NEW YORK INSTITUTE OF TECHNOLOGY

Distributed Loads

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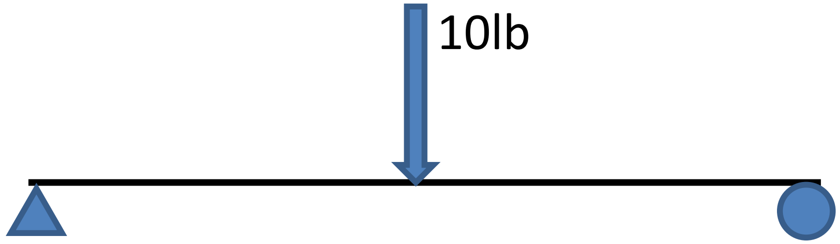
Rodrigo Suarez



$\Sigma Ma=0$

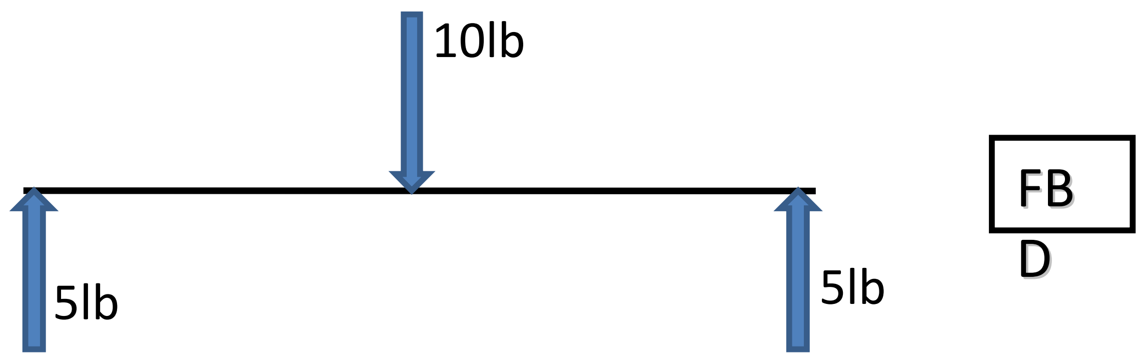
$-(10lb)(1ft)+(Ry_2)(2ft)=0$

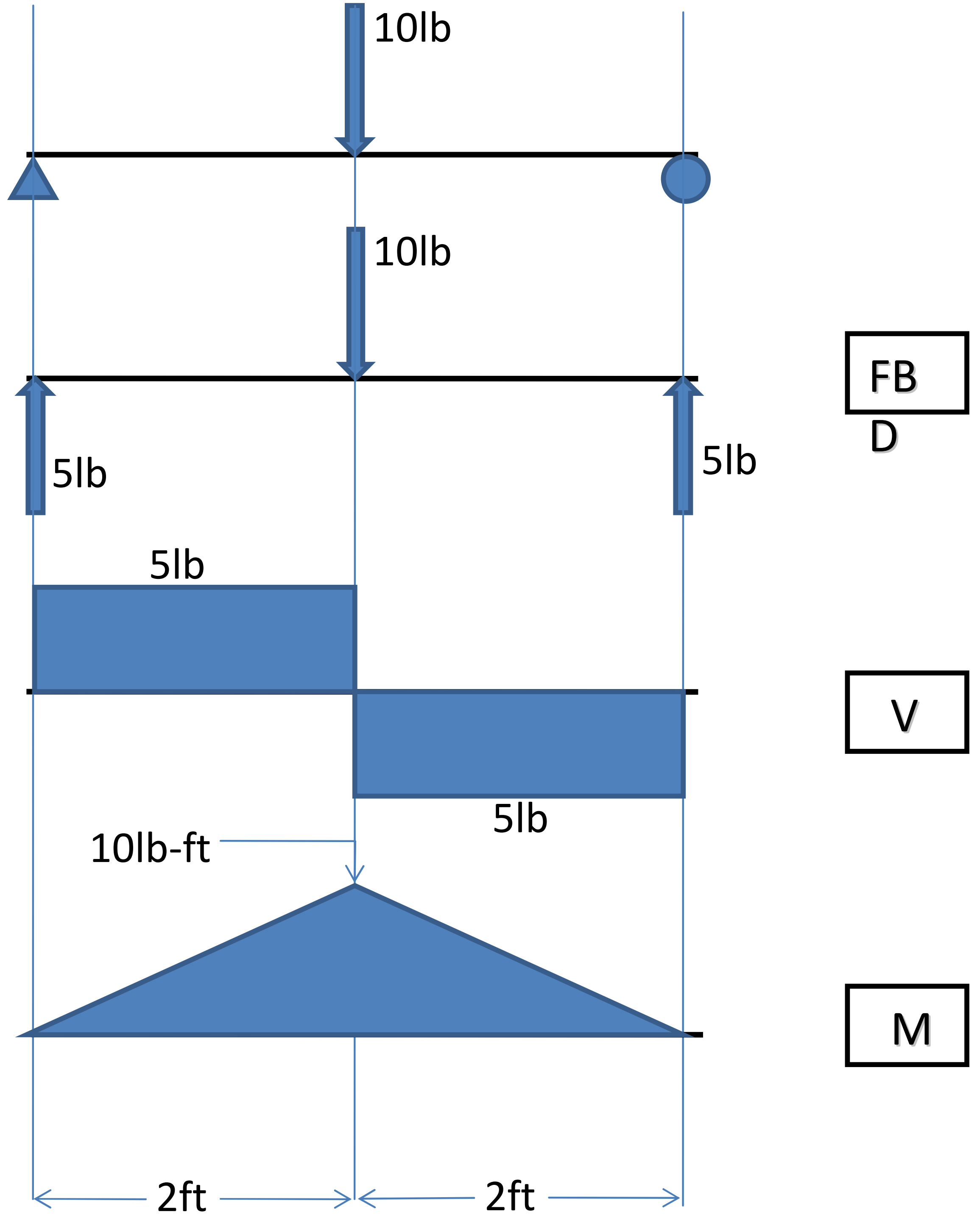
$Ry_2=5lb$

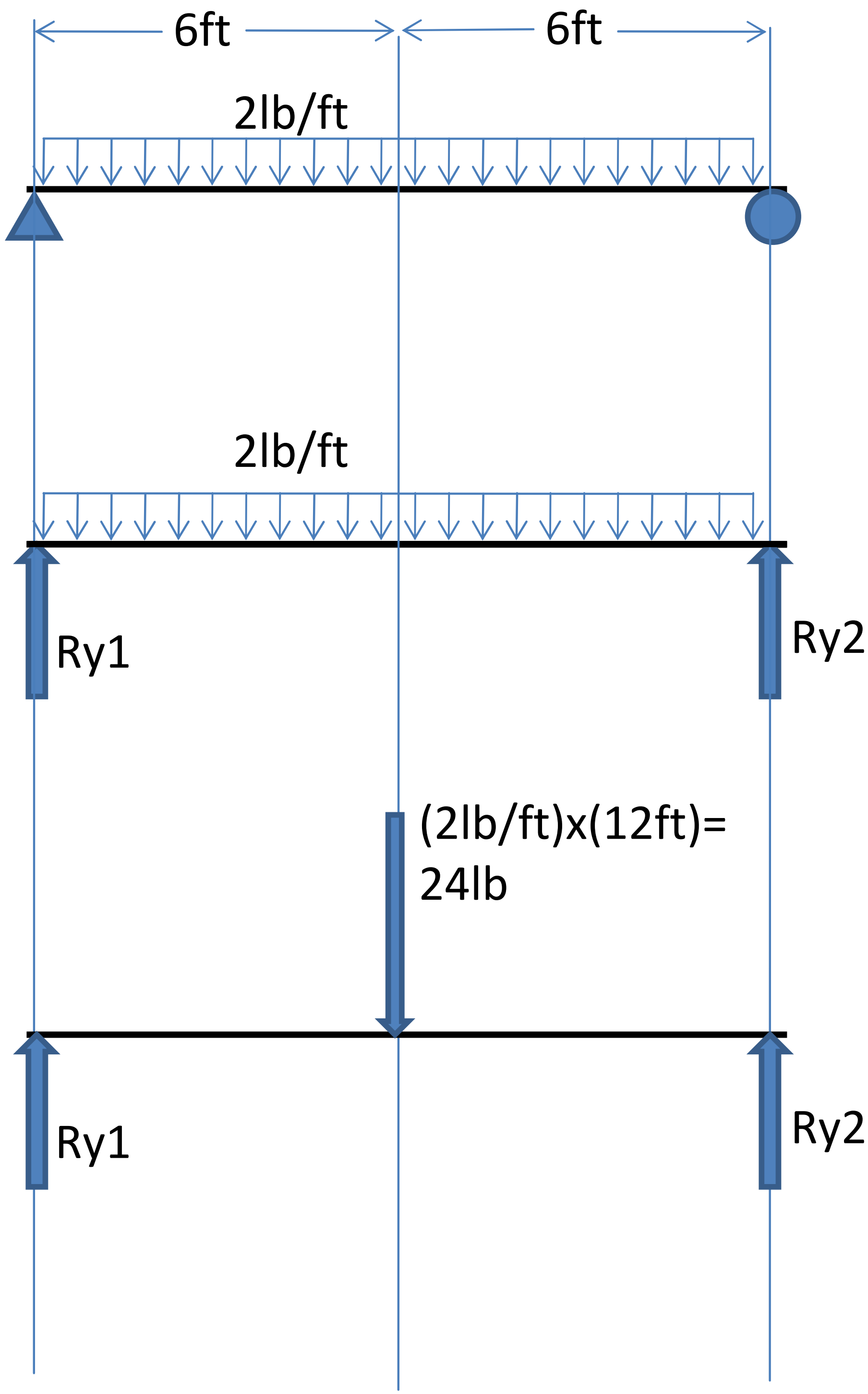
$\Sigma Fy=0$

$Ry_1-10lb+5lb=0$

$Ry_1=5lb$




10lb
10lb
5lb
5lb
FB
D
5lb
V
5lb
10lb-ft
M
2ft
2ft



FBD

$\Sigma M_a = 0$

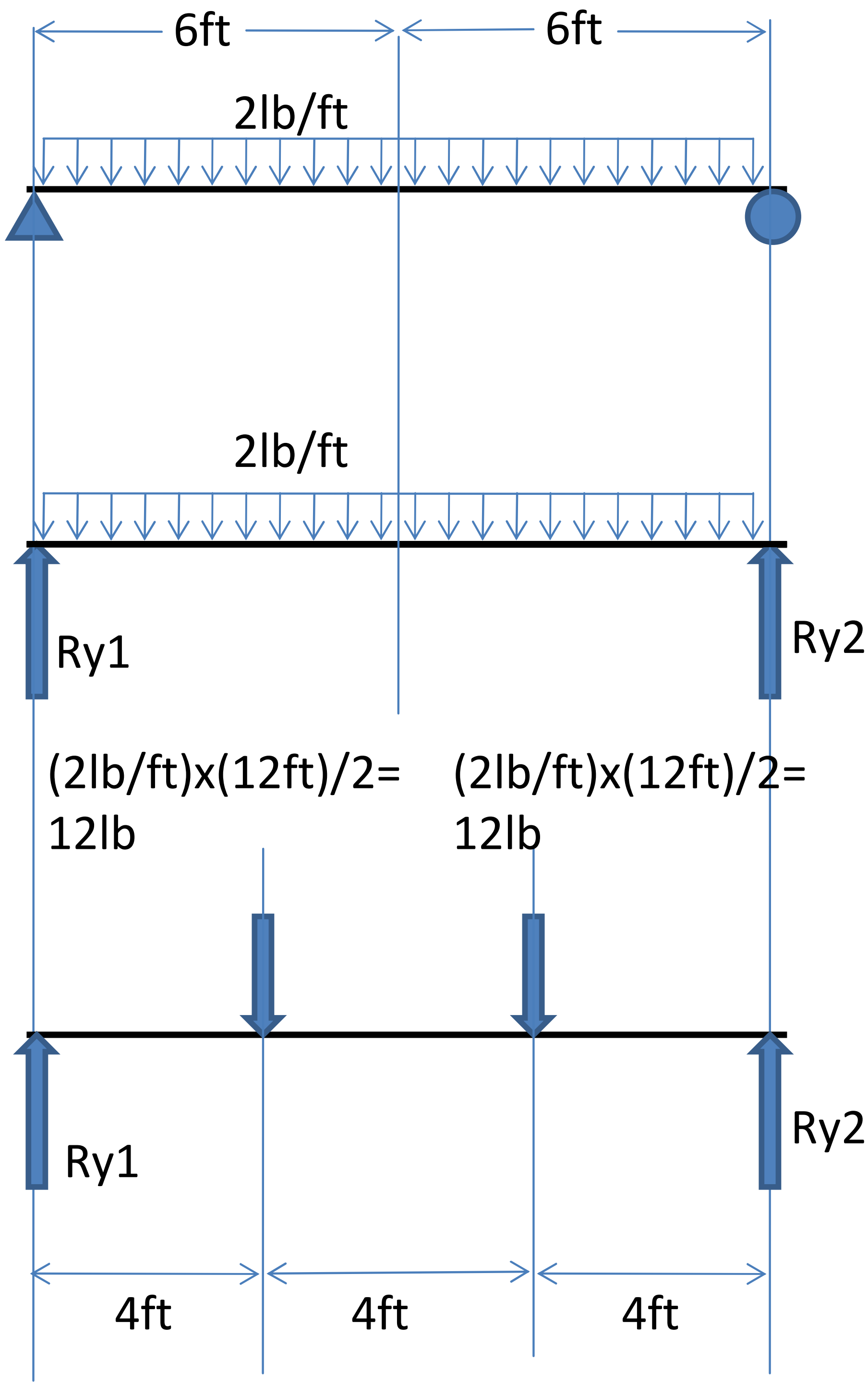
$-(24lb)(6ft) + (Ry_2)(12ft) = 0$

$Ry_2 = 12lb$

$\Sigma F_y = 0$

$Ry_1 - 24lb + 12lb = 0$

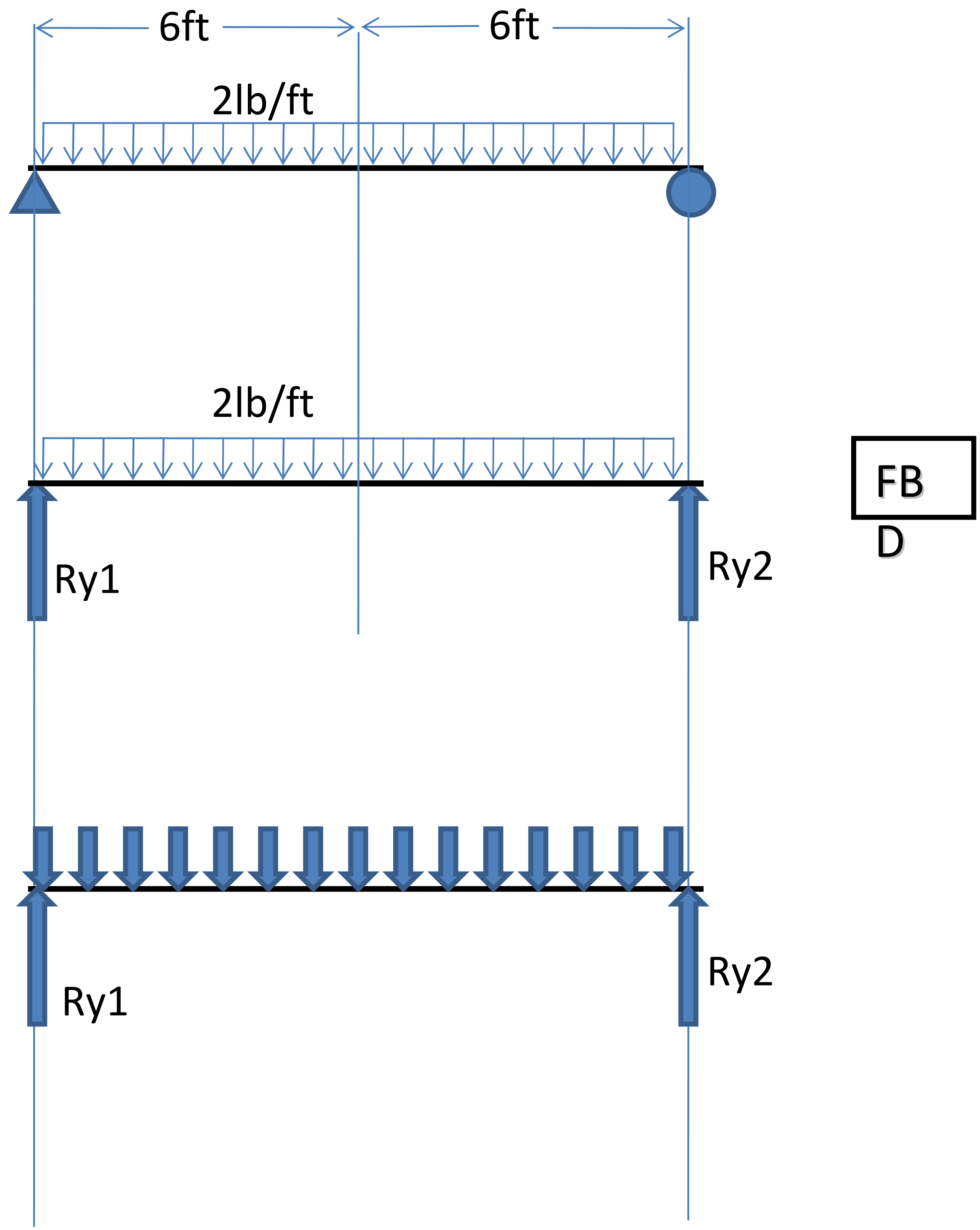
$Ry_1 = 12lb$

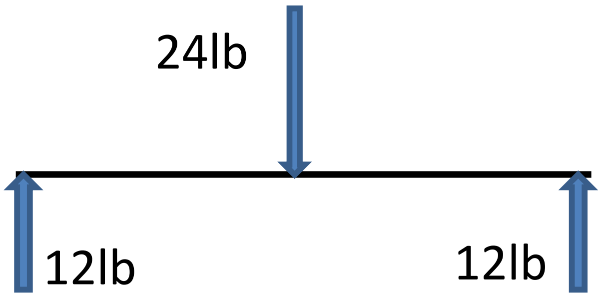


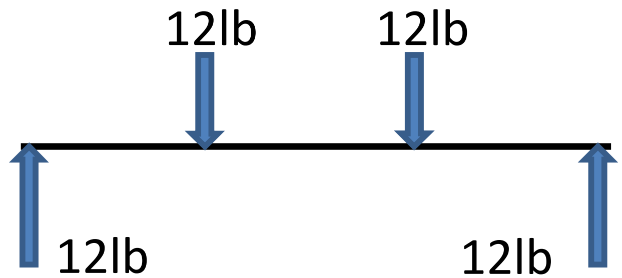
FB
D

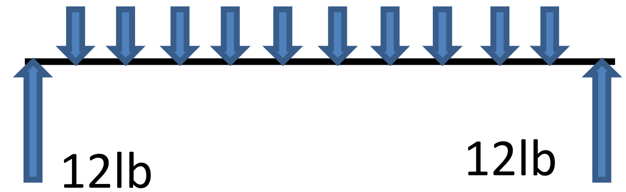
$$\Sigma M_a=0$$
$$-(12lb)(4ft)-(12lb)(8ft)+(Ry_2)(12ft)=0$$
$$-48lb\text{-}ft - 96lb\text{-}ft = -(Ry_2)(12ft)$$
$$-144/-12 = Ry_2$$
$$Ry_2=12lb$$

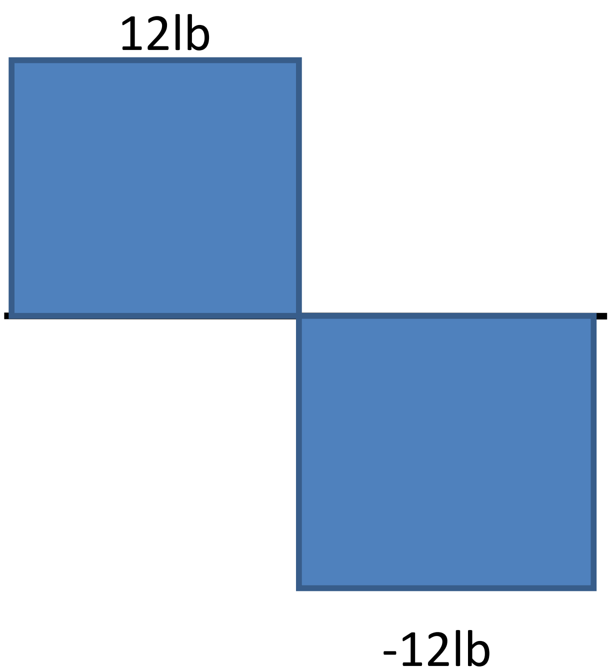
$$\Sigma F_y=0$$
$$Ry_1-12lb-12lb+12lb=0$$
$$Ry_1=12lb$$

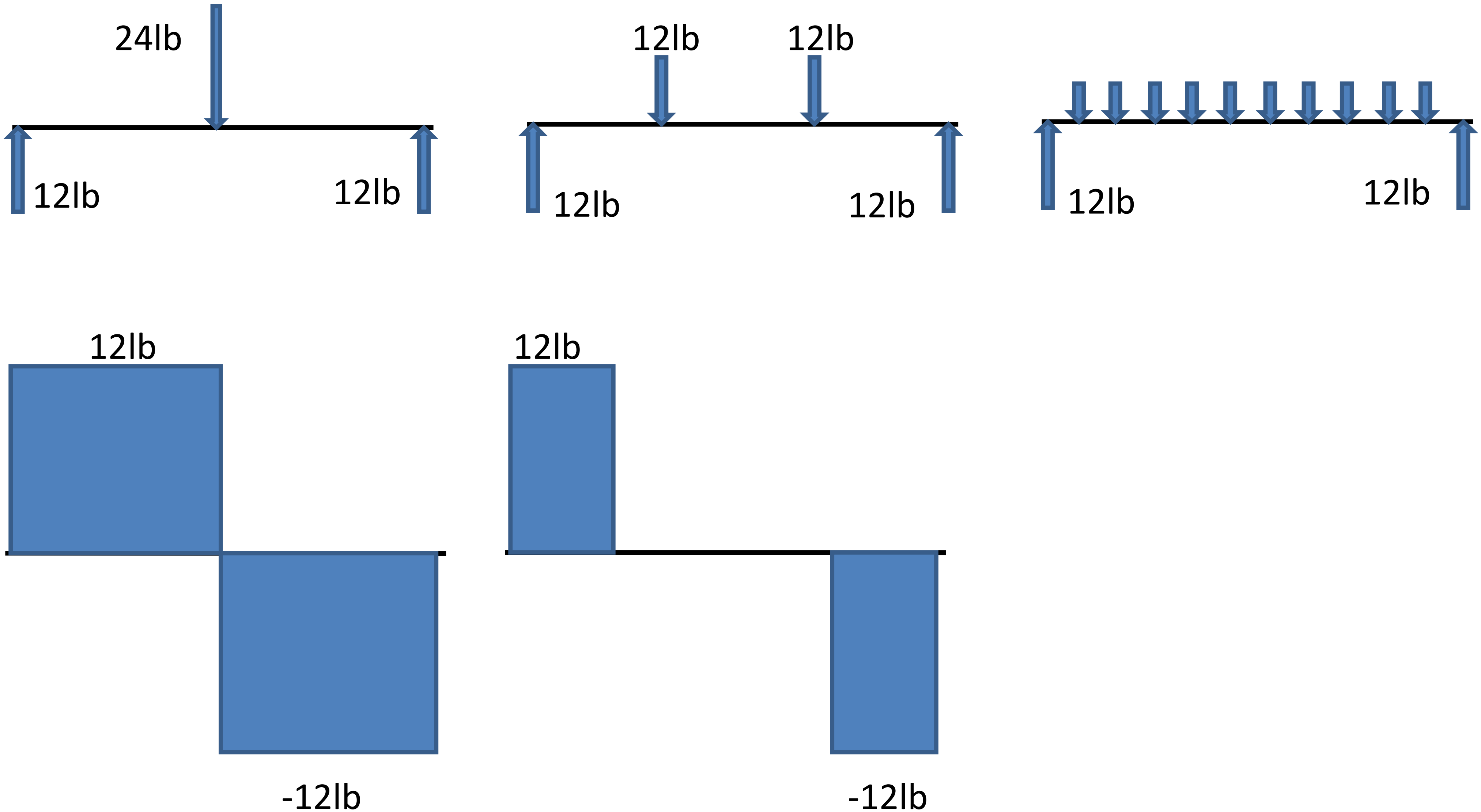

6ft
6ft
2lb/ft
2lb/ft
Ry1
Ry2
FB
D
Ry1
Ry2

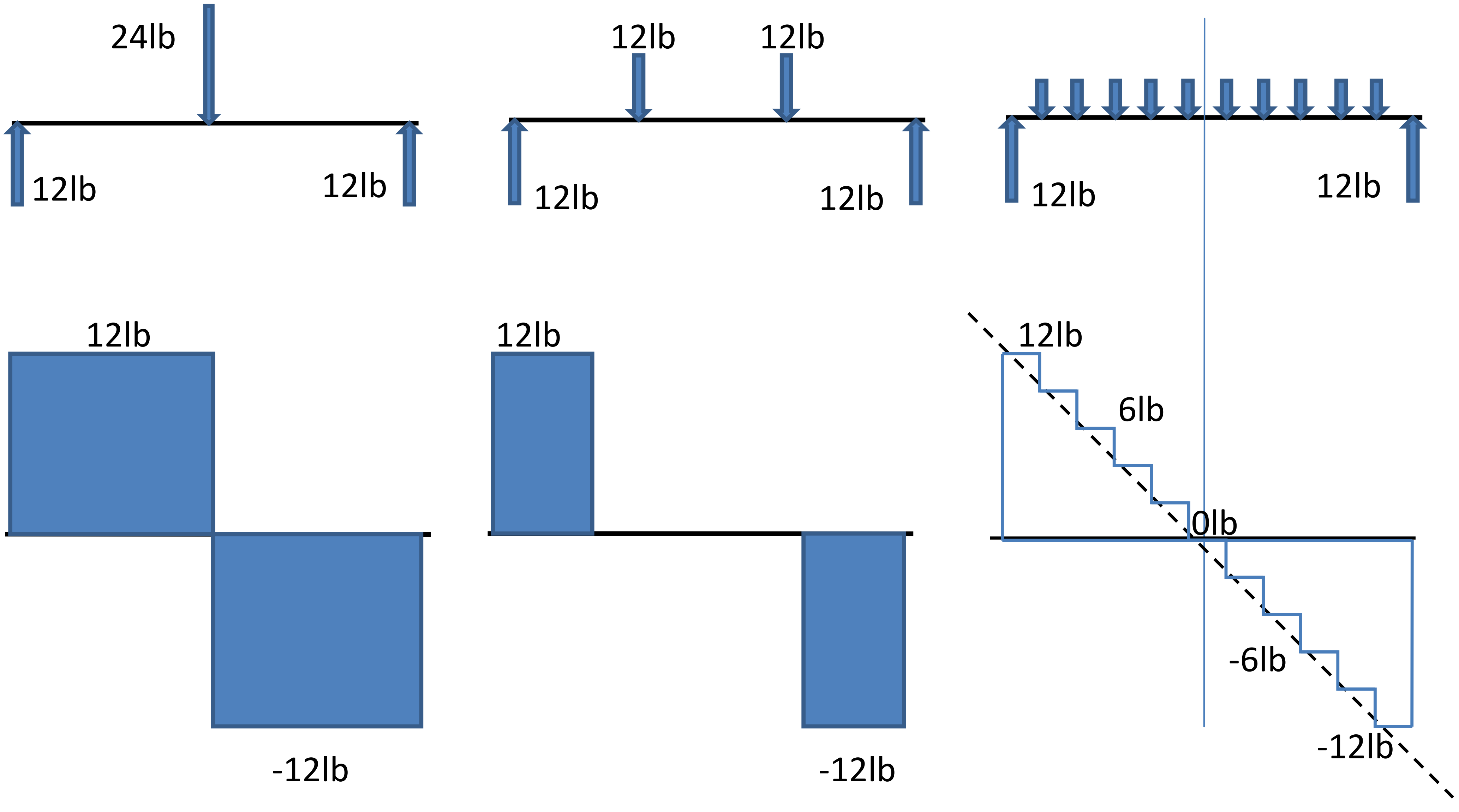

24lb
12lb
12lb

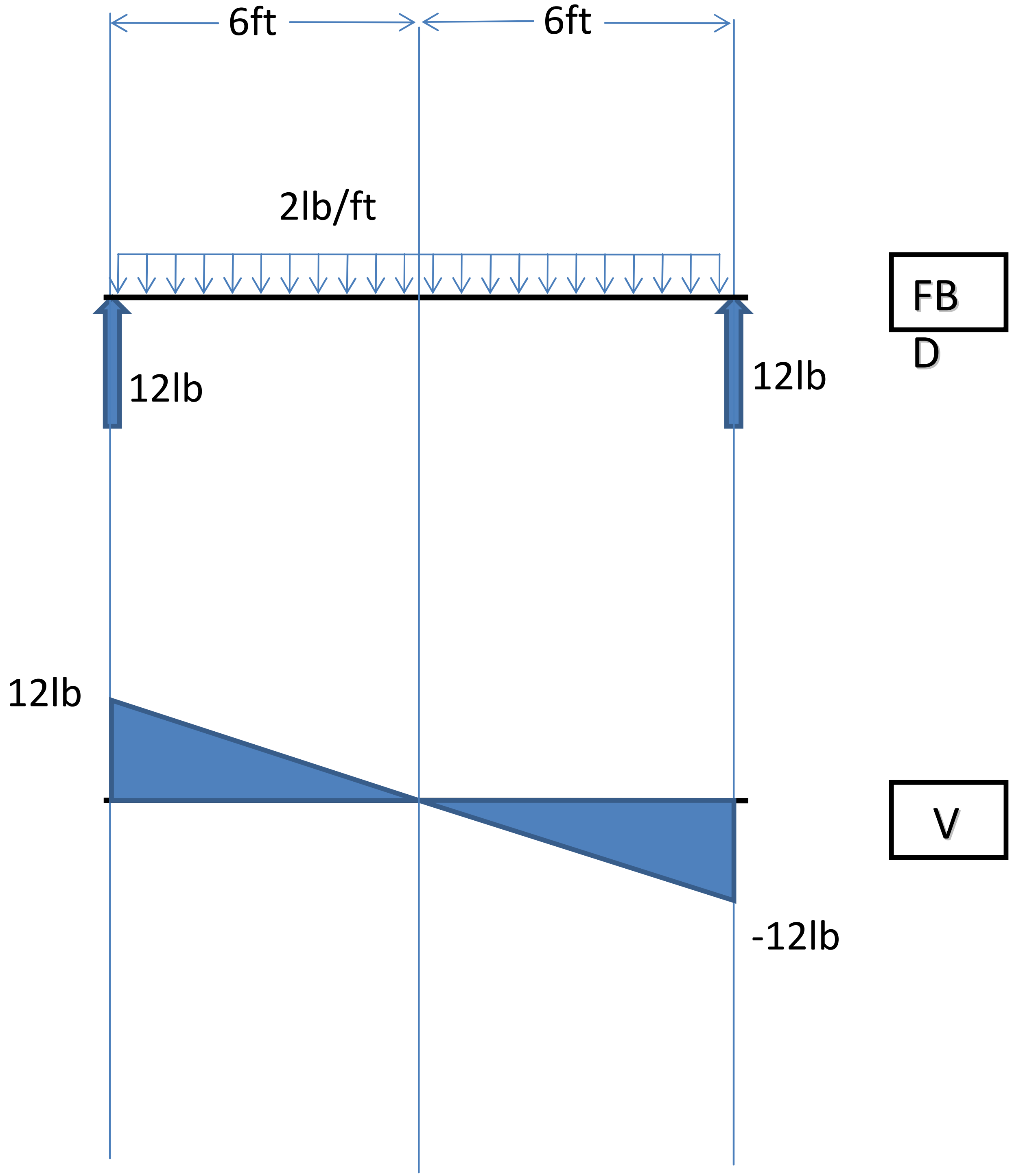

12lb
12lb
12lb
12lb


12lb
12lb

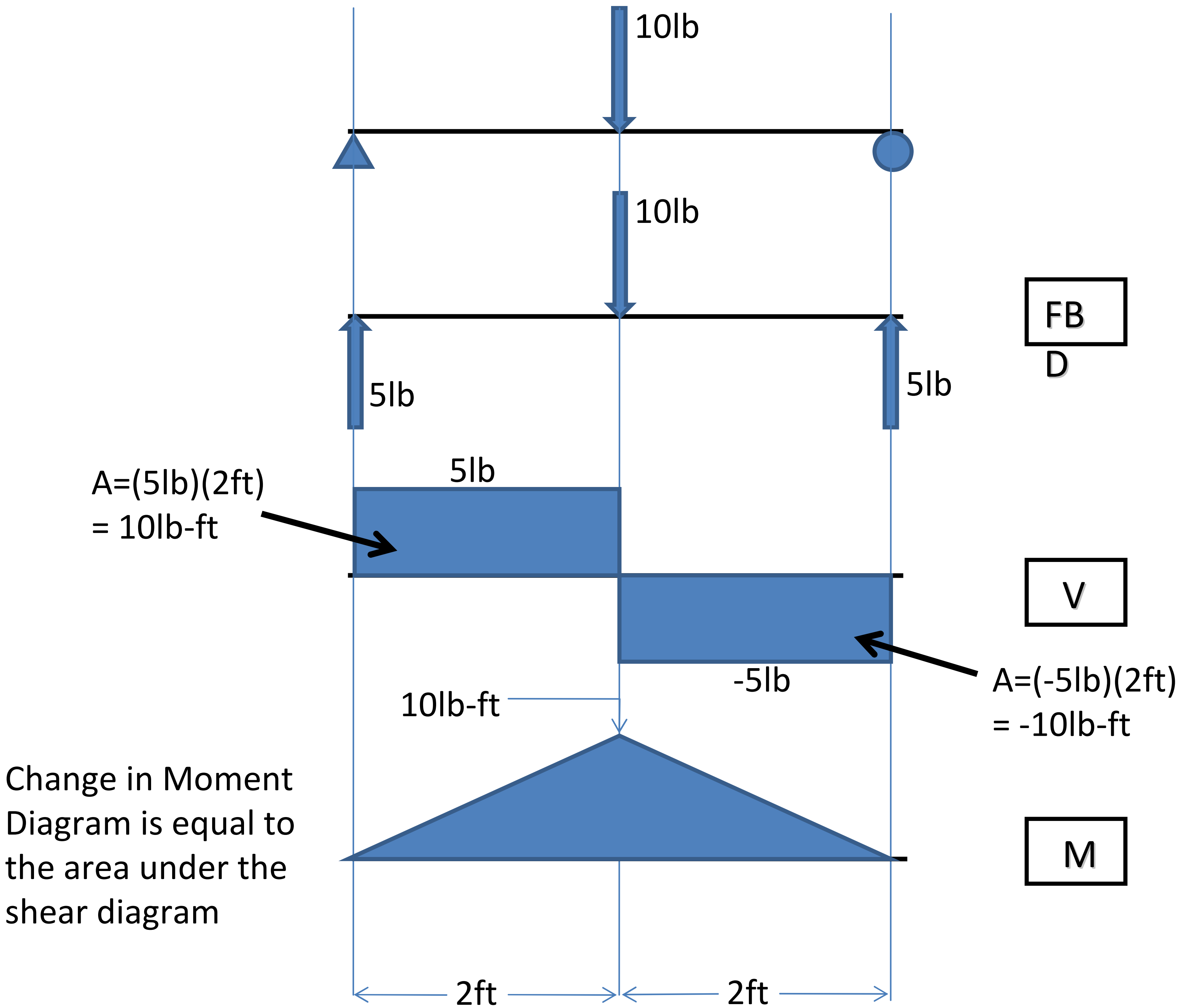

12lb
-12lb


24lb
12lb
12lb
12lb
12lb
12lb
12lb
12lb
12lb
12lb
-12lb
12lb
-12lb

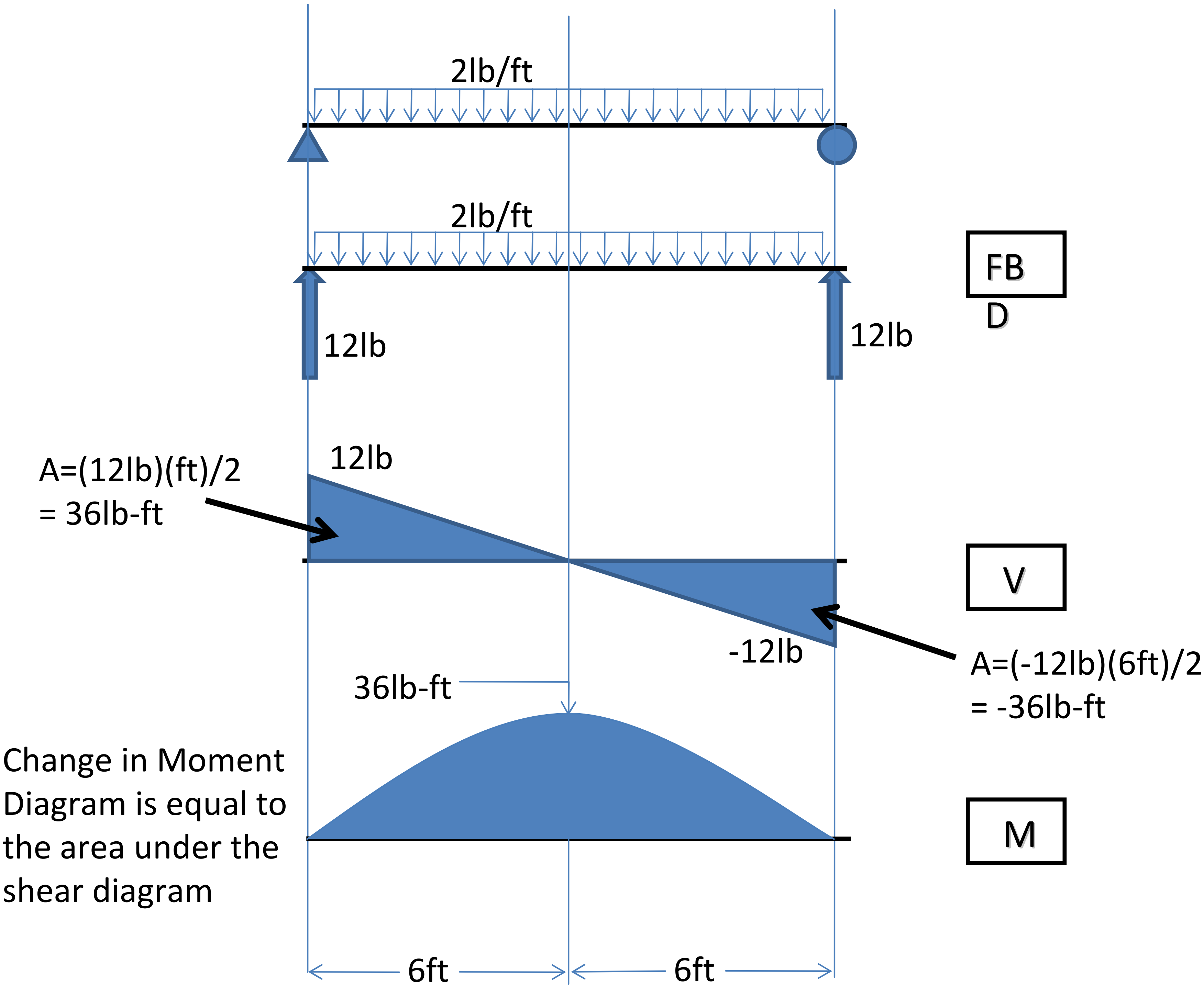

24lb
12lb
12lb
12lb
12lb
12lb
12lb
12lb
12lb
12lb
-12lb
12lb
-12lb
12lb
6lb
0lb
-6lb
-12lb

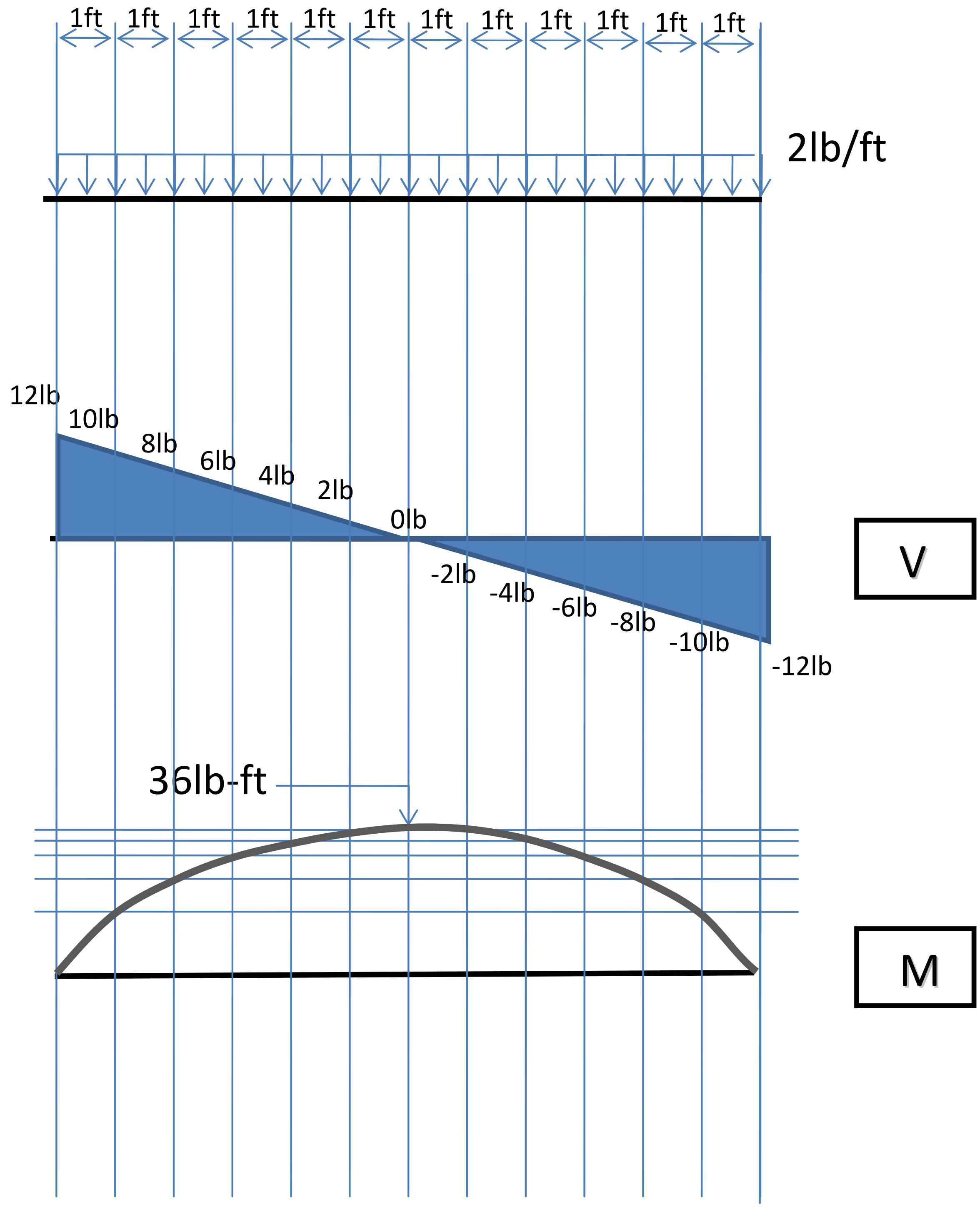


6ft
6ft
2lb/ft
12lb
12lb
FBD
12lb
V
-12lb



10lb
10lb
FB
D
5lb
5lb
5lb
A=(5lb)(2ft)
= 10lb-ft
V
-5lb
A=(-5lb)(2ft)
= -10lb-ft
10lb-ft
Change in Moment Diagram is equal to the area under the shear diagram
M
2ft
2ft


2lb/ft
2lb/ft
FB
D
12lb
12lb
12lb
A=(12lb)(ft)/2
= 36lb-ft
V
-12lb
A=(-12lb)(6ft)/2
= -36lb-ft
36lb-ft
Change in Moment Diagram is equal to the area under the shear diagram
M
6ft
6ft



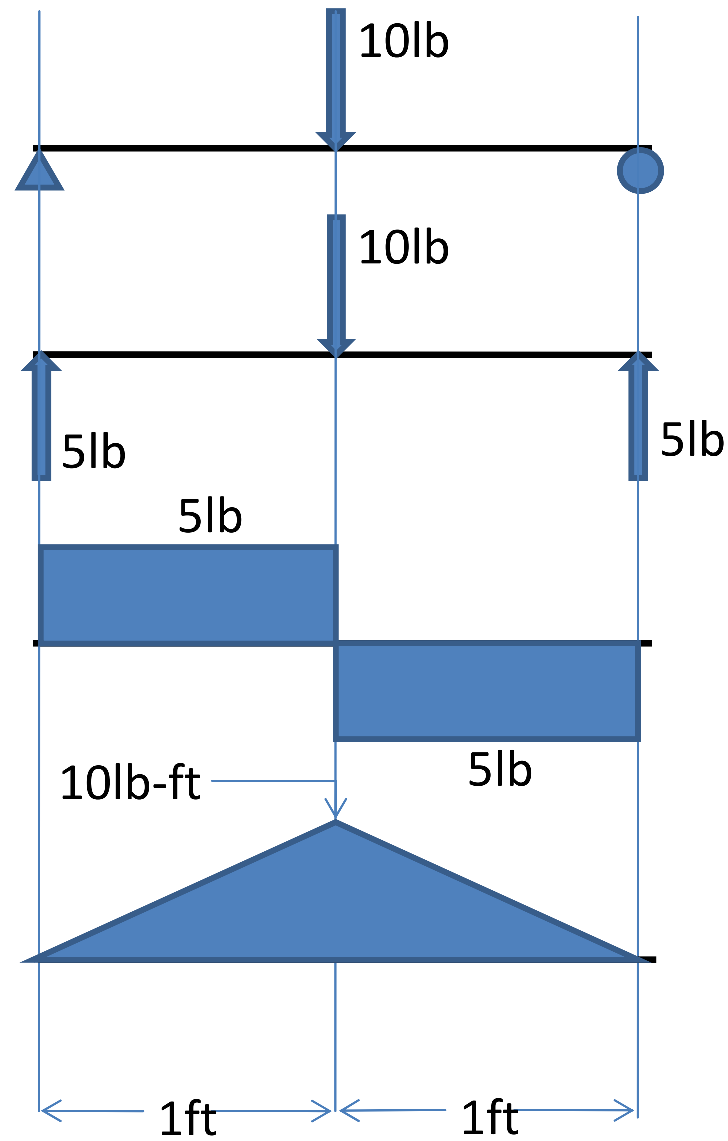
The VALUE at a point in the shear diagram is equal to the SLOPE of the moment diagram at that same point.

An external point load shifts the shear diagram an amount equivalent to its magnitude in its same direction.

A distributed load shifts the shear diagram linearly with a SLOPE equal to the magnitude of the distributed load in its same direction.

Change in Moment Diagram is equal to the area under the shear diagram.

The VALUE at a point in the shear diagram is equal to the SLOPE of the moment diagram at that same point.

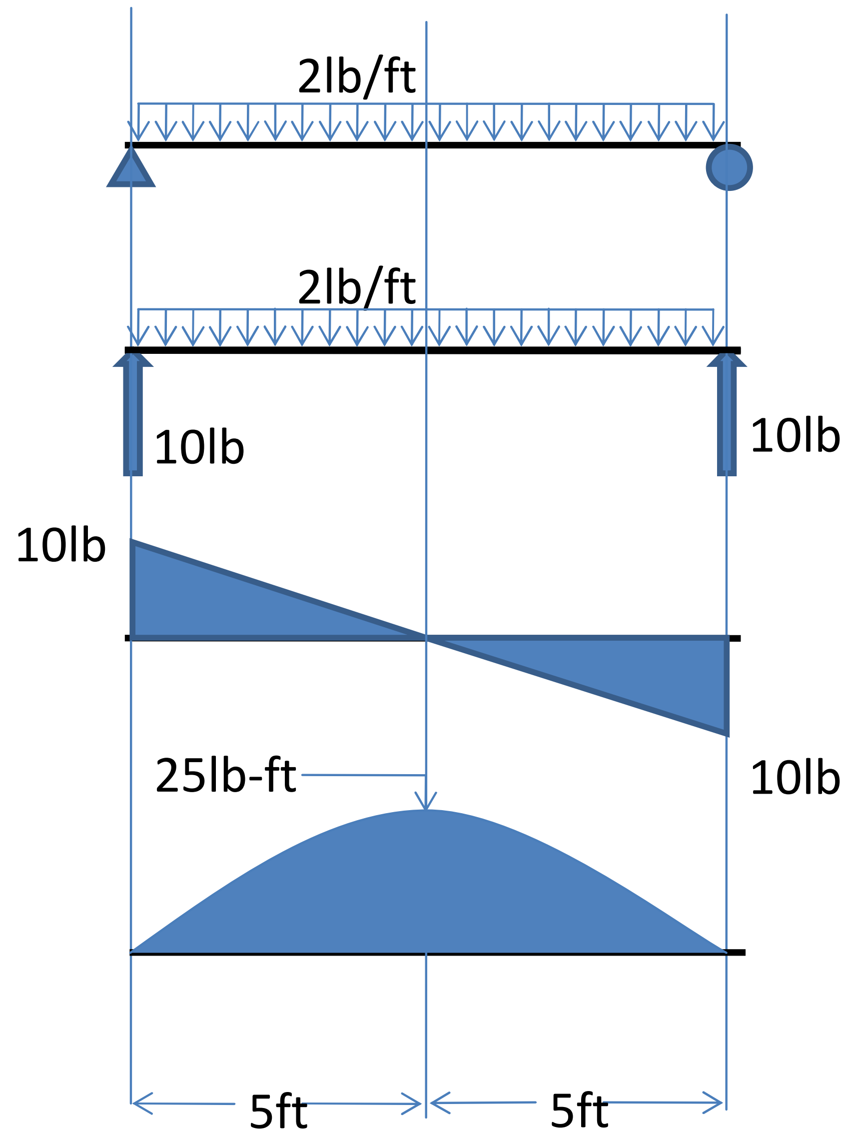


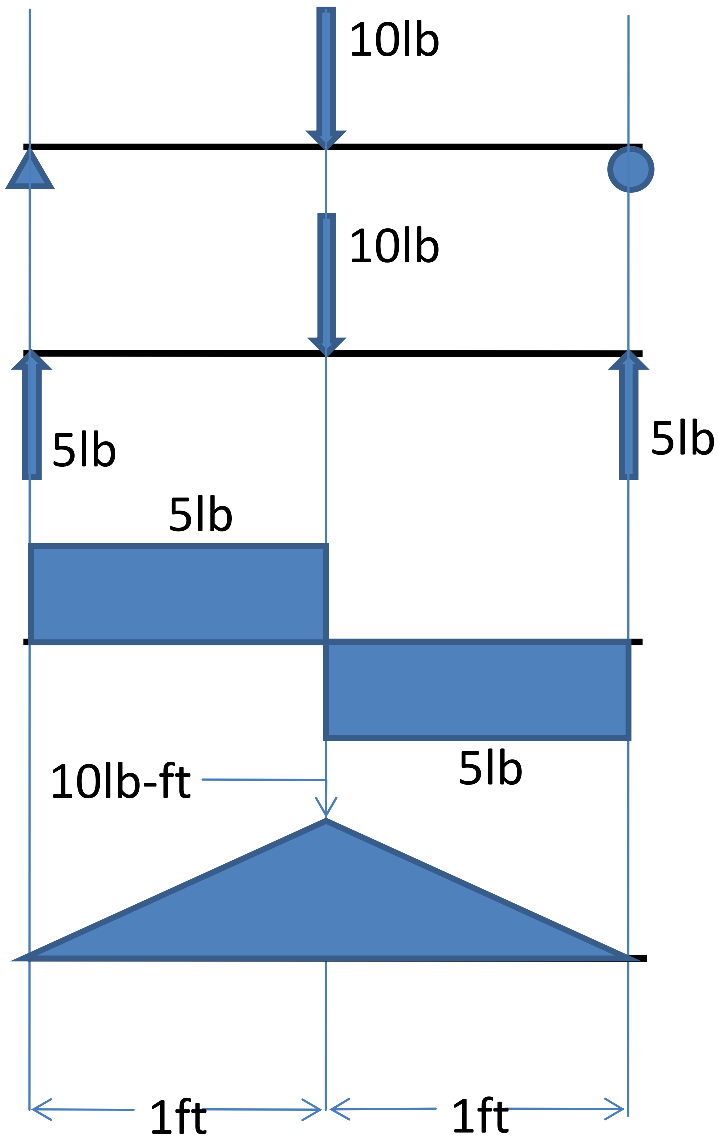
An external point load shifts the shear diagram an amount equivalent to its magnitude in its same direction.

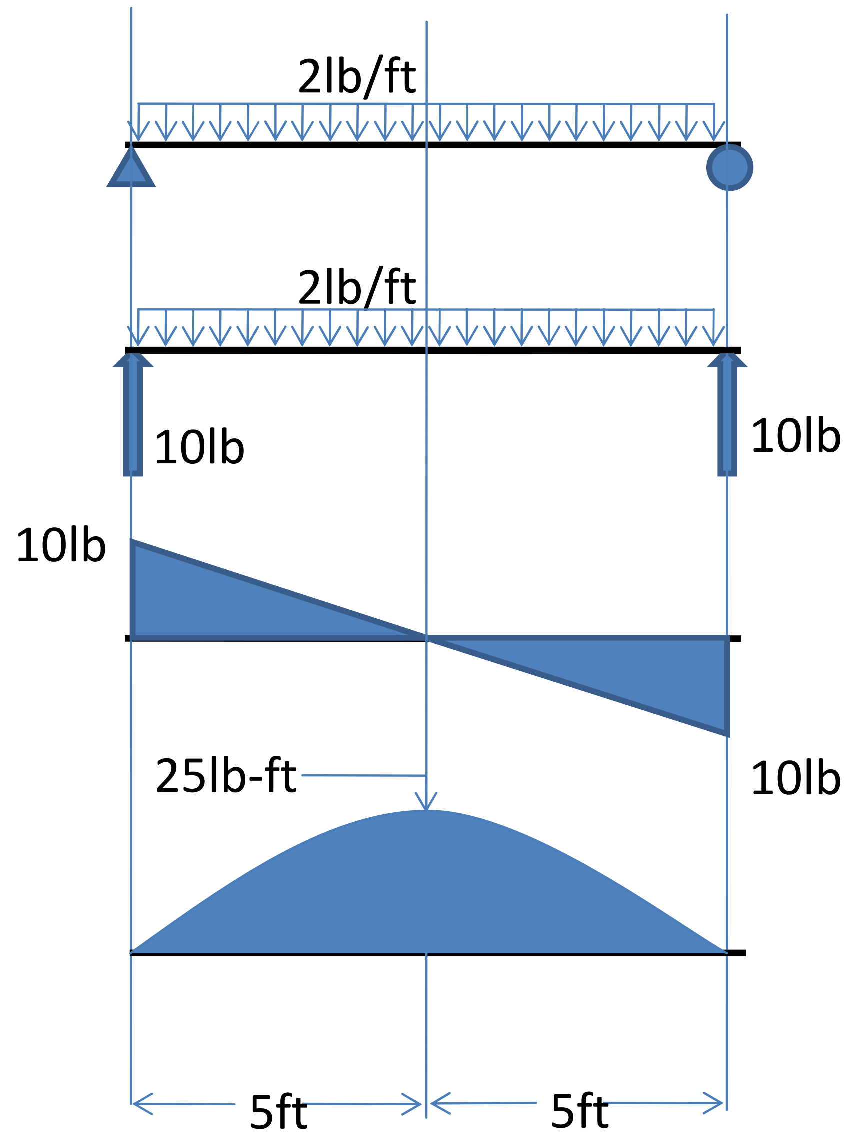
A distributed load shifts the shear diagram linearly with a SLOPE equal to the magnitude of the distributed load in its same direction.

Change in Moment Diagram is equal to the area under the shear diagram.

The VALUE at a point in the shear diagram is equal to the SLOPE of the moment diagram at that same point.




10lb
10lb
5lb
5lb
5lb
10lb-ft
5lb
1ft
1ft


2lb/ft
2lb/ft
10lb
10lb
10lb
25lb-ft
10lb
5ft
5ft