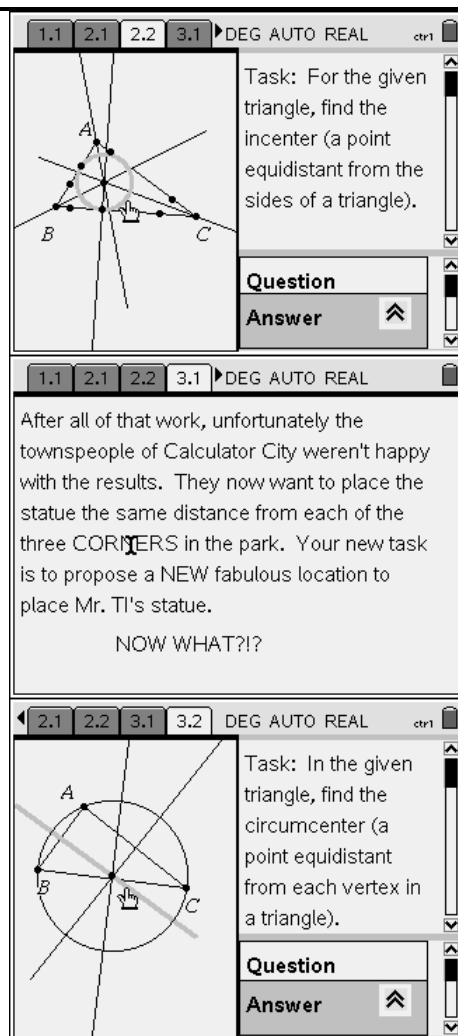
Page 2.1 has students begin by measuring the angles of the given triangle and determining what type of triangle it is. Answers should be typed in the provided section.

The screenshot shows two windows from the TI-Nspire application. The top window displays an introduction text: "Calculator City has decided to honor Mr. Tex Instruments with a statue of his likeness in the middle of their town park. The park can be found in the center of town in the shape of a triangle. The town people have decided that the statue of Mr. TI should be the exact same distance from each of the three streets surrounding the park. Your task is to find an outstanding location at which the statue of". The bottom window shows a geometry problem. On the left, a triangle with vertices A, B, and C is shown. Angle A is labeled 90°, angle B is 57°, and angle C is 33°. On the right, a "Question" box contains two tasks: "1. Measure each of the angles in the given triangle. Record your answers below." and "2. What type of".

Page 2.2 begins the process of creating the incenter of a triangle. Students can alternate between reading the task and constructing the incenter. Step-by-step instructions are provided on screen. Students should answer the question in the provided section.

Page 3.1 introduces an alternate problem where students will be finding the circumcenter.

Page 3.2 walks the students through the task of constructing and investigating the circumcenter. Students should answer the question in the provided section.



The image shows three screenshots of a TI-Nspire document interface. The top screenshot is for page 2.2, showing a triangle with its three angle bisectors intersecting at a point (the incenter). The task text reads: "Task: For the given triangle, find the incenter (a point equidistant from the sides of a triangle)." Below the task are fields for "Question" and "Answer". The middle screenshot is for page 3.1, showing a text-based problem: "After all of that work, unfortunately the townspeople of Calculator City weren't happy with the results. They now want to place the statue the same distance from each of the three CORNERS in the park. Your new task is to propose a NEW fabulous location to place Mr. TI's statue. NOW WHAT!?" The bottom screenshot is for page 3.2, showing a triangle with its three perpendicular bisectors intersecting at a point (the circumcenter). The task text reads: "Task: In the given triangle, find the circumcenter (a point equidistant from each vertex in a triangle)." Below the task are fields for "Question" and "Answer".

Activity extensions

- Students can be given the task of finding the incenter or circumcenter of a triangular location in the school, town or national map. A scavenger hunt of sorts could be created.

Student TI-Nspire Document
Incenter and Circumcenter_Calc.tns

1.1 2.1 2.2 3.1 ▶ RAD AUTO REAL

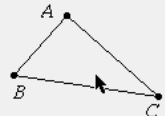
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NOW WHAT?!?

1.1 2.1 2.2 3.1 ▶ RAD AUTO REAL ctr1

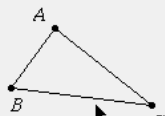


Question

1. Measure each of the angles in the given triangle. Record your answers below.

Answer ⬆

2.1 2.2 3.1 3.2 RAD AUTO REAL ctr1

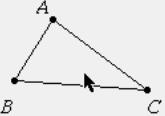


Task: In the given triangle, find the circumcenter (a point equidistant from each vertex in a triangle).

Question

Answer ⬆

1.1 2.1 2.2 3.1 ▶ RAD AUTO REAL ctr1



Task: For the given triangle, find the incenter (a point equidistant from the sides of a triangle).

Question

Answer ⬆