

NAME

DATE

QUIZ 001

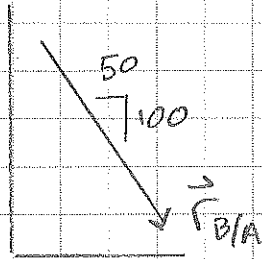
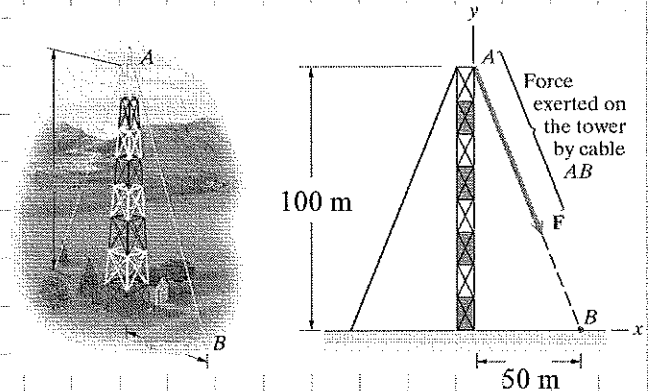
SOLUTIONS

**GIVEN:** THE CABLE FROM A TO B EXERTS A 1000 N FORCE ON THE TOP OF THE TOWER THAT IS SHOWN AS VECTOR  $F$ . EXPRESS  $F$  AS A VECTOR IN TERMS OF COMPONENTS USING THE COORDINATE SYSTEM PROVIDED.

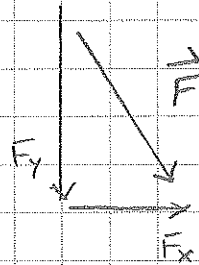
**REQUIRED:**

$$\vec{F} = ?$$

**SOLUTION:**



SIMILAR  
TO



$$r_{B/A} = \sqrt{50^2 + 100^2} = 111.8$$

SIMILAR TRIANGLES,  $\therefore$

$$\frac{F_x}{F} = \frac{50}{r} \quad \frac{F_y}{F} = \frac{100}{r} \quad \dots$$

$$F_x = \frac{50}{r} F \quad F_y = \frac{100}{r} F$$

WITH PRACTICE, VISUALIZE EASILY

$$F_x = \frac{50}{111.8} (1000 \text{ N}) = 447 \text{ N} \rightarrow$$

$$F_y = \frac{100}{111.8} (1000 \text{ N}) = 894 \text{ N} \downarrow$$

$$\therefore \vec{F} = \{ 447 \hat{i} - 894 \hat{j} \} \text{ N}$$

CHECK:  $\sqrt{447^2 + 894^2} = 1000 \checkmark$