



Middle School Challenge

Task 1: Math in the World

Using and understanding formulas is a critical skill in almost every field, including science, engineering and business. Below are two fun formulas to try.

TVs are measured diagonally, so a 48-inch screen measures 48 inches from one corner to the opposite corner. You should also consider the resolution of the TV - the higher the resolution the closer you can sit before you'll notice pixilation in an image. The first formula is used to find the right size TV for your space.

$$TV = \frac{D}{2.5}$$

where TV = ideal screen size and D = distance in inches from the couch to your TV

The next formula is used to determine how far away you are from a lightning strike. (You might have to wait a while to test this one out!)

$$D = 340 \cdot t$$

where t = the number of seconds from the time you see lightning flash until you hear thunder, and D = distance measured in metres.

Task 3: Family Build Challenge

Your challenge is to build the tallest freestanding structure possible using the materials listed below.

Each builder will need:
 20 pieces of spaghetti
 1 large marshmallow
 1 metre of yarn or string
 1 metre of masking tape or duct tape
 Scissors and a tape measure (tools to assist in the build)

Your structure must have the marshmallow on top, but you do not have to use all of the spaghetti, tape or string. Measure from table surface to top of the marshmallow.

Who is the Marshmallow Master at your house?

Task 2: Cardboard Creation

Build a cardboard house - could be for use by the family pet, or maybe a younger sibling!

A link to a website for some inspiration.
<https://playtivities.com/cardboard-houses/>

Calculate the surface area and volume of cardboard used in your creation.

Formulas can be found at:
<https://www.varsitytutors.com/hotmath/help/topics/perimeter-area-volume>