6. (a) Using the fact that the area A of a rectangle is width×length, we find

$$\begin{aligned} A_{\text{total}} &= (3.00\text{ acre}) + (25.0\,\text{perch})(4.00\,\text{perch}) \\ &= (3.00\,\text{acre})\left(\frac{(40\,\text{perch})(4\,\text{perch})}{1\text{ acre}}\right) + 100\,\text{perch}^2 \\ &= 580\text{ perch}^2 \quad . \end{aligned}$$

We multiply this by the perch^2 → rood conversion factor (1 rood/40 perch^2) to obtain the answer: $A_{\text{total}} = 14.5$ roods.

(b) We convert our intermediate result in part (a):

$$A_{\text{total}} = (580\text{ perch}^2)\left(\frac{16.5\text{ ft}}{1\text{ perch}}\right)^2 = 1.58 \times 10^5\text{ ft}^2 \ .$$

Now, we use the feet → meters conversion given in Appendix D to obtain

$$A_{\text{total}} = \left(1.58 \times 10^5\text{ ft}^2\right)\left(\frac{1\text{ m}}{3.281\text{ ft}}\right)^2 = 1.47 \times 10^4\text{ m}^2 \ .$$