

Learning Critical Thinking Through Astronomy:
Crime and Lunar Illumination

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STUDENT NOTE

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Questions

Is it true that more crimes are committed on the date of full moon than on other dates?

Materials Needed

For this activity, you will need the following materials:

- spreadsheet application, preferably OpenOffice but others will work because all spreadsheets work basically the same way
- the knowledge to use a spreadsheet application to create a chart, which you should have learned previously (if not, it's time to learn)
- spreadsheet containing data for 2005 (provided by your instructor)
- spreadsheet containing data for 2007 (provided by your instructor)
- dates and times for lunar phases in 2005 and 2007 (provided by your instructor)
- a pencil (do not use ink)
- the ability to read and follow directions

Points To Remember

Do not make any claims or draw any conclusions that cannot be substantiated by the data in the spreadsheets.

1 Testing A Claim

We have probably all heard the claim that certain things happen more often on the date of full moon than at other dates. Some people say crime rates rise. Some people say hospital emergency rooms are busier. Some people say human behavior is abnormal (whatever that may mean). In this activity, you will investigate the first of these three claims. Your instructor has given you two spreadsheet files, kindly provided by the Hickory Police Department, for the years 2005 and 2007. You may safely assume that the data in these files have not been altered by anyone, including your instructor. You may also safely assume the data are accurate.

You can click on <http://eclipse.gsfc.nasa.gov/phase/phase2001est.html> to get the dates and times of lunar phases for 2005 and 21007. The link should open in your computer's default web browser.

1. What, if anything, have you personally heard or read about this issue?

- Using the spreadsheet data and the lunar phase data, devise a method to test claim in question. Summarize that method in the space provided.

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It is essential that you thoroughly understand what the data are telling you and, more importantly, what the data are **not** telling you.

- Now carry out your method. This may be laborious! Your end product should be a graph or chart that either supports the claim or refutes the claim. Your methodology must be strictly adhered to, and you must not draw any conclusions that cannot be substantiated by the data. You are expected to know how to use a spreadsheet to make a graph. If you do not know how, now is the time to learn. It isn't difficult.

|—— CHECKPOINT ——|

2 Inquiry

4. What is your conclusion regarding the original claim?

5. Do the data cover **all** crimes or just one or two in particular?

6. Do the data say anything about murder rates?

7. Would you say the spreadsheet data are biased in any way? Carefully explain how this may or may not affect your conclusions.

8. Based on your analysis, would you change anything about the claim's wording to make your analysis more meaningful or less prone to being quoted out of context?

9. All the lunar phase dates and times are for Eastern Standard Time, and the times in the data files are in either Eastern Standard Time or Eastern Daylight Time. What effect, if any, would adjusting these dates and times to, say, California have on your outcome? Defend your answer.

CHECKPOINT

10. Map this activity into as many of the elements of thought as you can.

Sample Student Version Activity

11. Every activity will have at least one standard associated with it.

STANDARD

I can analyze data and draw valid (not necessarily correct) conclusions from it.

3 Feedback

What could be done to make this activity more interesting? Please be honest.