Example 1: The engineers who designed the Coal River Bridge on the Alaska Highway in BC used a supporting arch with twin metal arcs. The function that describes the arch is: \( h(x) = -0.005061x^2 + 0.499015x \)

where \( h(x) \) is the height, in metres, of the arch above the ice at any distance, \( x \), in metres, from one end of the bridge.

a. Determine the distance between the bases of the arches.

b. Determine the maximum height of the arch, to the nearest tenth.
Example 2: Find two consecutive odd whole numbers such that the sum of their squares is 130.

Example 3: Two planes travel at right angles to each other after leaving an airport at the same time. One hour later, they are 390 km apart. If one plane travels 210 km/h faster than the other, what is the speed of the slower plane?
**Example 4:** A doughnut store sells doughnuts with Bavarian cream centres. Thbaker wants the area of the cream to be half the area of the cake part of the doughnut. The outer radius of the whole doughnut is 6cm. Determine the radius of the cream centre.

**Example 5:** The length and width of a rectangular sheet of paper is 8 in by 11 in. How much must be added equally to the length and width to double the area?
Example 6: A photographer is compiling a display of photos. He wants each photograph to be square, and the matte around each photo to be 4 cm wide. He wants the area of the matte of be equal to the area of the photo itself. What should the dimensions of each photo be, to the nearest tenth of a centimetre?