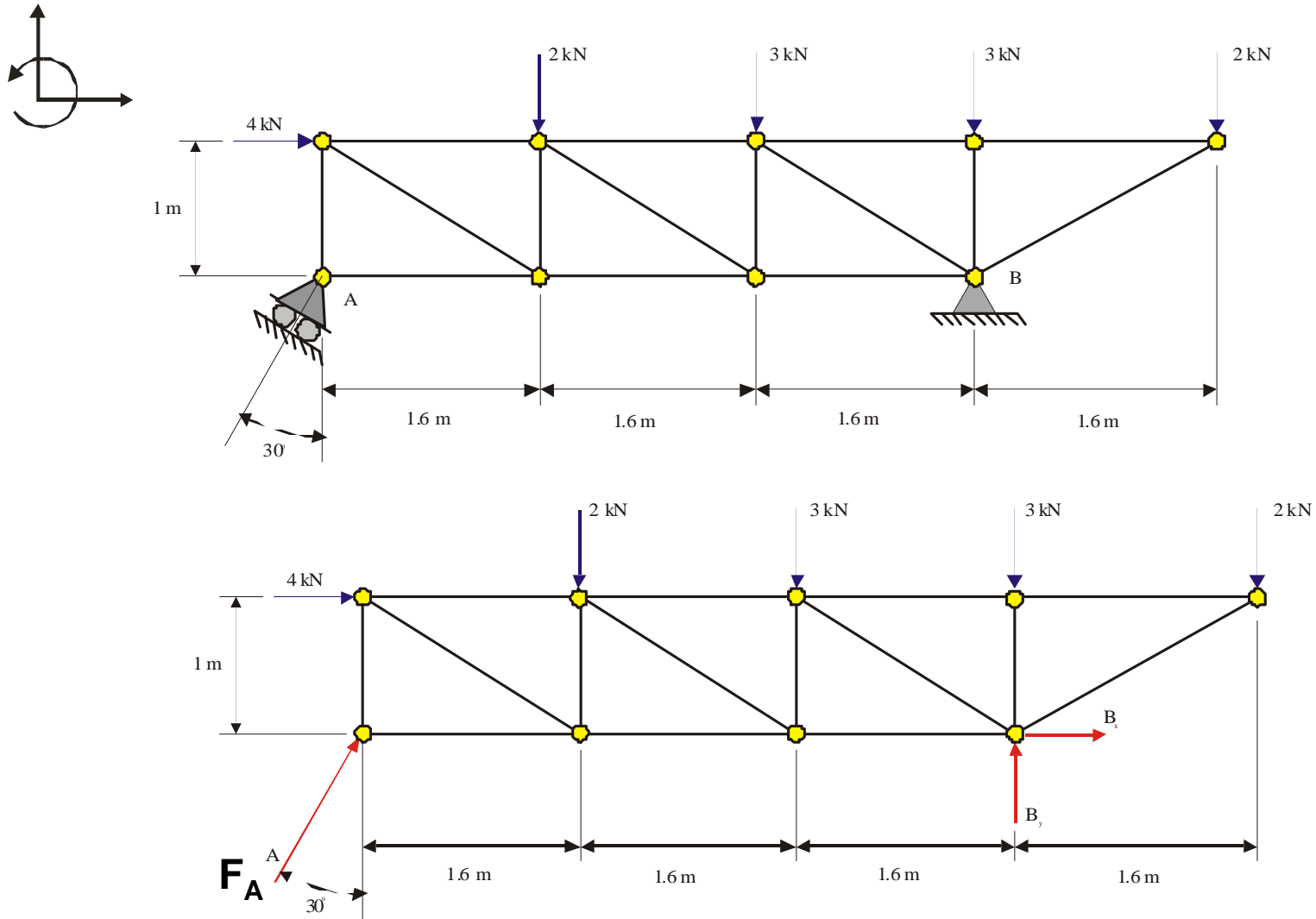


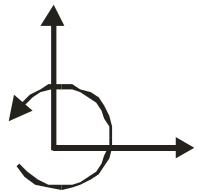
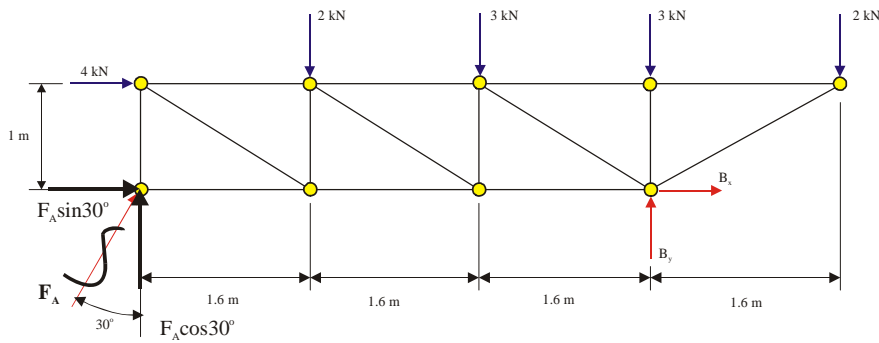
# Example 3.9

J. Frye

### Example 3.9:

For the truss shown, determine the reactions at A and B.





$$\sum F_x = 0 \rightarrow$$

$$F_A \sin 30^\circ + 4 + B_x = 0 \quad (1)$$

$$\sum F_y = 0 \uparrow$$

$$F_A \cos 30^\circ - 2 - 3 - 3 - 2 + B_y = 0 \quad (2)$$

$$\sum M_B = 0 \quad \curvearrowleft$$

$$-F_A \cos 30^\circ (4.8) - 4(1) + 2(3.2) + 3(1.6) - 2(1.6) = 0 \quad (3)$$

$$F_A = +0.962 \text{ kN} \quad (\text{Direction of } F_A \text{ in FBD is correct!!!})$$

$$\therefore F_A = 0.962 \text{ kN}$$



Substitute in (1):

$$0.962 \sin 30^\circ + 4 + B_x = 0$$

$$B_x = -4.48 \text{ kN} \quad (\text{Direction of } B_x \text{ in FBD is incorrect!!!})$$

$$\therefore B_x = 4.48 \text{ kN} \leftarrow$$

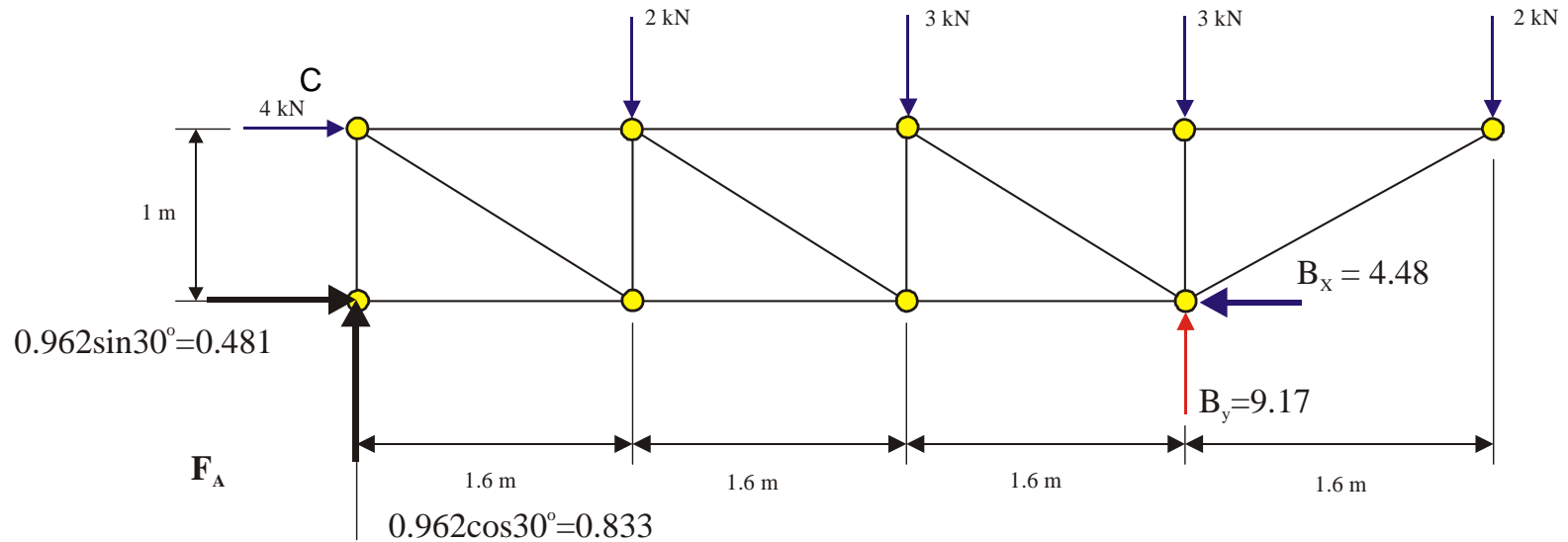
Substitute in (2):

$$0.962(0.866) - 10 + B_y = 0$$

$$B_y = +9.17 \text{ kN} \quad (\text{Direction of } B_y \text{ in FBD is correct!!!})$$

$$B_y = 9.17 \text{ kN} \uparrow$$

**CHECK** – We redraw the FBD and take moments about a different point on the rigid body!! (Note we have indicated the correct direction for  $B_x$ .)



$$\sum M_C = 0$$

$$0.481(1) - 2(1.6) - 3(3.2) - 3(4.8) - 2(6.4) - 4.48(1) + 9.17(4.8) = 0$$

$$-0.8 \approx 0$$