

# Problem 1: Raising the Flag

USMA D/Math Problem of the Week

**Submission Deadline: 11 September, 2008 at 1600**

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<b>Circle one:</b>	cadet	faculty	other
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## **Problem Statement:**

A flag is black on the front and gold on the back, and it is being raised up a vertical flagpole. Oddly enough, the bottom of the flag is at a fixed point up the flag pole, while the top starts 10 meters below this point and stops 10 meters above it. The top of the flag is moving at a rate of 1 meter per second as it rises up the pole. An observer away from the flagpole notes that the other side of the flag (that which is not right next to the pole) is moving erratically in the high winds, but he always sees it as a rectangle. When the top and bottom of the flag are even he observes the width to be 5 meters. At what rate is the observed area of the flag changing when the top and bottom of the flag are at the same height?