

**Concept Question 1-5:** Why is a SAR called a “synthetic”-aperture radar?

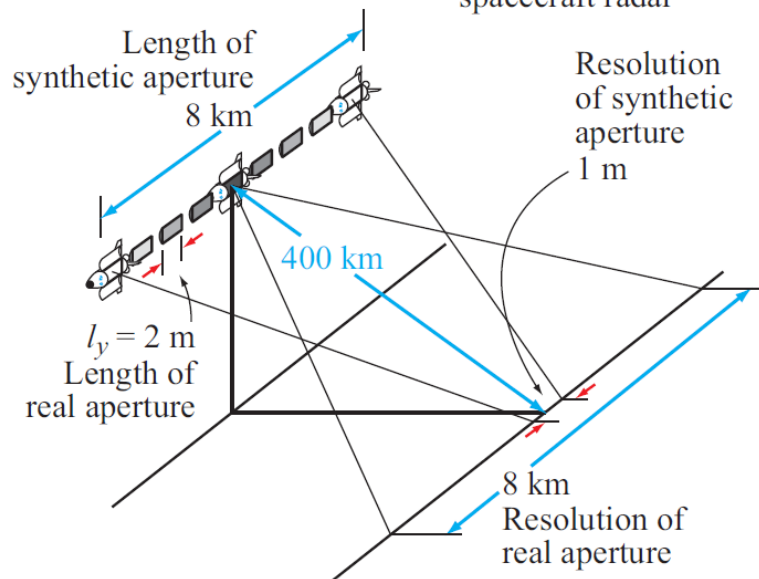
SAR makes use of the movement of the plane to act as a large antenna (synthetic).

**Along-track resolution**

$$\text{Real-aperture } \Delta y'_{\min} = \lambda R / l_y$$

$$\text{Synthetic-aperture } \Delta y'_{\min} = l_y / 2$$

**Example:**  $\lambda = 4$  cm  
spacecraft radar



**Figure 1-21** An illustration of how synthetic aperture works.