Rectangles in triangles

Teacher notes

Why use this resource?

This is a maximising problem that students are expected to tackle without calculus. Ideally students should be allowed the time to explore their own chosen approach before comparing the efficiency and accuracy to those of others. Making students aware that a combination of the algebraic and graphical representations of the area can enable them to identify exact solutions is important.

Possible support

Asking students to sketch some different rectangles and conjecture what the answer might be, may guide students into thinking about the problem geometrically rather than algebraically.

Depending on their approach these questions may be helpful:

- Have you considered a specific triangle?
- Have you thought about the area of the triangle that is outside the rectangle?

Possible extension

Students have to decide what their variables are going to represent in both parts of the problem. It is interesting to think about how the choice of variable can affect your journey to a solution.

- How would your calculations have changed if your initial variable labelled a different part of the diagram? Does it become easier? Harder?

This is a resource that may be returned to once students have encountered differentiation as a further opportunity to compare and contrast the efficiency of different approaches.

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