# Designing a Kite

## Task Statement 1

A customer has requested a design for a kite. They have sent some requirements. It must be:

- Well balanced.
- Easy to travel with.
- Sturdy.
- Lightweight.

The manufacturing company has nylon fabric and wooden dowels in stock. The fabric comes in all colors.

1. Create the design.
2. Write a letter to the customer explaining how your final design meets all of the requirements.
3. The manufacturing company needs to be sure they match your final design exactly. Choose one element of the design, make a mathematical claim, and then write a proof to justify your claim. For example, you could prove that two triangles are congruent or that two lines are parallel or perpendicular.

# Designing a Kite

## Task Statement 2

A customer has requested a design for a kite. They have sent some requirements. It must be:

- Well balanced: It must have a vertical line of symmetry with the string attached on the line of symmetry.
- Easy to travel with: no larger than 24 inches in any dimension.
- Sturdy: Each region of the kite must be a triangle.
- Lightweight: All materials, including the string, must weigh no more than 1 pound.

The manufacturing company has nylon fabric and wooden dowels in stock. The fabric comes in all colors.

- 1 square yard of nylon fabric weighs 1.4 ounces.
- 1 yard of wooden dowel weighs 0.5 ounce.
- The standard spool of kite string weighs 0.2 pound.

1. Create the design.
   a. Sketch at least 3 different designs.
   b. Check each design against the list of requirements.
   c. Choose one design that meets all the requirements to be the final version.
2. Write a letter to the customer explaining how your final design meets all of the requirements.
3. The manufacturing company needs to be sure they match your final design exactly. Choose one element of the design, make a mathematical claim, and then write a proof to justify your claim. For example, you could prove that two triangles are congruent, or that two lines are parallel or perpendicular.