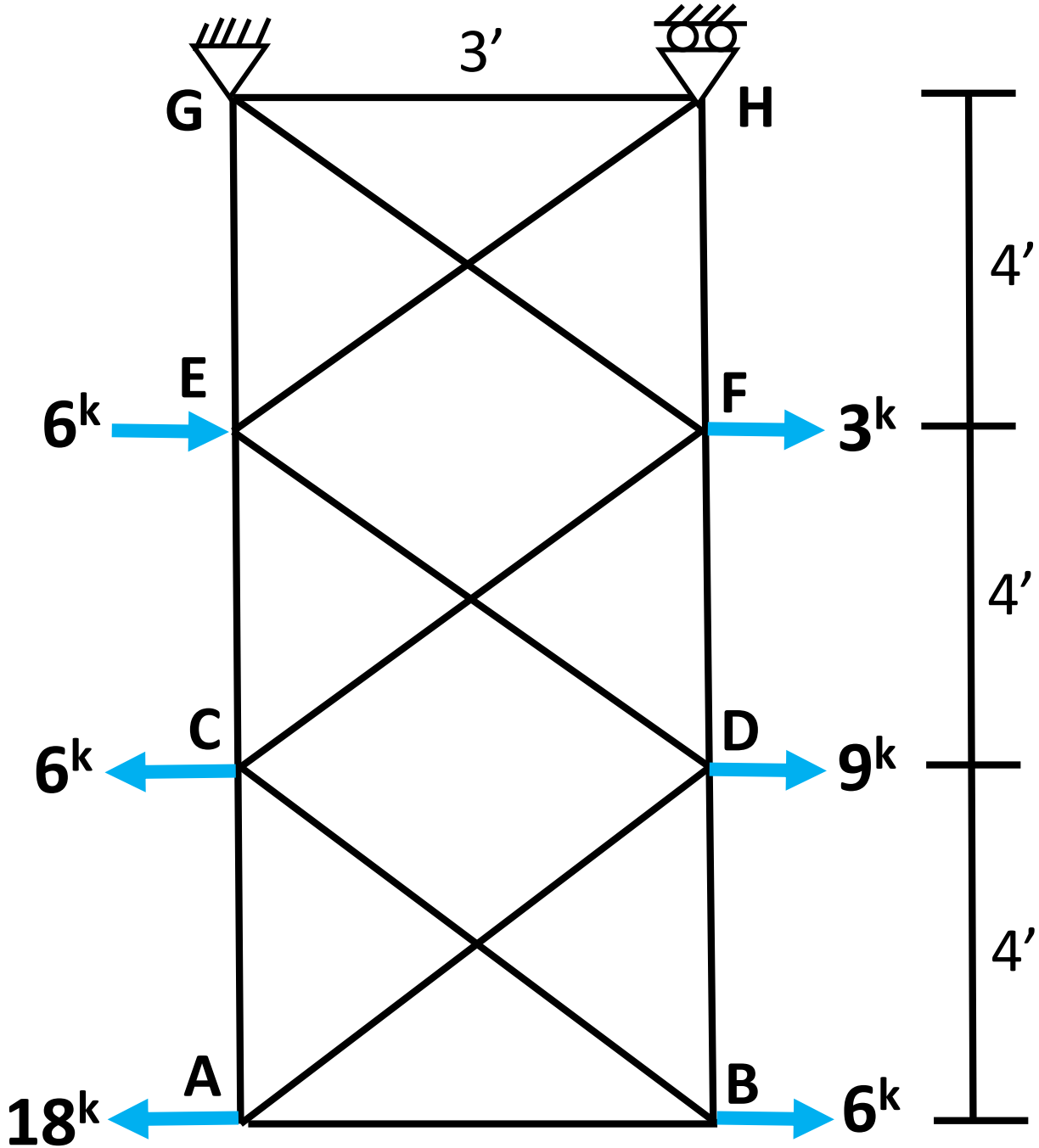
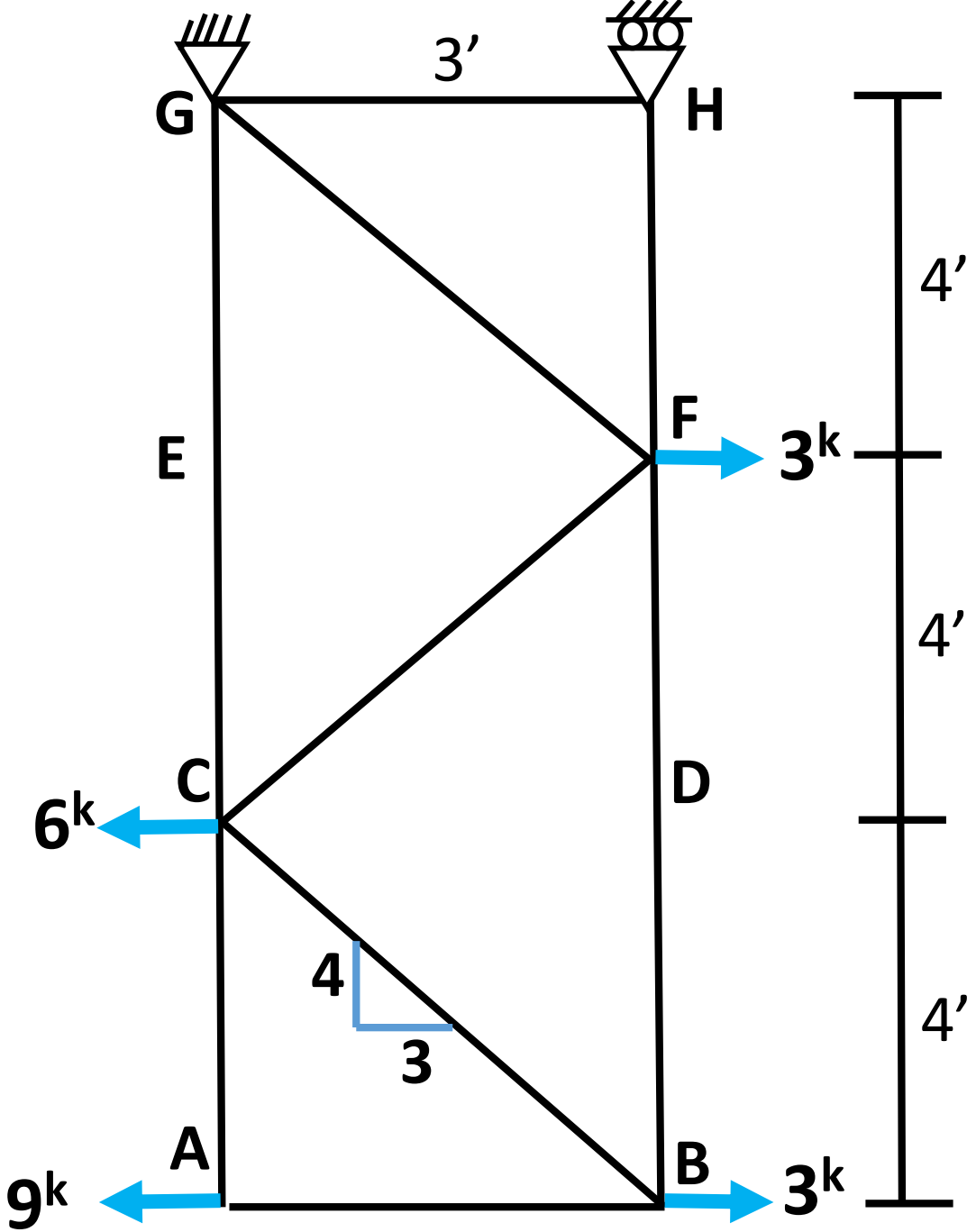
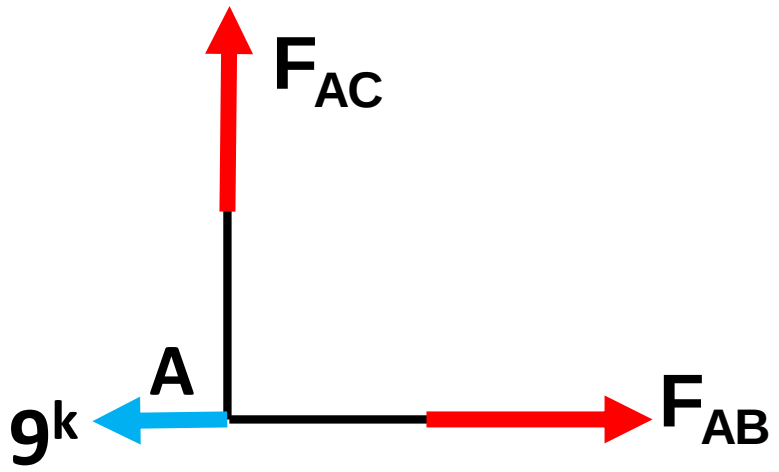


BRACED TRUSS EXAMPLE:1





At joint A,

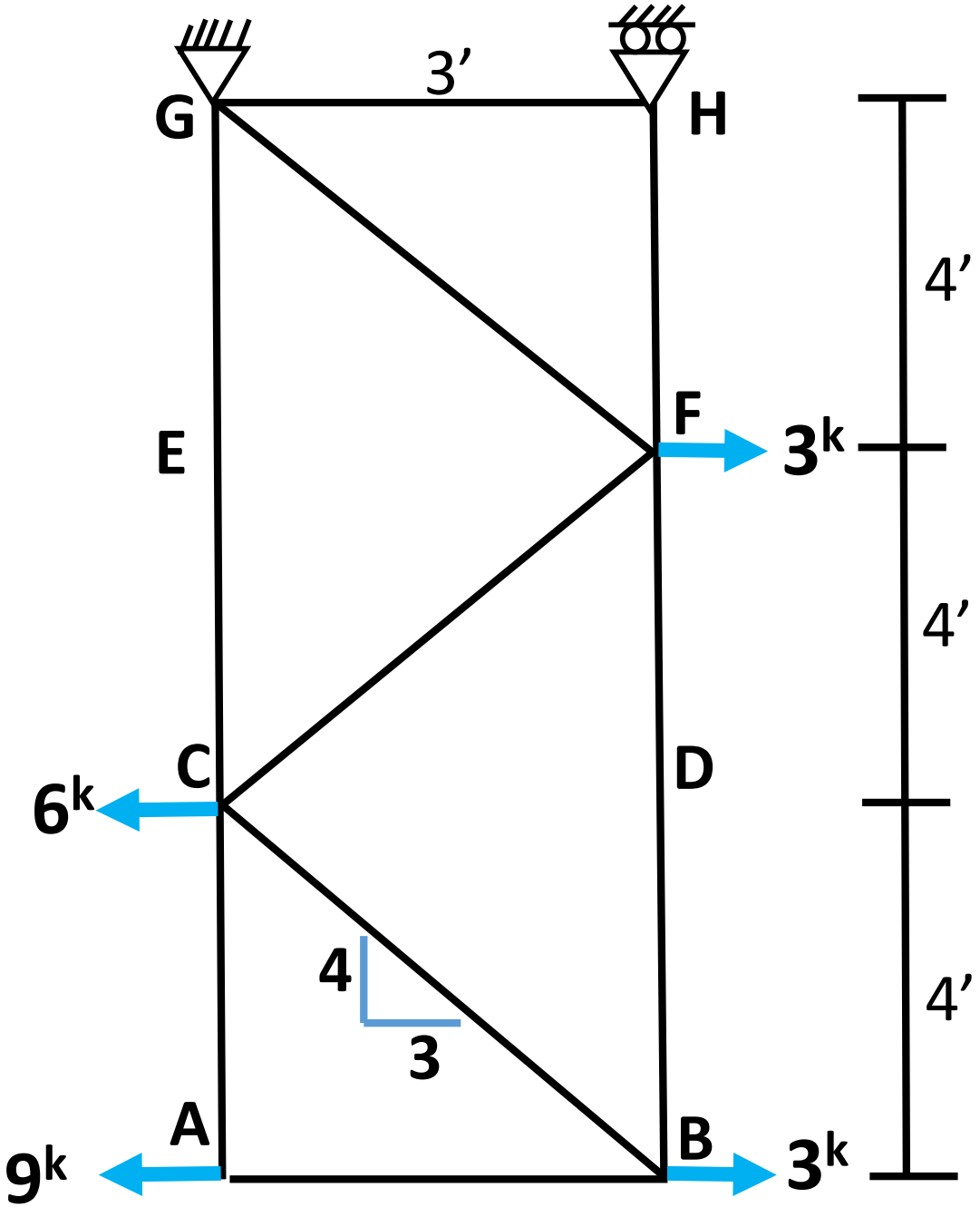
$\sum F_x = 0$ ($\rightarrow$ +ve)

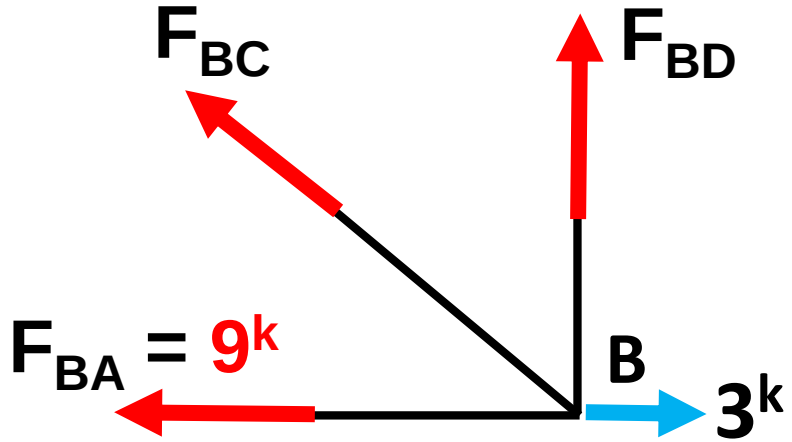
$\rightarrow -9 + F_{AB} = 0$

$\rightarrow F_{AB} = 9^k$ (T)

$\sum F_y = 0$ ($\uparrow$ +ve)

$\rightarrow F_{AC} = 0$





At joint B,

$\sum F_x = 0$ ($\rightarrow$ +ve)

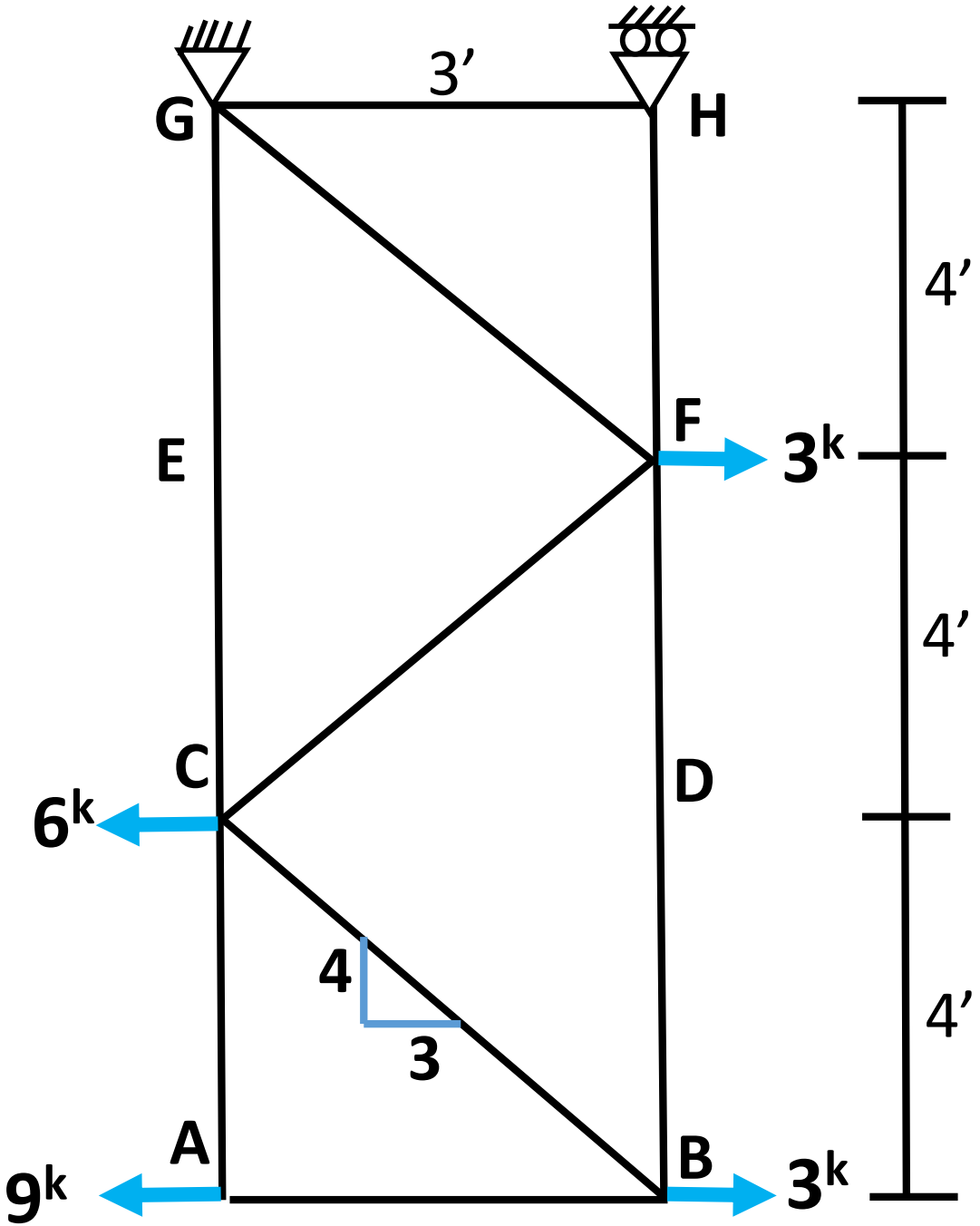
$\rightarrow$ $-9 + 3 - F_{BC} \times (3/5) = 0$

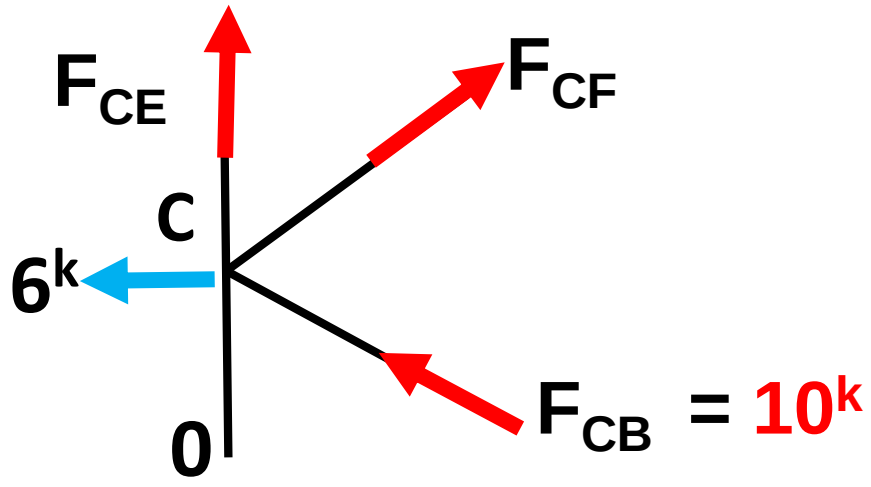
$\rightarrow$ $F_{BC} = -10^k$ (C)

$\sum F_y = 0$ ($\uparrow$ +ve)

$\rightarrow$ $F_{BD} - 10*(4/5) = 0$

$\rightarrow$ $F_{BD} = 8^k$ (T)





At joint C,

$\sum F_x = 0$ ($\rightarrow$ +ve)

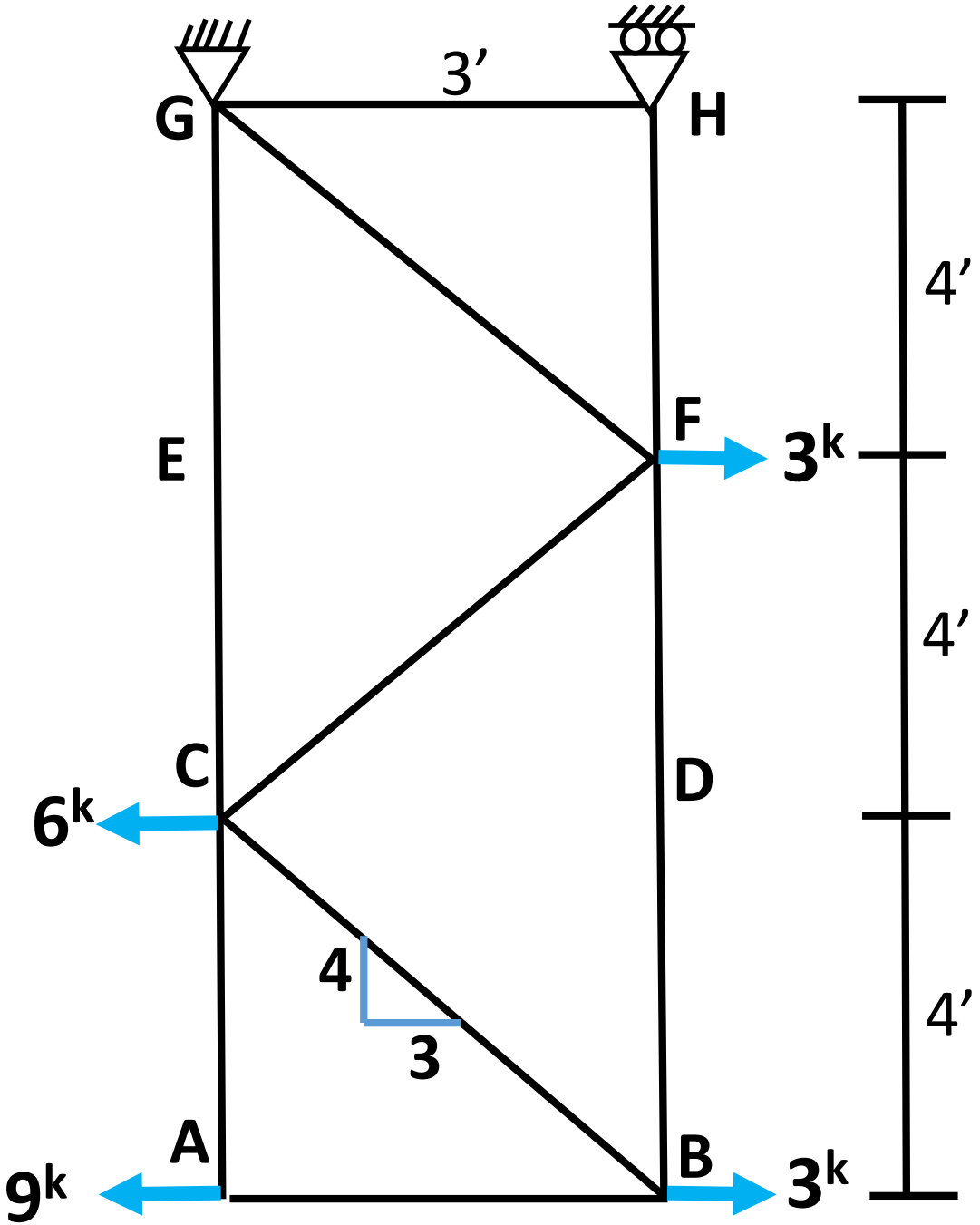
$\rightarrow$ $-9 + F_{CF}*(3/5) - 10*(3/5) = 0$

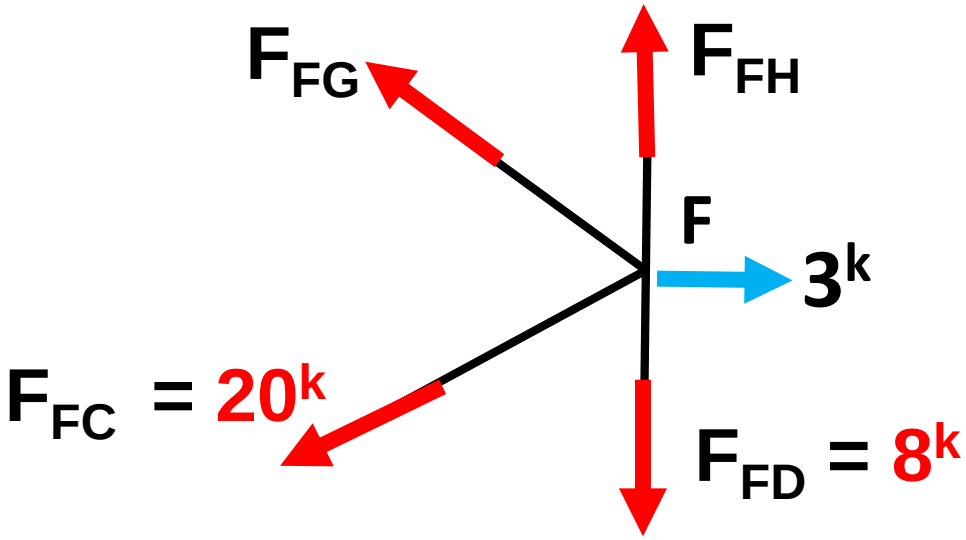
$\rightarrow$ $F_{CF} = 20^k$ (T)

$\sum F_y = 0$ ($\uparrow$ +ve)

$\rightarrow$ $F_{CE} + 20*(4/5) + 10*(4/5) = 0$

$\rightarrow$ $F_{CE} = -24^k$ (C)





At joint F,

$\sum F_x = 0$ ($\rightarrow$ +ve)

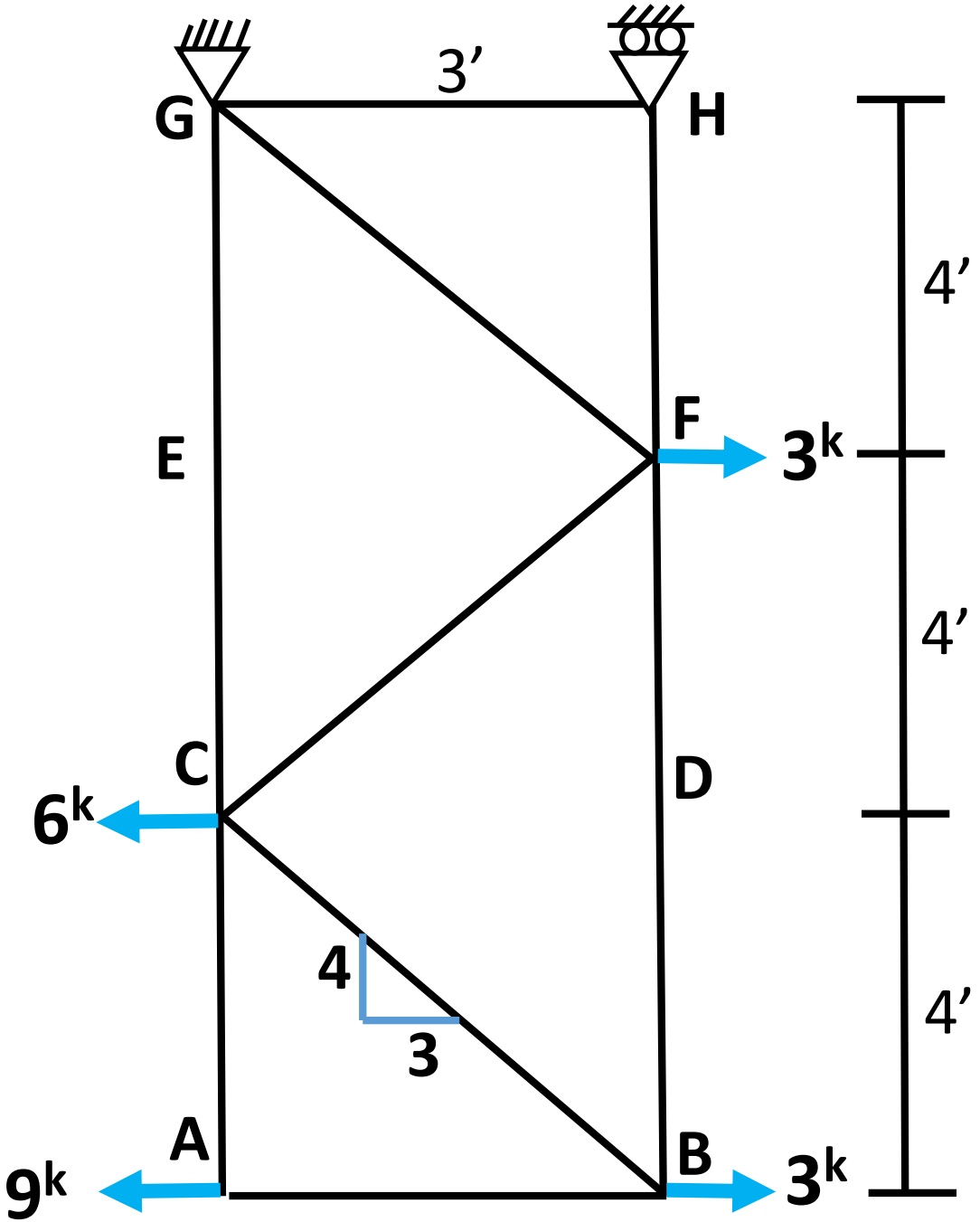
$3 - 20*(3/5) - F_{FG}*(3/5) = 0$

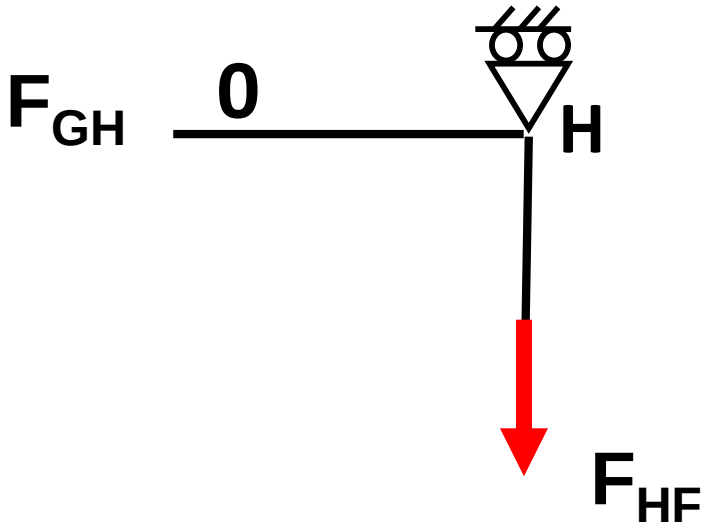
$F_{CF} = -15^k$ (C)

$\sum F_y = 0$ ($\uparrow$ +ve)

$F_{FH} - 20*(4/5) - 8 - 15*(4/5) = 0$

$F_{FH} = 36^k$ (T)



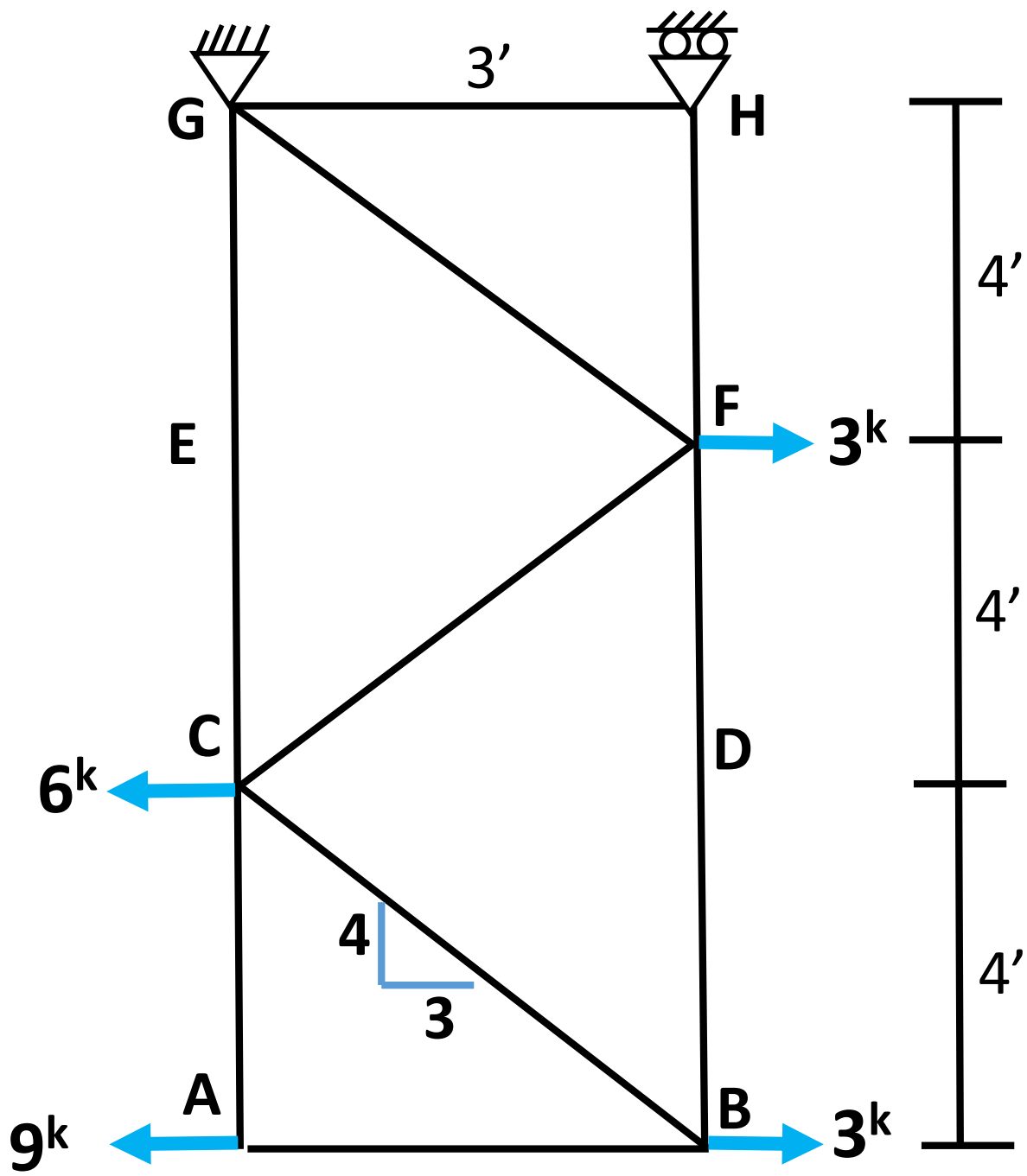


At joint H,

$\sum F_y = 0$ (↑ +ve)

→ $-H_Y - 36 = 0$

→ $H_Y = -36^k$



At joint G,(for whole structure)

$\sum F_x = 0$ (↑ +ve)

Gx -9+3-6+3= 0

$G_x = 9^k$ →

$\sum F_y = 0$ (↑ +ve)

$- G_y + 36 = 0$

$G_y = 36^k$ ↓

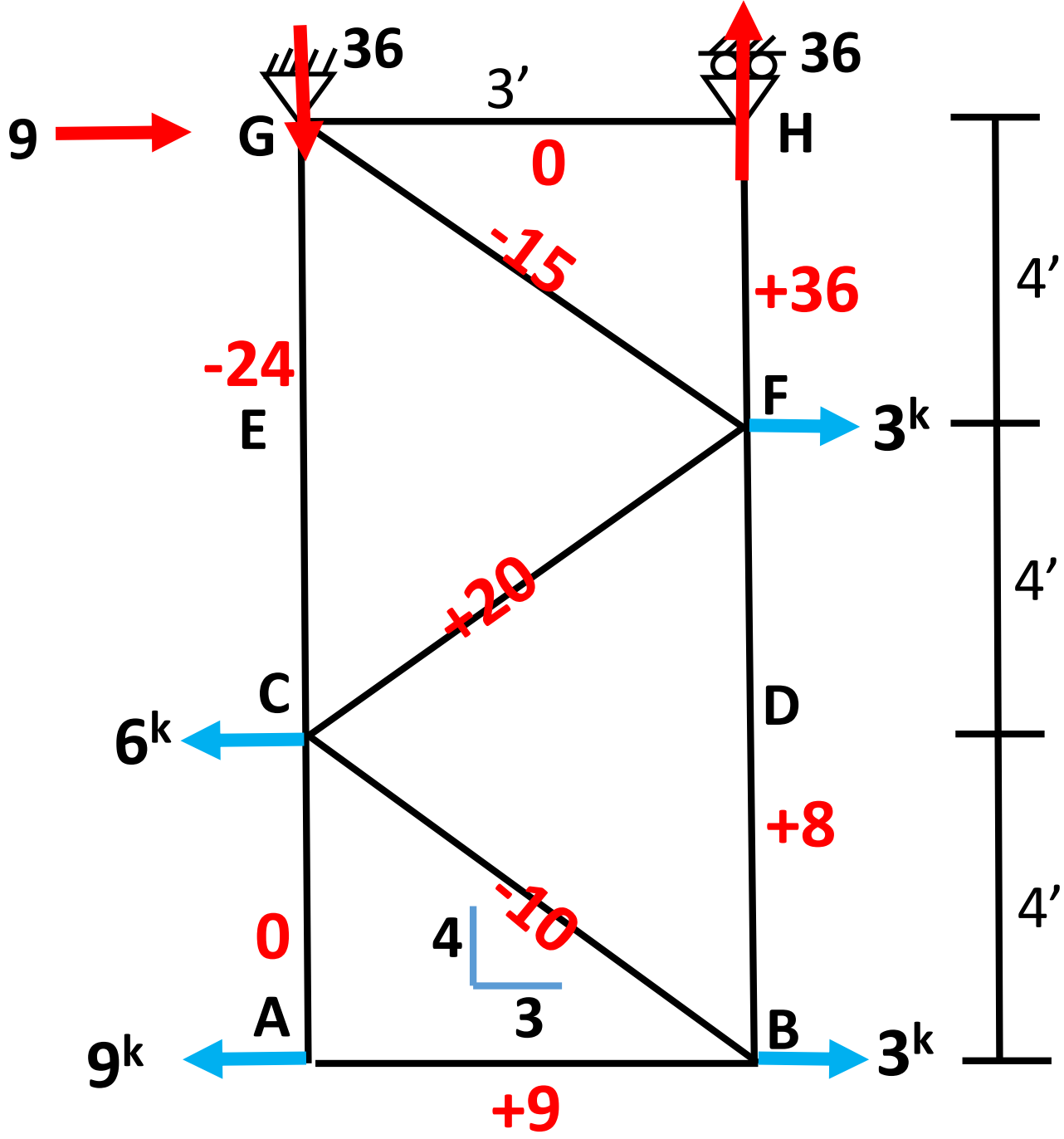
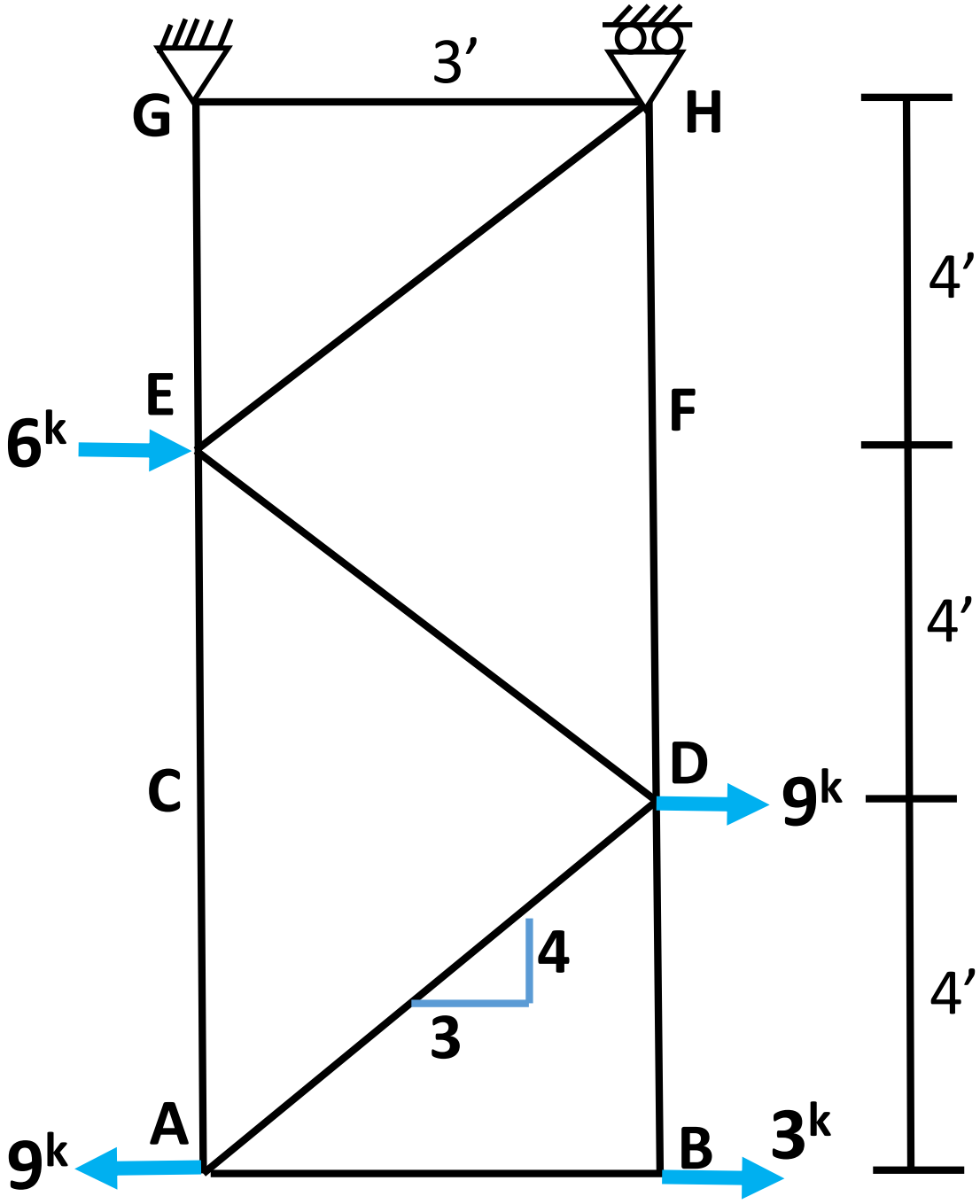
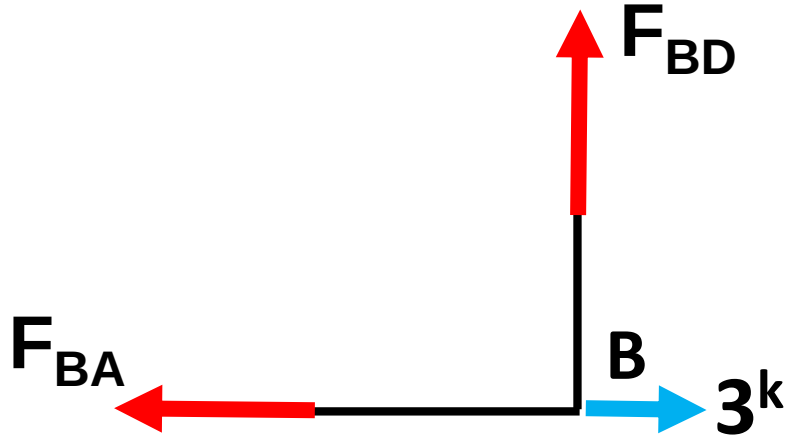


Fig 1





At joint B,

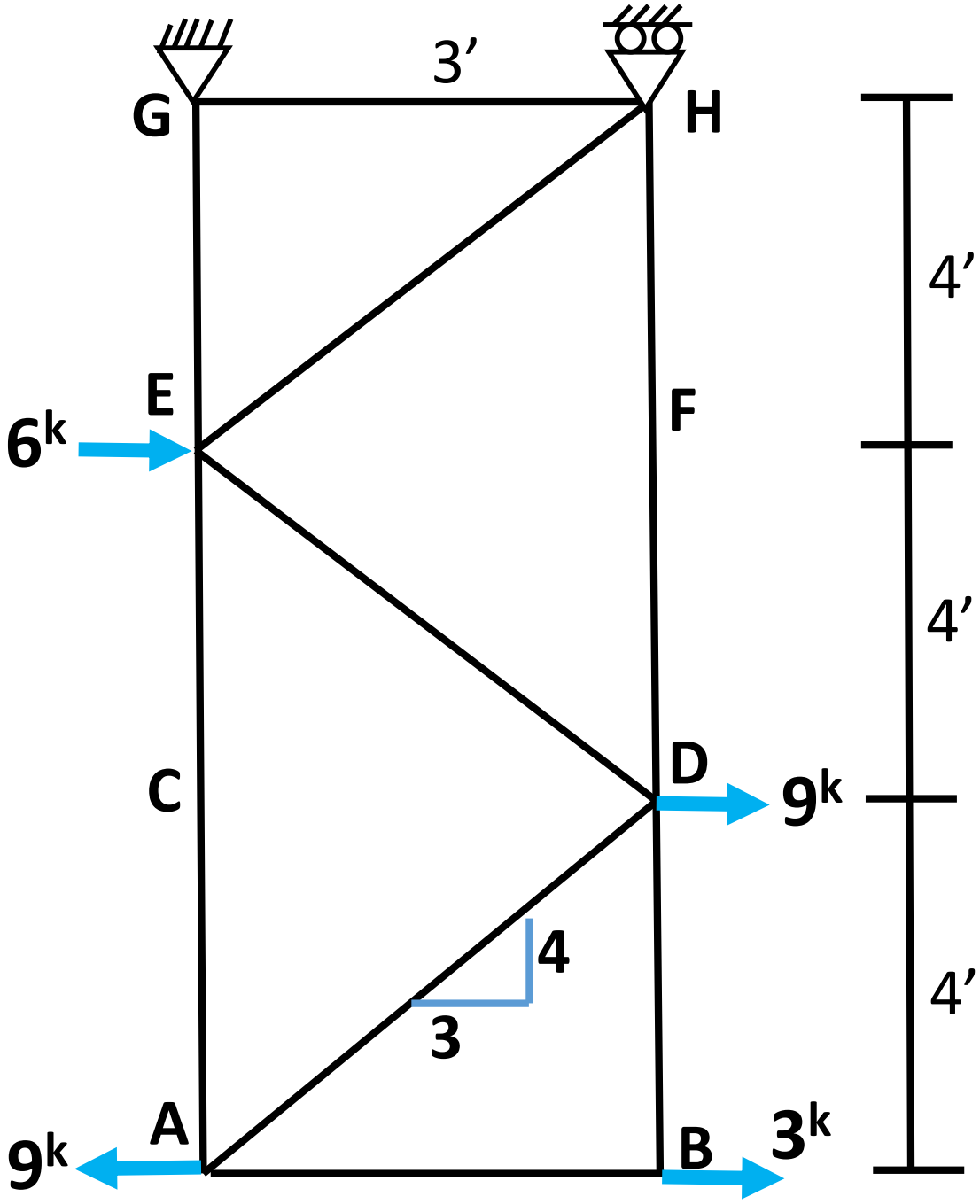
$\sum F_x = 0$ ($\rightarrow$ +ve)

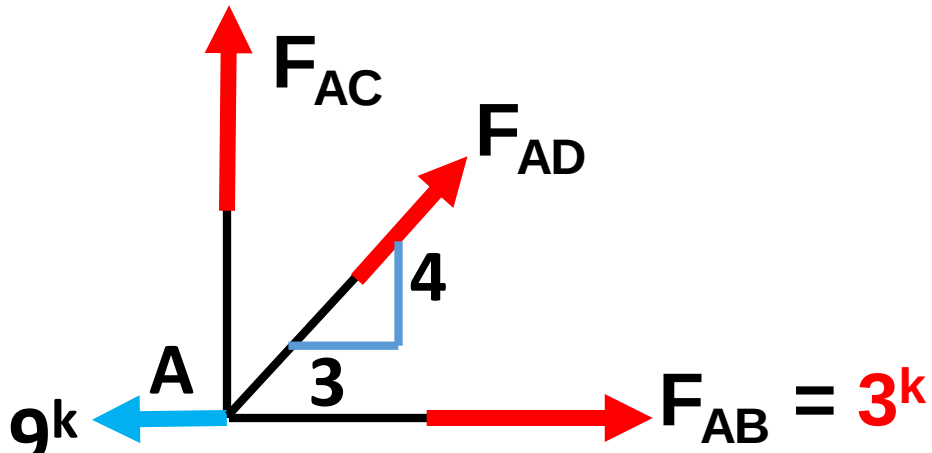
$\rightarrow 3 - F_{AB} = 0$

$\rightarrow F_{BA} = 3^k$ (T)

$\sum F_y = 0$ ($\uparrow$ +ve)

$\rightarrow F_{BD} = 0$





At joint A,

$\sum F_x = 0$ ($\rightarrow$ +ve)

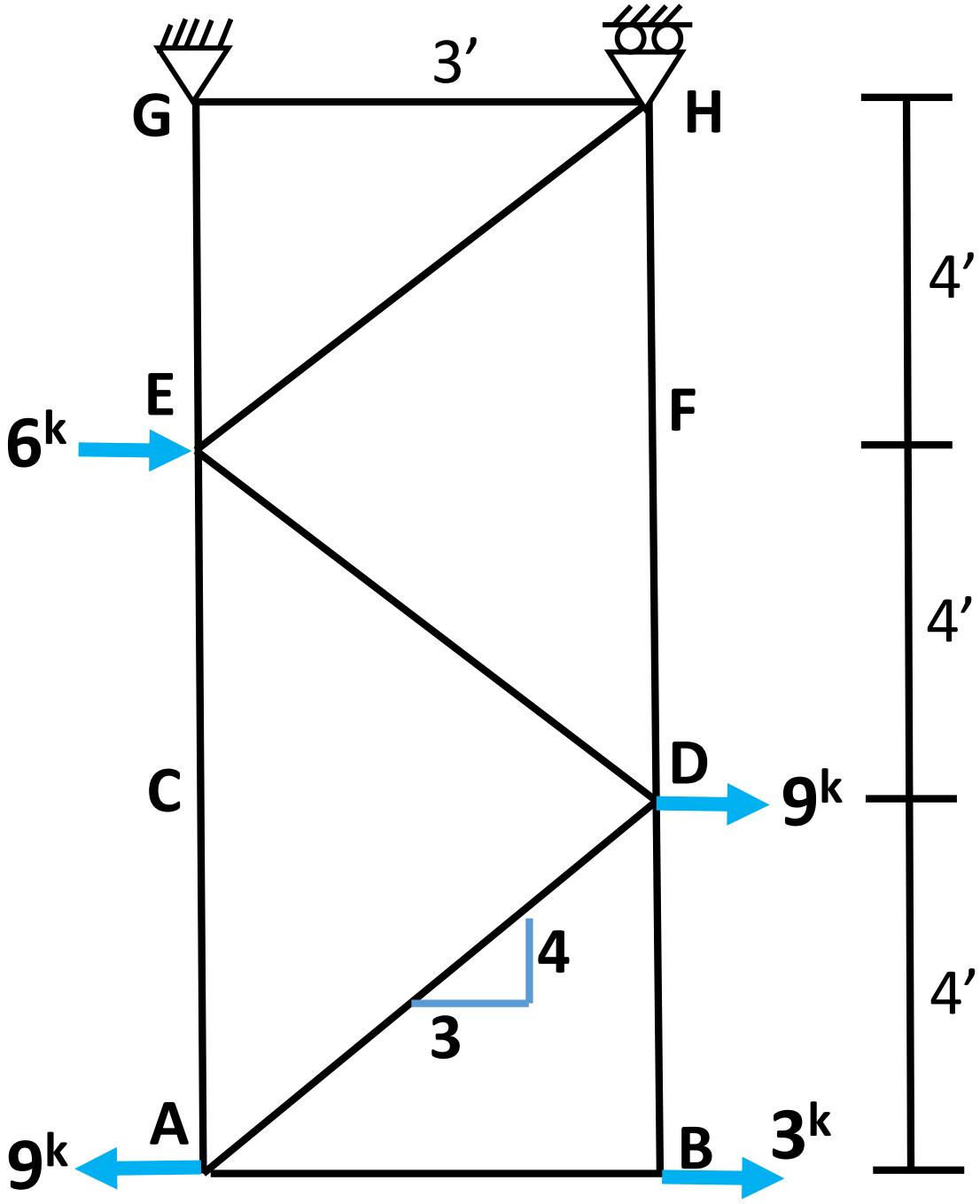
$\rightarrow$ $-9 + 3 + F_{AD} * (3/5) = 0$

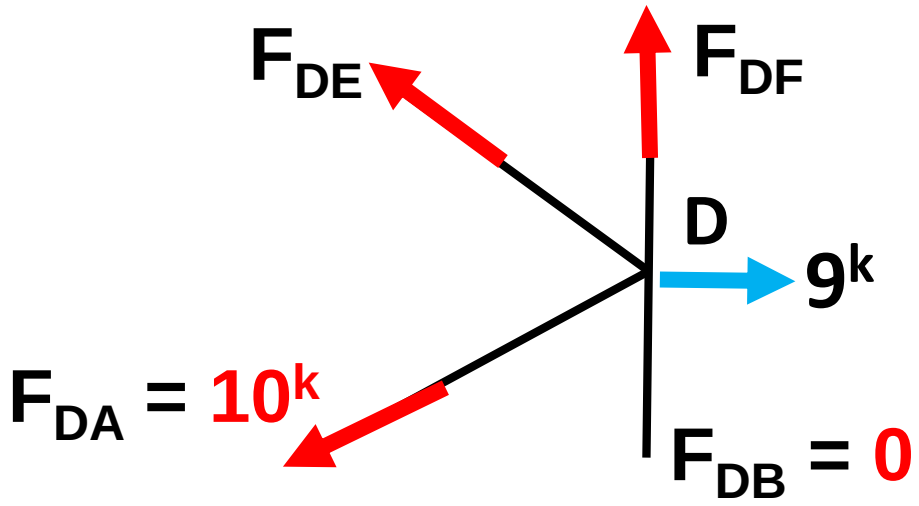
$\rightarrow$ $F_{AD} = 10^k$ (T)

$\sum F_y = 0$ ($\uparrow$ +ve)

$\rightarrow$ $F_{AC} + 10 * (4/5) = 0$

$\rightarrow$ $F_{AC} = -8^k$ (C)





At joint D,

$\sum F_x = 0$ ($\rightarrow$ +ve)

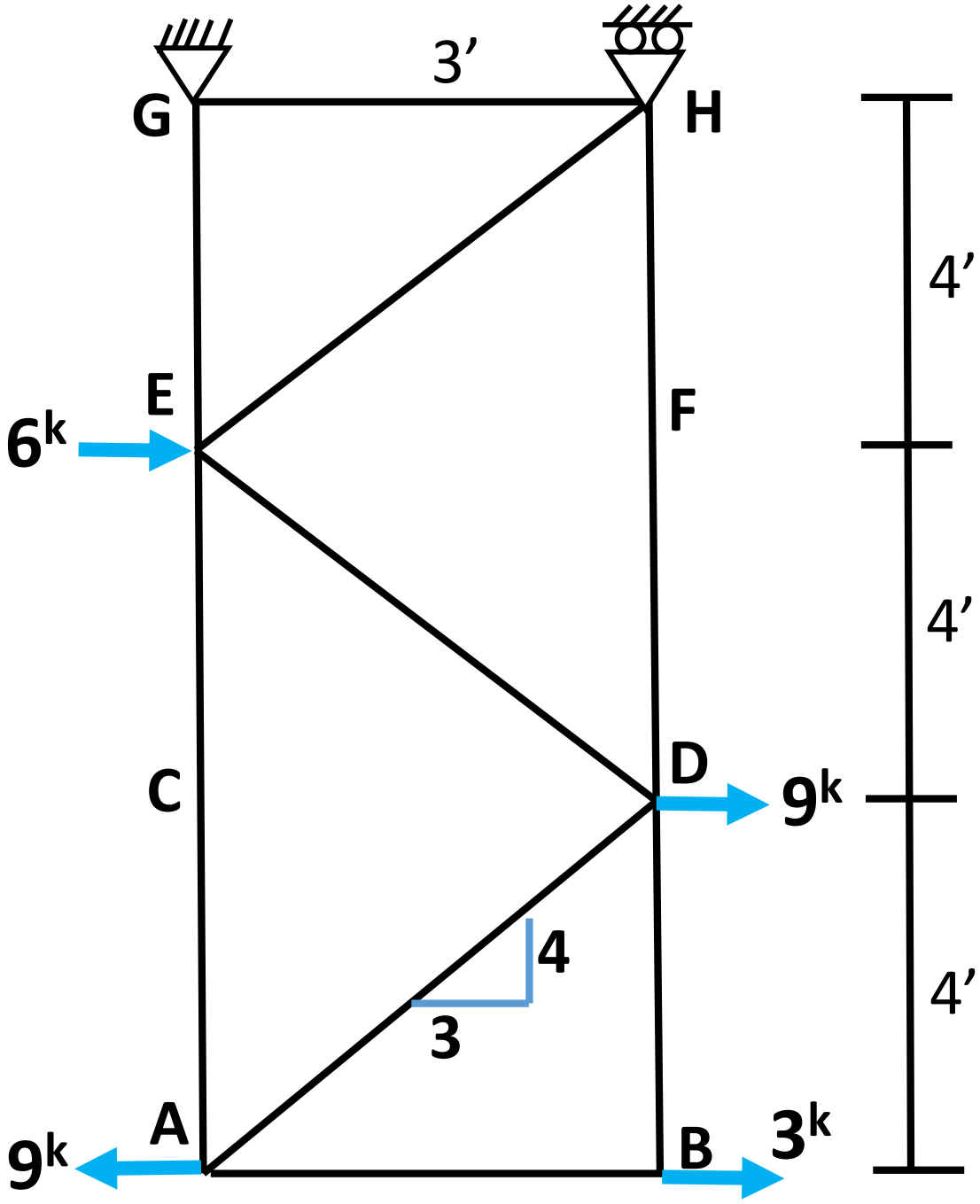
$\rightarrow$ $9 - 10 *(3/5) - F_{DE} *(3/5) = 0$

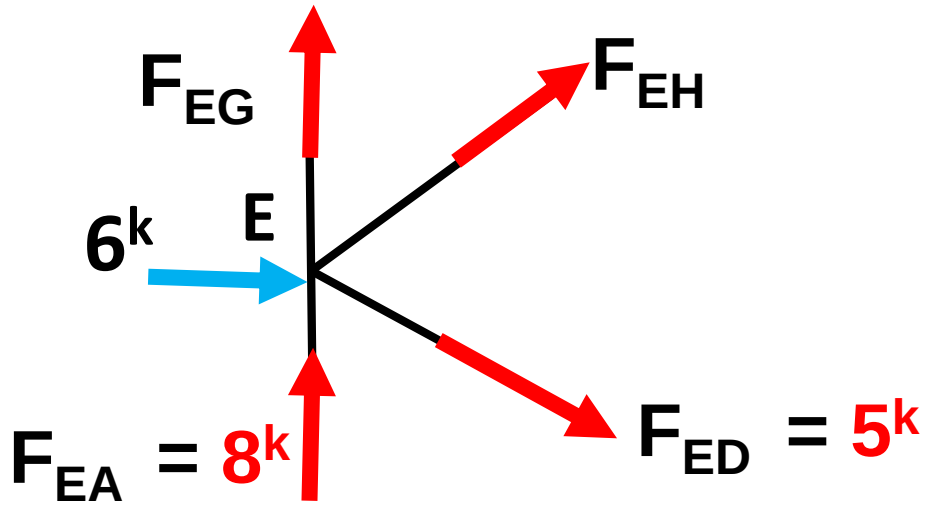
$\rightarrow$ $F_{DE} = 5^k$ (T)

$\sum F_y = 0$ ($\uparrow$ +ve)

$\rightarrow$ $- 10 *(4/5) + 5*(4/5) + F_{DF} = 0$

$\rightarrow$ $F_{DF} = 4^k$ (T)





At joint E,

$\sum F_x = 0$ ($\rightarrow$ +ve)

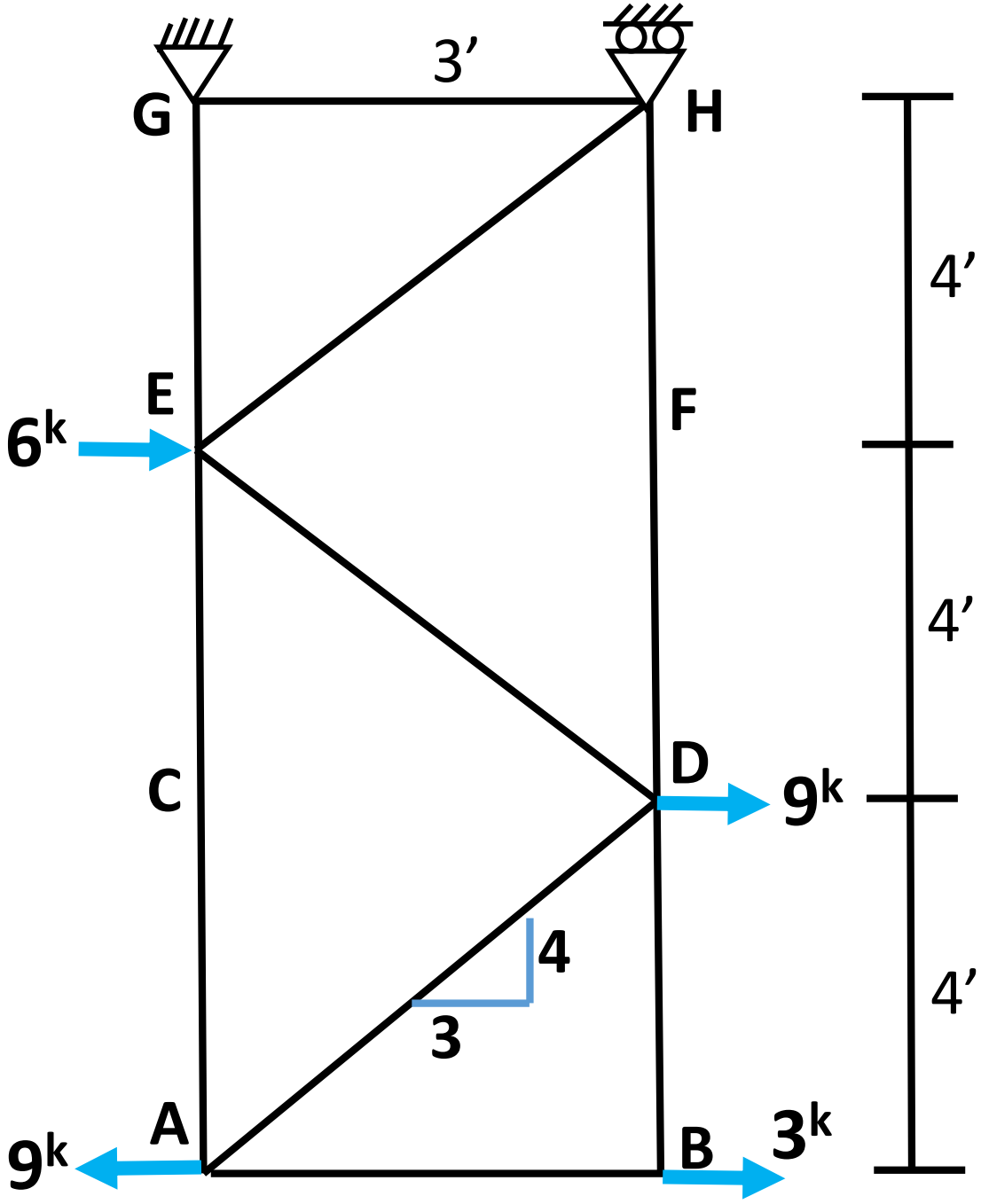
$\rightarrow 6 + 5 * (3/5) + F_{EH} * (3/5) = 0$

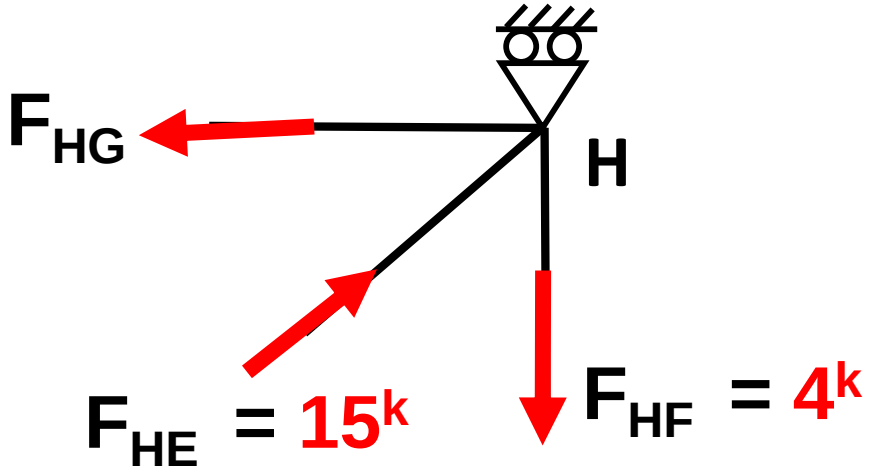
$\rightarrow F_{EH} = -15^k$ (C)

$\sum F_y = 0$ ($\uparrow$ +ve)

$\rightarrow 8 - 5 * (4/5) - 15 * (4/5) + F_{EG} = 0$

$\rightarrow F_{EG} = 8^k$ (T)





At joint H,

$\sum F_Y = 0$ ($\rightarrow$ +ve)

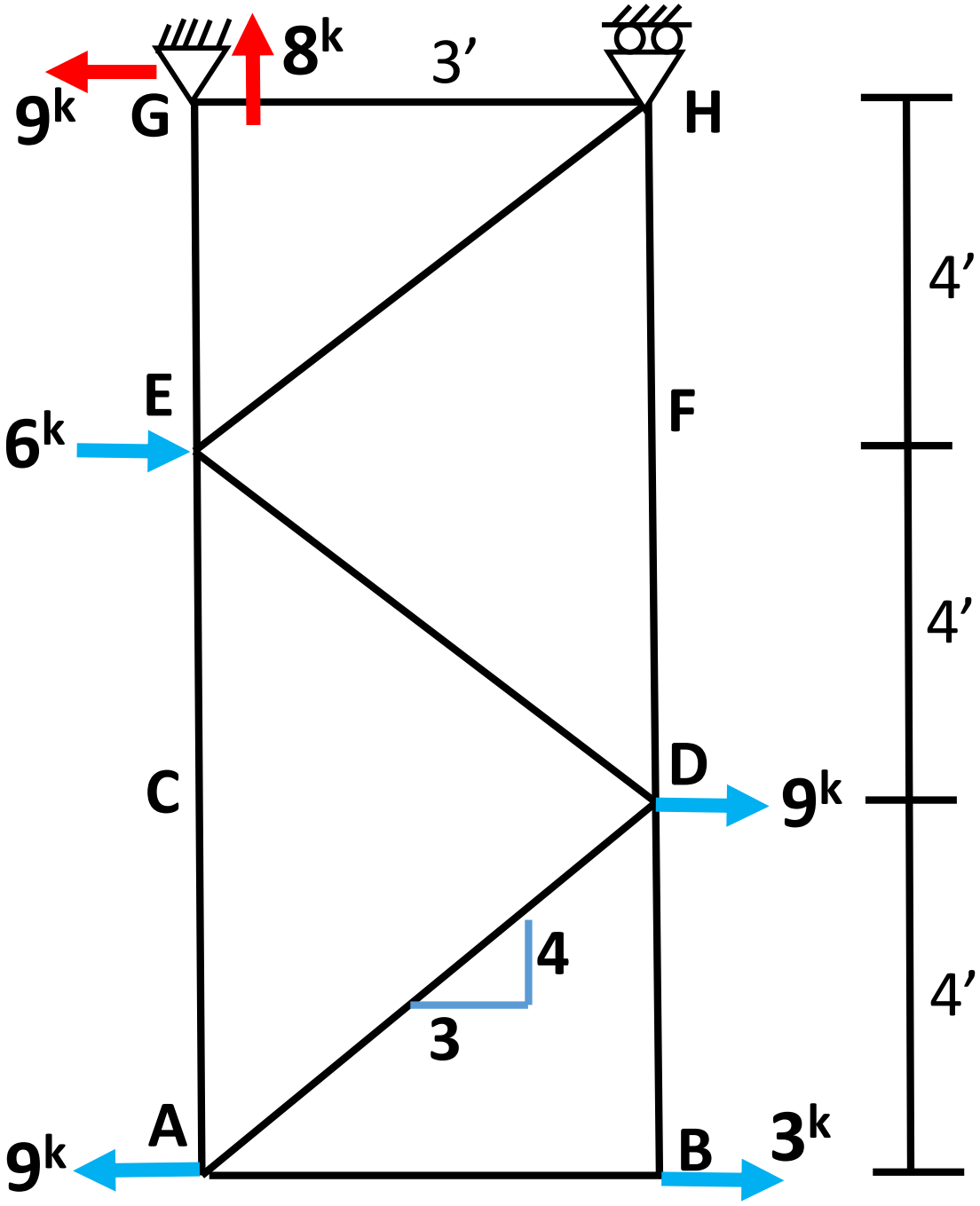
$-4 + 15 *(3/5) - H_Y = 0$

$H_Y = 8^k$ ($\downarrow$)

$\sum F_X = 0$ ($\uparrow$ +ve)

$- F_{HG} + 15 *(3/5) = 0$

$F_{HG} = 9^k$ (T)



At joint G,(for whole structure)

$\sum F_x = 0$ (↑ +ve)

$Gx + 9 - 9 + 3 + 6 = 0$

$G_x = -9^k$

$\sum F_y = 0$ (↑ +ve)

$-G_y - 8 = 0$

$G_y = -8^k$

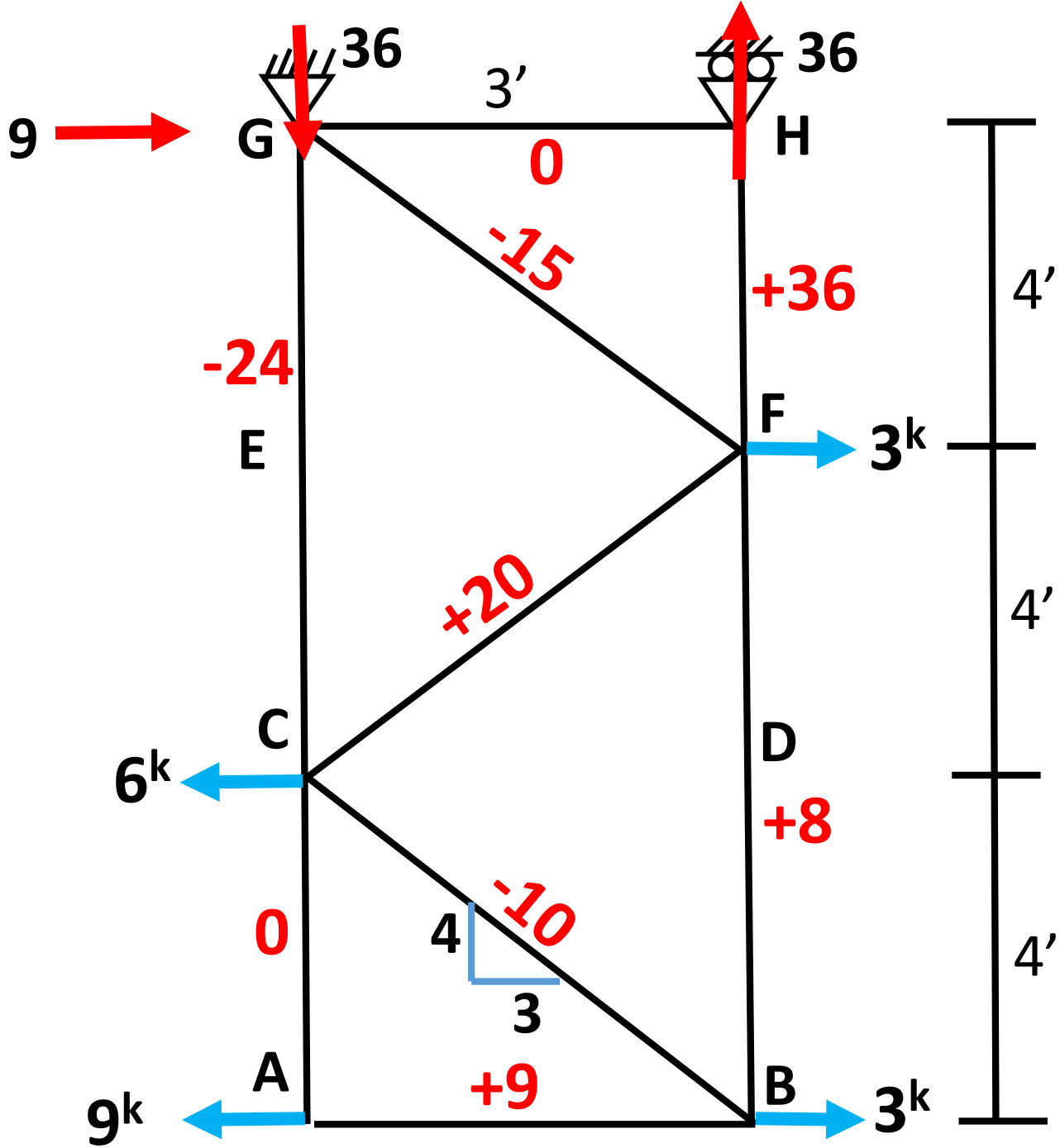


Fig 1

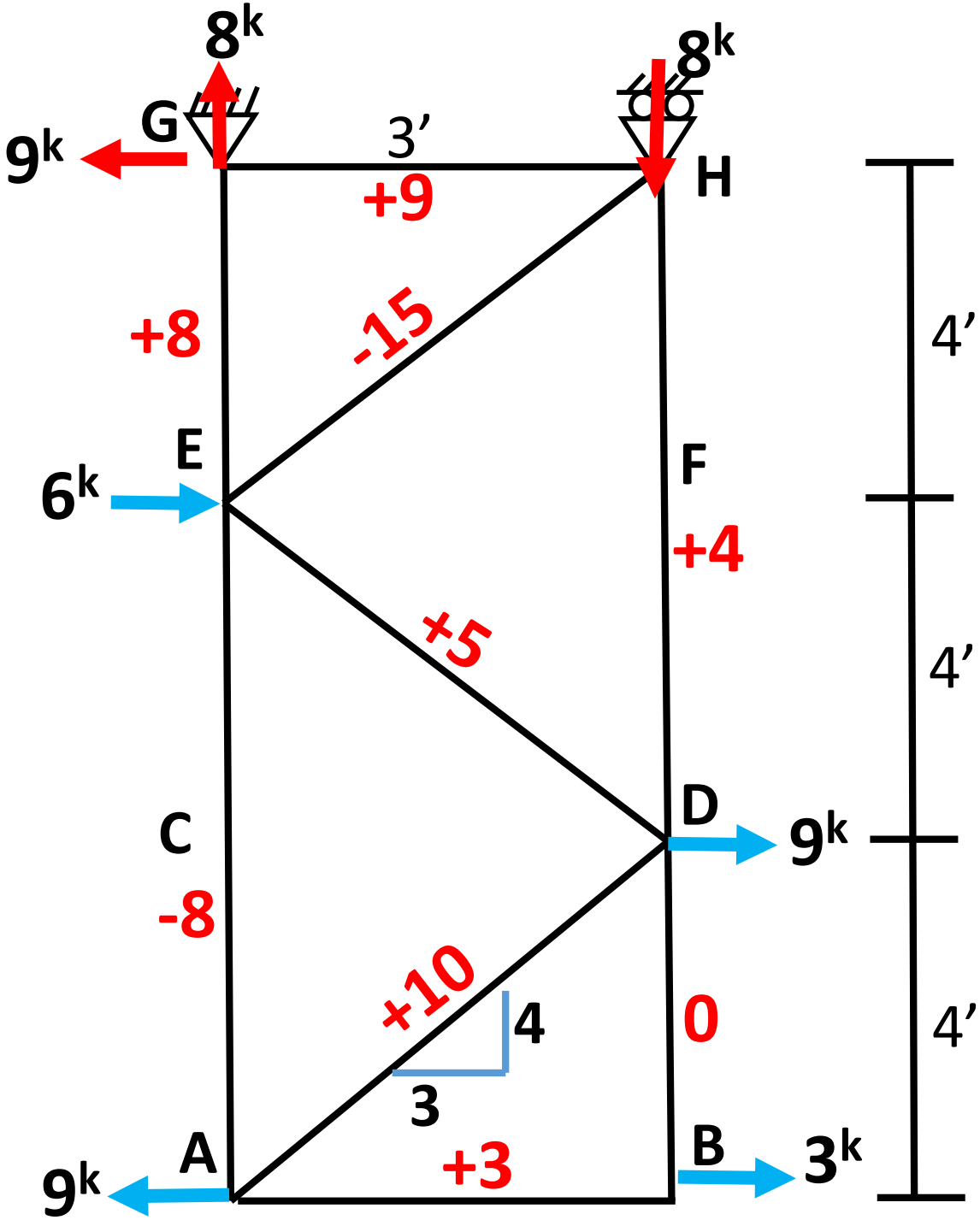


Fig 2

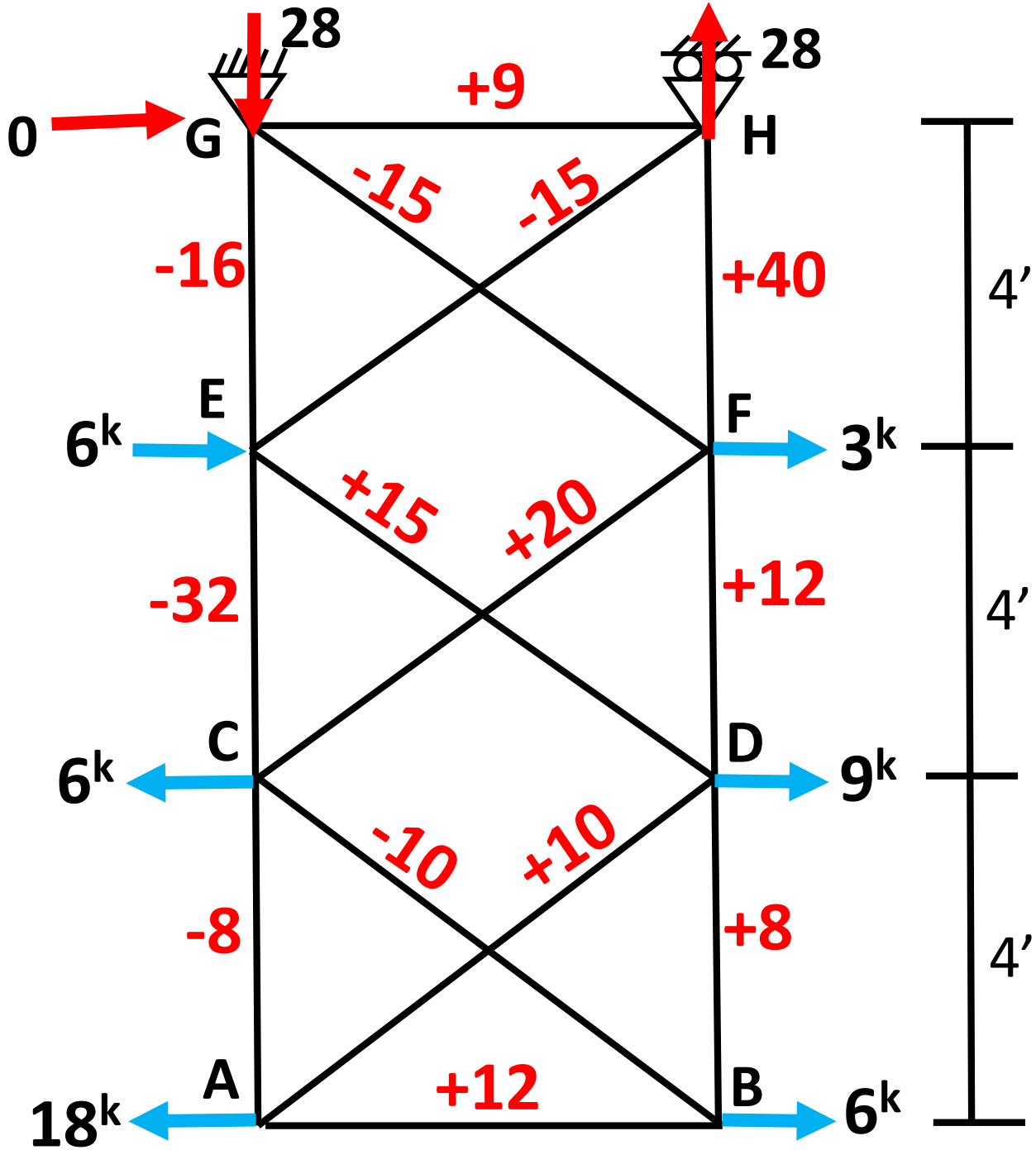

28
28
+9
0
G
H
-15
-15
-16
+40
4’
E
F
6k
3k
+15
+20
-32
+12
4’
C
D
6k
9k
-10
+10
-8
+8
4’
A
+12
B
18k
6k

Fig 3