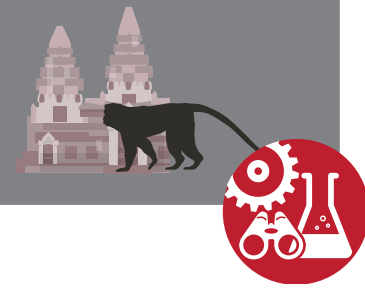


GRAVITY PULLS

MONKEY CITY Creative Expression



THE ADVENTURE:

Compare how quickly different objects fall, figure out what determines an object's speed in free fall, and try different strategies to make things fall faster and slower.

PLAN:

- Where will you do this adventure? Indoors, outdoors, or at camp?
- Is there a safe structure from which you can drop your objects? How could you build one?
- What objects will you drop? Choose objects that are similar in size and shape but have different masses.
- How will you form your groups?



DO:

Activity #1: What falls faster?

- In your group, predict which objects will fall the fastest. What characteristics of the objects will change how fast they fall? Make a list of your hypotheses.
- Drop the objects from a consistent height and time how long it takes them to reach the ground. Record your observations and calculate the speed of each object's fall. Speed is measured in metres per second, or distance over time.
- As a Pack, discuss which object fell the fastest. Which one was the slowest? Why?
- What causes an object to fall? What other forces do you think are acting on the objects as they fall?

Activity #2: Fall Faster!

- Take a few minutes to do whatever you want to a piece of paper (without cutting it) to make it fall faster.
- Then, drop the paper from a height and see which group's paper falls the fastest.
- After the first round, change your design and try again. Repeat as many times as you want, using a fresh piece of paper each time.
- Which designs fell faster? Why?

Activity #3: Slow Down!

- This time, groups will design and build a parachute that slows down a falling object.
- Using garbage bags, plastic bags and newspapers, make a parachute and then compete to see which design works best.
- If you have time, you can decorate your parachutes.
- Which design went slower? Why?

GRAVITY PULLS

REVIEW:

- What do you know now that you did not know before?
- What kinds of objects fall faster? What kinds of objects fall slower? What do you notice about the shape of the objects?
- What did you do to make the paper fall faster? Why?
- What did your parachute do to make the object fall slower?
- How did your group work together on this Adventure?
- What elements of STEM were in this Adventure? Science? Technology? Engineering? Mathematics?
- What did you like about this Adventure? What did you not like about the Adventure? How would you do this Adventure differently?

SAFETY TIP:

- Remember: garbage bags and plastic grocery bags can be very dangerous and should never be put over anyone's head.

ONLINE RESOURCES:

- Speed of Freefall
- Dropping a feather and a hammer on the moon
- Science of gravity
- What falls faster?

MATERIALS:

- One set of unbreakable objects with different weights and shapes for each group (e.g. small stones, tennis balls, ping pong balls, sheets of paper, feathers, pieces of Styrofoam, pieces of wood of different sizes)
- Stopwatches
- Pencils
- At least 20 sheets of paper
- Tape or glue
- Three garbage bags, three plastic grocery bags and newspapers for each parachute
- Treads or thin ropes (at least 1.5 m for each parachute)
- Colouring supplies