



# Current Geometry PoW

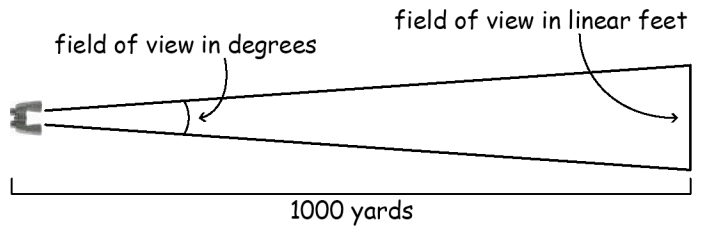
The Math Forum's PoWs provide non-routine constructed response problems. The Geometry problems target concepts typically learned in a high school geometry class. Memberships and mentoring options are available at the individual, class, school, and district levels.

## Field of View - posted April 24, 2006

We have two pairs of binoculars. Last week we noticed that the labels on the binoculars describe the fields of view in two different ways. On the Pentax binoculars, the label reads “6.2 degrees”, while the label on the Bushnell binoculars reads “487 feet at 1000 yards”.

A binoculars' “field of view” refers to how much you can see when you look through them. The degree measurement describes the angle between the lines that connect the binoculars with the edges of the field of view. The linear feet measurement describes the breadth of the field of view you can see a thousand yards away.

1. Given the angle, how could you find the breadth of the field of view? Given the breadth of the field of view, how could you find the angle?
2. Use your answers to the first question to find the linear field of view of the Pentax binoculars and the angle of view for the Bushnell binoculars.



Learn more about the Problems of the Week at <http://mathforum.org/pow/powcharges.html>

Win a t-shirt! In order to enter the drawings for t-shirts, write your answer and an explanation of your solution on this sheet, fill out the green entry card, and staple them together. Return it to Booth 630.

# The Geometry Problem of the Week Scoring Rubric

A full-page version of this file is available to the public via the Scoring Guide link at <http://mathforum.org/geopow/>. Problem-specific scoring rubrics, as well as "Expected Solution" documents, are available to Teacher Members who choose to mentor their students' work using our online environment.

For each category, choose the level that *best describes your work*

	Novice	Apprentice	Practitioner	Expert
<b>Problem Solving</b>				
<b>Interpretation</b>	I do not understand much of the problem.	I don't understand all of the math concepts in the problem.  I didn't attempt to solve all of the parts.	I understand all of the math concepts in the problem.  I attempted all parts of the main problem.	I understand the Extra question and solved it correctly (and am at least a Practitioner in Strategy).
<b>Strategy</b>	I do not know how to set up the problem.	I picked an incorrect strategy, or relied on luck to get the right answer.	I picked a sound strategy and solved the problem with skill, not luck.	I used two separate strategies or an unusual or sophisticated strategy.
<b>Accuracy</b>	I think I made many errors.	Most of my work is accurate. I may have one or two errors.  I didn't use correct units.  I didn't leave things in exact form.	My work is accurate and contains no arithmetic mistakes.  I used appropriate units.  I left things in exact form when required.	[not possible for most problems]
<b>Communication</b>				
<b>Completeness</b>	I didn't write much, if anything, about how I found my answer.	I don't explain where my equations and expressions came from.  I showed my work but didn't explain it. <i>or</i> I explained what I did without showing any of the actual work.	I explained almost all of the steps taken to solve the problem.  I explained how I came up with my equations, expressions, and calculations.	I added some extensions and further explanation of some of the ideas involved.  I proved one of the theorems that I used.
<b>Clarity</b>	My explanation is very difficult to read and follow.	My explanation isn't entirely unreadable, but another student wouldn't be able to follow it easily.  My spelling and typing errors make my explanation hard to understand.	I explained all of the steps in such a way that another student would understand.  I made an effort to check my formatting, grammar, spelling, and typing, though there might still be a few small mistakes.	My answer is very readable and it looks good!  My organization makes my ideas especially clear.
<b>Reflection</b>	These items are reflective:   I did nothing reflective.	I showed how I checked my own answer.  I explained why my answer is reasonable.  I suggested a hint that I would give to another solver.  I did one reflective thing.	I connected the problem to another problem or experience.  I explained where I'm stuck.  I summarized my process.  I did two reflective things.	I explained why I think the problem is easy or difficult.  I <i>revised</i> and improved my work.  I did three or more reflective things or I did a great job with two of them.

## Teacher Support for *Field of View*

Each Current Problem of the Week (and consequently many in the library) includes a list of topics, pointers to related resources, and NCTM Standards correlation. This table is adapted from the full online Teacher Support page for this problem that includes links for all of the resources. These pages are available to members at <http://mathforum.org/pow/support/>.

Topics	Math Tools	Other Resources	Teacher2Teacher
right triangle trig	Tool: Learn Trig...The Easy Way Tool: VisualTrig	Library: Trigonometry	Trigonometry Trigonometry in soph year? Trigonometry supplement
<b>NCTM Standards – 9-12</b> Geometry Reasoning and Proof Problem Solving Communication	<b>Ask Dr. Math</b> Explaining How SohCahToa Works Trigonometry Word Problem	<b>Problems Library</b> Geometry: Right Triangle Trig GeoPoW: The Corner Banking of the Daytona Speedway	