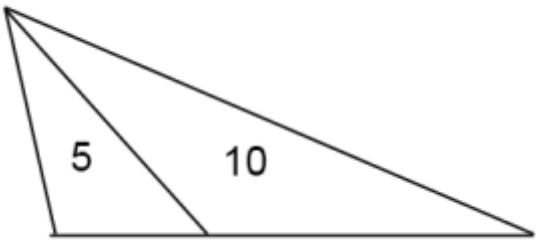
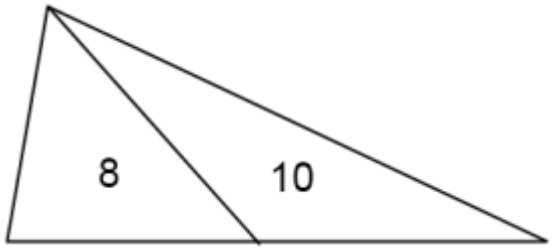
Areas and Ratios Building Block A

This question is about triangles with their bases on the same line and a shared side, like the ones below:





The numbers in the triangles represent their areas.
The diagrams are not drawn to scale - can you create diagrams with the correct areas drawn to scale?
Convince yourself that there are many different possibilities
Make a note of the base lengths of your triangles.
Notice anything interesting? Convince yourself it always happens.

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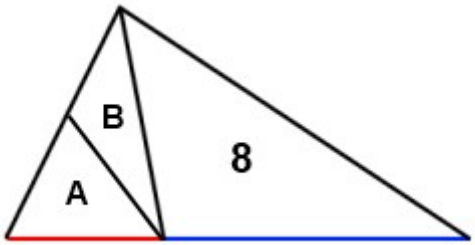
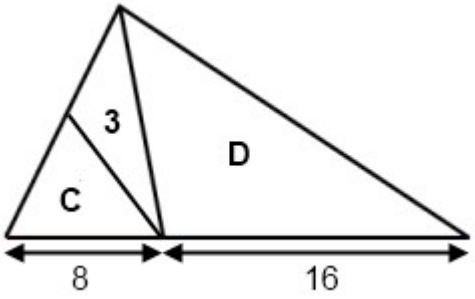
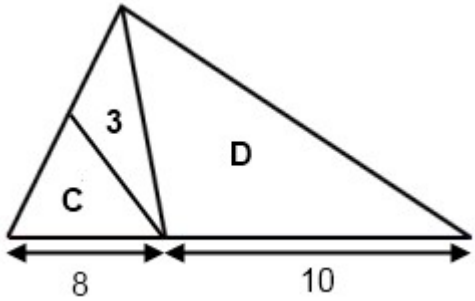
Areas and Ratios Building Block B



The red line is half the length of the blue line. Numbers and letters inside a triangle represent its area. What can you say about A+B?

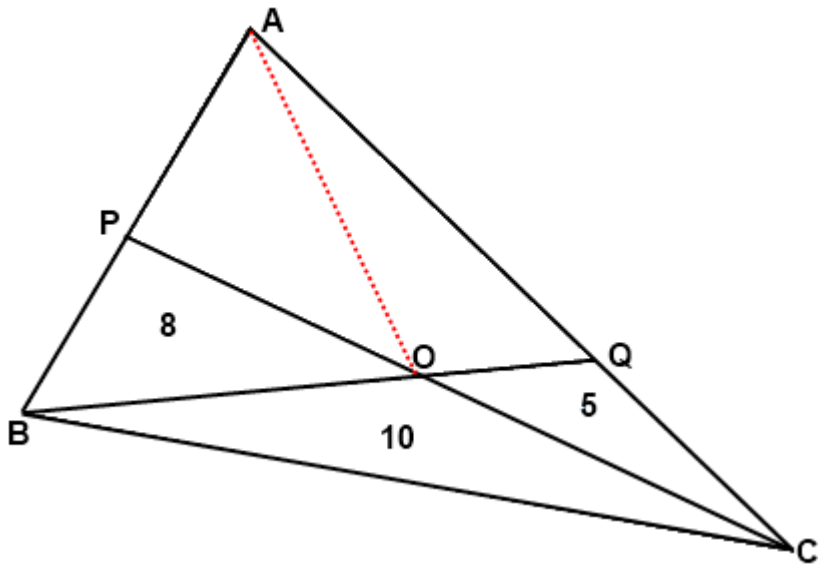




For each triangle with base lengths as shown, write C in terms of D.

Areas and Ratios: Final Challenge

Look at the diagram below (which is not drawn to scale).



The areas of three of the triangles are shown.
What is the area of the quadrilateral APOQ?