Spaghetti Bridge Project

Your Challenge is to construct a bridge to certain specifications. The goal is to design and create the most efficient and aesthetic bridge possible using **only spaghetti noodles and school glue**.

The Criteria:

Weigh Held – You want your bridge to hold more weight than your classmates' bridges.

Structural Effectiveness is equal to the weight supported divided by the weight of the bridge.

Aesthetics Subject to Ms. Keith's opinion and will be determined through visual appeal, uniqueness, symmetry, & neatness.

Data calculations must be accurate.

The Specifics:

Span: The bridge must be a **minimum** of 12 inches in length. *Note*: the gap that you will bridge is 10in, if your bridge is short, you will lose credit, or possibly be disqualified. There is **no** maximum length.

Deck: Must be at least 1.5 inches wide. This will be measured using a block of wood that should be able to travel the whole length of the bridge. The width cannot exceed 2.5 inches.

Bridge Height: The height of the tallest point of the bridge can be no more than 7inches above the level of the higher table.

Load Connection: The bridge must be able to accommodate my loading block at the midpoint of the deck. The loading block is 2in long, by 1.5in wide, by .75in tall. A whole in the center of the bridge must accommodate a ¼in rod that must pass through the vehicle deck.

Pedestal: One table is exactly 3.5cm lower than the other. Your bridge should have a pedestal on one end to account for this issue. The pedestal is part of the bridge; must be constructed from spaghetti & glue and must be attached.

Material Specifications:

Spaghetti Noodles: Kroger Psst. Brand Spaghetti available in 16oz packages is about the cheapest it gets.

Any other type/style noodles (besides spaghetti) will result in deduction, possible disqualification.

Elmer's (or similar) school glue. *Epoxy, wood glues, hot glue, and super glues will result in deduction, possible disqualification.*

Do not coat bridge with any material (paint, stain, or glue)

Total Weight of bridge cannot exceed 10 ounces.

Bridges not meeting these specifics will be penalized and possibly disqualified

Testing Procedures:

1. Bridge will be weighed and measured for compliance with specifications.
2. Loading block will be put in place in the center of the bridge.
3. Bridge will be placed between 2 tables spaced 10 inches apart.
4. Load will be applied by Ms. Keith slowly until I have achieved bridge collapse.

Data Sheet

(Must be completed on the day of bridge test)

	Grams	**Ounces (*Round to nearest 10th*)**
Weight of Bridge	_____	_____

Weight Held!! _____ (Including weight of loading apparatus)

Calculate Structural Effectiveness Ratio. Include units in your answers.

Structural Effectiveness = $\frac{Weight\ Held\ (lbs)}{Weight\ of\ Bridge\ (oz.)}$ Divide and round to nearest 10th to find weight carried per ounce.

Structural Effectiveness = _____

Spaghetti Bridge Rubric

Honors Geometry

Aesthetics (10)	Bridge is messy, not clean. Extra glue. Noodles out of place. (3)	Bridge has some appealing qualities but is mostly messy. (5)	Bridge is mostly appealing, but has one or two messy areas (7)	Bridge is neat, clean. No noodles out of place. (10)
Bridge Criteria (15)				
12in Span	Does not Meet (0)			Meets (3)
1.5 ≤ Width ≤ 2.5 in	Does not Meet (0)			Meets (3)
Height ≤ 7in	Does not Meet (0)			Meets (3)
Pedestal	Does not Meet (0)			Meets (3)
Hole for Loading	Does not Meet (0)			Meets (3)
Materials	Anything other than school glue & noodles (0)	Bridge over 10oz (0)		Meets (3)
Effectiveness (40)				
Weight Held		Based on how well your bridge		=
Structural Effectiveness (SE)		compares to the bridges of your classmates		=
			Total out of 65	=

*If bridge is too short or over weight, it will moved to last place in the structural effectiveness category.

*If illegal materials are present, it will move to last place in the weight held category.

Name _____