

Name: \_\_\_\_\_ Period: \_\_\_\_\_

## **Parabola - Headlights - Student Instructions**

Click on link below, and scroll down until you find black GSP screen.

Click on this screen to activate applet (in Geometer's Sketchpad).

<http://jwilson.coe.uga.edu/EMAT6680Fa08/Wisdom/EMAT6690/Parabolanjw/reflectiveproperty.htm>

**Your goal, as a designer of a headlights for a new car model, is to find the best location of the light source so that the headlight shines the most light directly in front of the car. By shining the most light in front of the car, the road will be brightly lit, so that you can avoid hitting the car in front of you, or the deer which just ran in front of your car.**

**Start:** Move the light source so that it sits on the inside curve of the parabola, then click on EMIT LIGHT.

Observe the light pattern. Is this optimal?

**Experiment:** Move the light source to different locations to try to maximize the light being emitted directly in front of the headlight. Click on EMIT LIGHT each time. Discuss your trials

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Move the light source to the focal point (button). Click on EMIT LIGHT . Describe how this changes the light pattern.

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Sketch what you see:

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