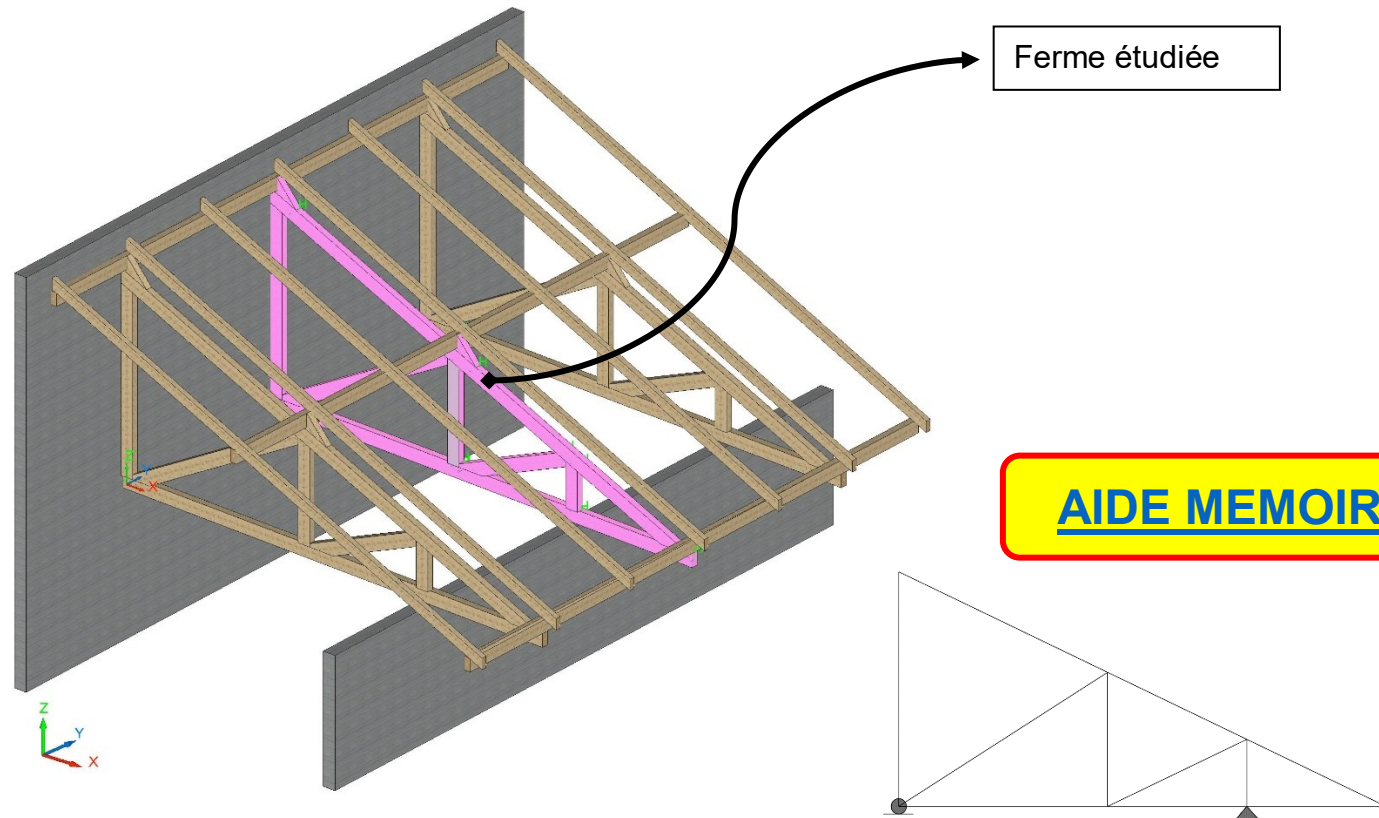
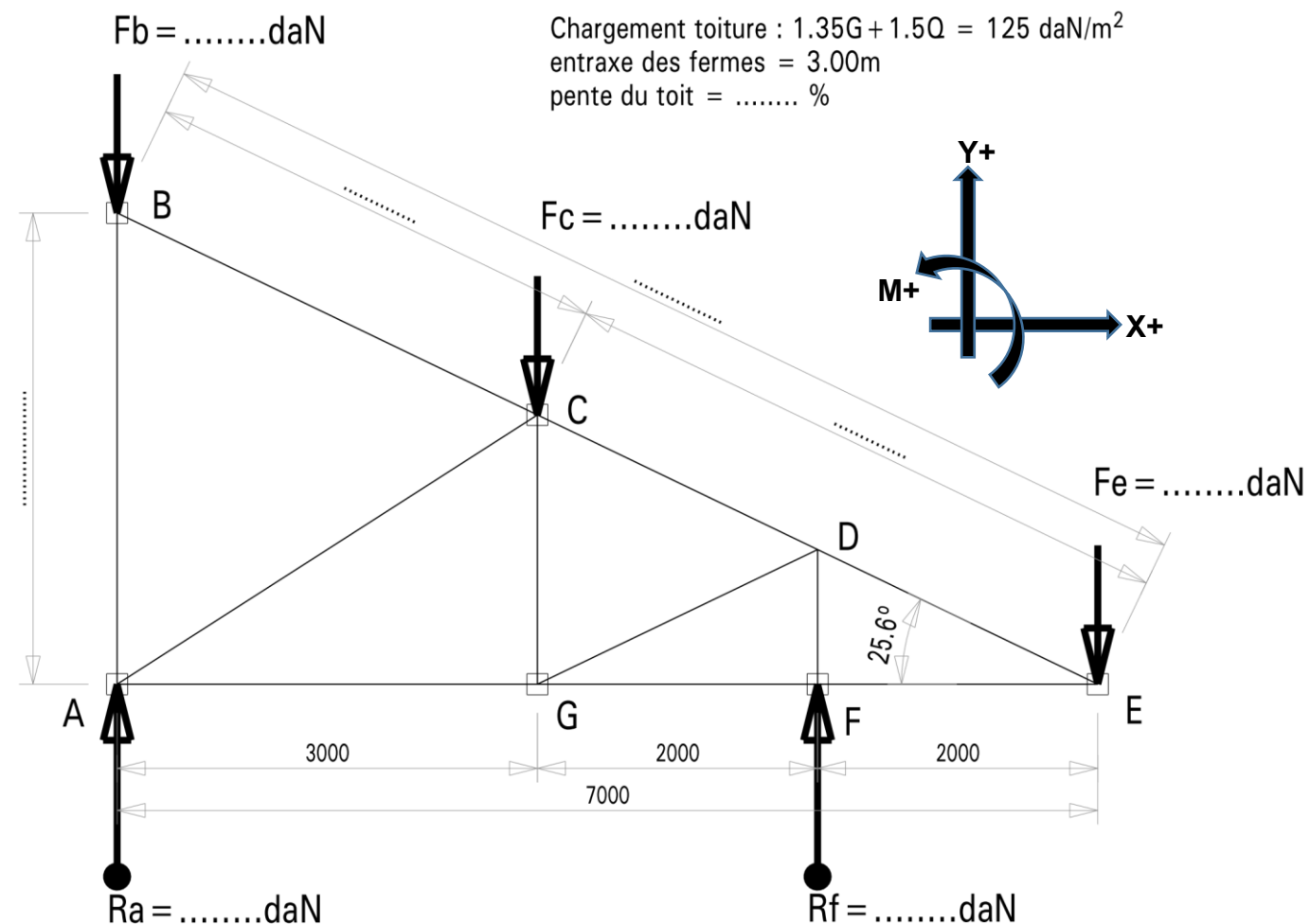


## EXERCICE DESCENTE DE CHARGE 2



**AIDE MEMOIRE**



### A. Recherche de longueurs par trigonométrie

$$\begin{aligned} GE / CE &= \cos 25.6^\circ \\ CE &= GE / \cos 25.6^\circ \\ CE &= 4435.4 \end{aligned}$$

$$\text{CE} = 4.435 \text{ m}$$

$$\begin{aligned} AG / BC &= \cos 25.6^\circ \\ BC &= AG / \cos 25.6^\circ \\ BC &= 3326.5 \end{aligned}$$

$$\text{BC} = 3.327 \text{ m}$$

### B. Calcul des surfaces d'influence

#### 1. Faitage

$$\begin{aligned} S_b &= BC / 2 * (2 * Entraxe / 2) \\ S_b &= 3.327 / 2 * 3.00 = 4.491 \text{ m}^2 \end{aligned}$$

$$S_b = 4.99 \text{ m}^2$$

#### 2. Panne intermédiaire

$$\begin{aligned} S_c &= BC / 2 + CE / 2 * 3.00 \\ S_c &= (3.327 / 2 + 4.435 / 2) * 3.00 = 11.643 \text{ m}^2 \end{aligned}$$

$$S_c = 11.64 \text{ m}^2$$

#### 3. Sablière

$$\begin{aligned} S_e &= CE / 2 * 3.00 \\ S_e &= 4.435 / 2 * 3 = 6.653 \text{ m}^2 \end{aligned}$$

$$S_e = 6.65 \text{ m}^2$$

### C. Détermination des charges ponctuelles aux nœuds

#### 1. En B

$$\begin{aligned} F_b &= S_b * \text{Chargement toiture} \\ F_b &= 4.491 * 125 \\ F_b &= 561.375 \end{aligned}$$

$$F_b = 624 \text{ daN}$$

#### 2. En C

$$\begin{aligned} F_c &= S_c * 125 \\ F_c &= 11.643 * 125 = 1455.375 \end{aligned}$$

$$F_c = 1455 \text{ daN}$$

#### 3. En E

$$\begin{aligned} F_e &= S_e * 125 \\ F_e &= 6.653 * 125 = 831.625 \end{aligned}$$

$$F_e = 831 \text{ daN}$$

### D. Application PFS

Somme des forces /Y = 0

$$\begin{aligned} R_a + R_f &= F_b + F_c + F_e \\ R_a &= - R_f + 624 + 1455 + 831 \\ R_a &= - R_f + 2910 \\ R_a &= - 2036 + 2910 \end{aligned}$$

$$R_a = 874 \text{ daN}$$

Somme des moments en A = 0

$$\begin{aligned} - 3.F_c + 5.R_f - 7.F_e &= 0 \\ R_f &= (7.F_e + 3.F_c) / 5 \end{aligned}$$

$$R_f = 2036 \text{ daN}$$