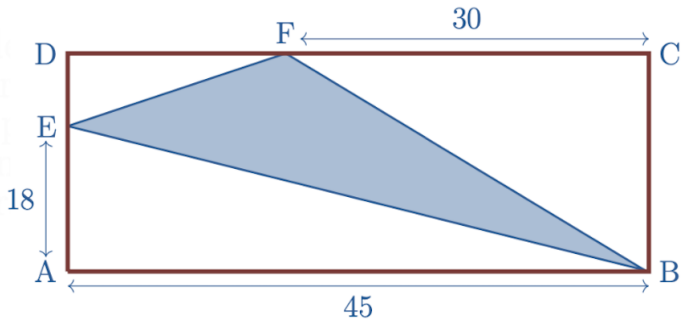
NMSU MATH PROBLEM OF THE WEEK

Solution to Problem 1

Spring 2022

Problem 1

Find the area of the triangle ΔBEF if the area of the rectangle ABCD $= 1350$.



Solution. From the knowledge of the area of the rectangle ABCD, we deduce that

$$|BC| = \frac{\text{Area of ABCD}}{|AB|} = \frac{1350}{45} = 30.$$

Since $|AD| = |BC|$ (as they are the opposite sides of the rectangle), we get

$$|DE| = |AD| - |AE| = 30 - 18 = 12.$$

Then the area of ΔBEF can be computed by subtracting from the area of the ABCD, the area the right-angled triangles ΔABE, ΔBCF and ΔDEF

$$\begin{aligned} \text{Area of } \Delta BEF &= 1350 - \frac{1}{2}(45)(18) - \frac{1}{2}(30)(30) - \frac{1}{2}(15)(12) \\ &= 1350 - 405 - 450 - 90 \\ &= 405. \end{aligned}$$