

Pasta Structure Activity – 100 classroom points

Mr. Stewart

Students will choose one of the standards listed below and write a 1 page discussion on the subject.

HS-ESS3-b – Analyze and revise solutions for developing, managing, and utilizing resources that would increase economic, social, environmental, and/or cost versus benefit ratios.

HS-PS2-a – Analyze data to support the claim that Newton’s second law of motion describes the mathematical relationships between the net forces on macroscopic objects, their masses, and acceleration.

N.12.A.5 – Students know models and modeling can be used to identify and predict cause-effect relationships.

P.12.B.1 – Students know laws of motion can be used to determine the effects of forces on the motion of objects.

P.12.B.4 – Students know the strength of the gravitational force between two objects increases with mass and decreases rapidly with distance.

Students will work in teams of three in order to decide on an appropriate design for their pasta structure. The structure must be at least 25 cm tall, and have horizontal dimensions of at least 25 cm. The structure can only be composed of pasta and white glue.

Students will use trade-offs of mass and strength to finalize a construction plan. The goal will be to create a construction that has the least amount of total mass, yet is capable of holding the maximum amount of mass before failure – to become as efficient as possible. Structures must be composed of both horizontal and vertical components. Structures will be tested after completion with increasing mass in order to determine maximum efficiency.

Structures must support a wood “2 x 4 x 12” inch beam that holds metal hooks that will suspend a bucket to which sand will be added to reach failure of the structure. Students will receive 70 points for a successful structure. Highest efficiency structures will qualify for an award.

Students will compose a 1 page summary of how their selected standard fits into the lesson plan. Students will be awarded 30 points for a completed and excellent paper.

100 total classroom points.