

MATERIALS

The following is a suggested list of materials needed to complete this challenge. The quantity will depend on the number of students participating. Alternatives can be used if necessary.

- Digital scale or balance (1)
- Stopwatch (1)
- Measuring tape (1)
- Rulers (1 per team)
- Thin string like embroidery thread or fishing line
- Small sealable plastic storage bag to hold payload inside capsule (1 per team)
- Washers, marbles, or pennies to serve as mass
- Hole reinforcements or stickers with a hole punch
- Template for capsule (see page 39) – one for each team
- General building supplies for teams to assemble designs. These could include:



aluminum foil	empty paper towel/toilet	plastic wrap
balloons	paper tubes	craft sticks or tongue depressors
skewers or stirrers	glue sticks	rubber bands
binder clips	mini foil pie plates	scissors
bubble wrap	modeling clay	staplers and staples
buttons or beads	paper bags	straws
cardboard or cardstock	paper clips	string
clothespins	pennies	masking, electrical, transparent and duct tapes
cloth	pipe cleaners	
coffee filters	plastic cups	
cotton balls	plastic eggs	

Pre-Activity Set-Up:

- For each group, prepare a plastic bag filled with 28 grams of washers, marbles, or pennies. This will serve as a simulated payload that will go into the capsule the teams assemble from the capsule template.
- Determine a unit cost for each of the materials available. Based on these unit costs, decide the maximum budget each team has to design their model. This value can be raised (budget increase) or lowered (budget cut) to adjust the level of challenge difficulty. Teams should itemize their budget using the Budget Planning Worksheet on page 38.