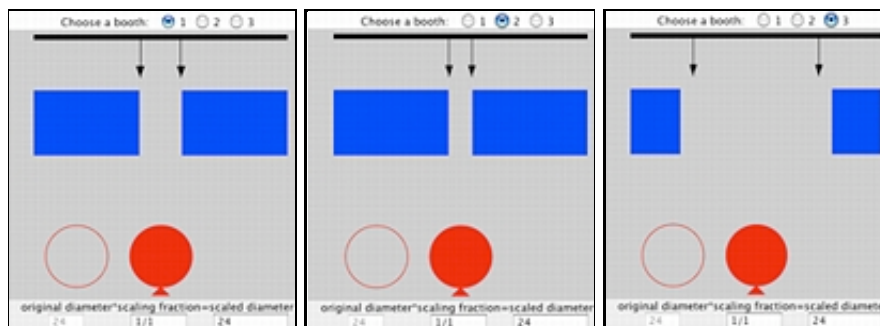


Math Forum - Problem of the Week

Balloon Booths

[[Spanish version](#)]



In a game called "Scale 'n Pop." a helium-filled balloon is tied to a rod. Just above it, between two boards, is a gap that leads to a pair of sharp nails. The distance between the nails is a little less than the width of the gap.

To win the game, you must figure out how to make the balloon small enough to fit through the gap, yet still large enough to touch (and be popped by) the nails. You can inflate or deflate it so that its diameter is a fraction of its original size. (That fraction may be greater than or less than 1.)

Play the game in **three** different balloon booths using this Java applet: <http://mathforum.org/escotpow/puzzles/scalenpop/ScaleNPop.html> to find the scaling fraction that will pop each balloon.

Question:

Last year a student playing this game in a different booth found that $3/2$ made the diameter too small and $5/3$ made the diameter too large. Recommend a strategy the student might use to find a fraction that will pop the balloon.

Extra:

Do any other non-equivalent scaling fractions pop the balloon in any of the three booths?

Use the **submit** link below to get hints and also chances to revise.