

## Prize Problem

Point  $B$  is on line segment  $\overline{AC}$  with  $|AB| = 9$  and  $|BC| = 21$ . Point  $D$  is *not* on  $\overline{AC}$  so that  $|AD| = |CD|$ , and both  $|AD|$  and  $|BD|$  are integers. Let  $\Sigma$  be the sum of all possible perimeters of  $\triangle ACD$ . Calculate  $\Sigma$ .

Return solutions to Harris 4158 by 3 March 2017 to be eligible for prize, or submit electronic solutions to [jpledford@vcu.edu](mailto:jpledford@vcu.edu).