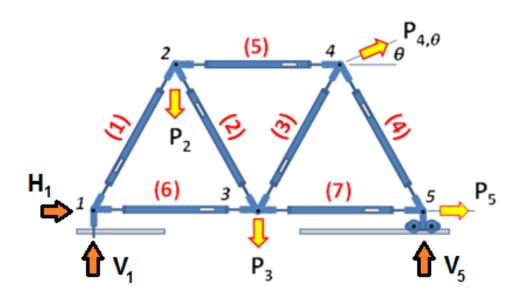
Group:_____Date:___

TechnoLab



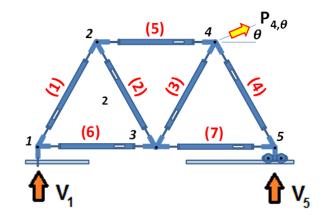
Truss HomeLab Series

Experiment T3: Forces in a 7-bar Truss



Case 1: 7-bar Truss - Load @ Node#4

$P_{4,\theta}$		$\boldsymbol{ heta}$			
As noted ar	nd No	ominated below			
~200gm	_ N	0°			
~400gm	_ N	0°			
~200gm	_ N	30°			
~400gm	_ N	30°			



Note the observed Nodal Movements

Node	1	2	3	4	5
Δ_{x} (mm)	0				
$\Delta_{\rm y}$ (mm)	0				0

 $k_m = N/mm$

Name:_			2
	Group:	Date:	

Note the Experimentally Determined/Measured Member Forces and Reactions

Reaction/ Member	H1	V1	V5	1	2	3	4	5	6	7
Member δ_m (mm)										
$\mathbf{F} = \mathbf{K}_{m} \delta_{m} (N)$										

Note the Theoretically Determined Member Forces and Reactions (7-bar_Truss.xlsx)

Reaction/ Member	H1	V1	V5	1	2	3	4	5	6	7
$\delta_{\rm m}$ (mm)	0	0								
Force (N)										

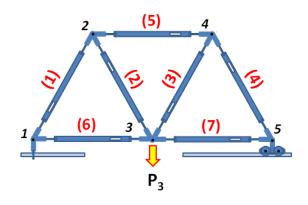
Comments (Member Forces) :							

_		1
Name:		

Group:_____Date:__

Case 2: 7-bar Truss – Load @ Node#3

P ₃		$oldsymbol{ heta}$			
As noted	d and No	ominated below			
~300gm	N	270°			
~400gm	N	270°			
~500gm	N	270°			
~600gm	N	270°			



Note the observed Nodal Movements

Node	1	2	3	4	5
Δ_{x} (mm)	0				
Δ_{y} (mm)	0				0

 $k_m = \underline{\hspace{1cm}} N/mm$

Note the Experimentally Determined/Measured Member Forces and Reactions

Reaction/ Member	H1	V1	V5	1	2	3	4	5	6	7
Member δ_m (mm)										
$\mathbf{F} = \mathbf{K}_{m} \delta_{m} (N)$										

Note the Theoretically Determined Member Forces and Reactions (7-bar_Truss.xlsx)

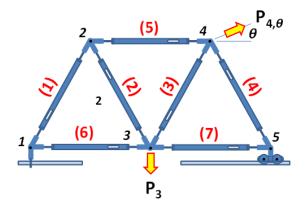
Reaction/ Member	H1	V1	V5	1	2	3	4	5	6	7
$\delta_{\rm m}$ (mm)	0	0								
Force (N)										

comments (wiember Forces) :							

Name:			4
	Cuarra	Doto	

Case 3: 7-bar Truss – Case 1 and 2
Loads Applied Simultaneously

As noted for Case 1						
$P_{4, heta}$	$oldsymbol{ heta}$					
N	0					
As noted for Case 2						
P ₃	$\boldsymbol{ heta}$					
N	270°					



Note the observed Nodal Movements

Node	1	2	3	4	5
Δ_{x} (mm)	0				
Δ_{y} (mm)	0				0

 $k_m = \underline{\hspace{1cm}} N/mm$

Note the Experimentally Determined/Measured Member Forces and Reactions

Reaction/ Member	H1	V1	V5	1	2	3	4	5	6	7
Member δ_m (mm)										
$\mathbf{F} = \mathbf{K}_{m} \delta_{m} (N)$										

Note the Theoretically Determined Member Forces and Reactions (7-bar_Truss.xlsx)

Reaction/ Member	H1	V1	V5	1	2	3	4	5	6	7
$\delta_{\rm m}$ (mm)	0	0								
Force (N)										

Comments (Member Forces) :_		

Sum of Observed Nodal Movements for LC1 and LC2 compared with LC3

Node	1		- 2	2			3	3			4	1			į	5	
Load Case		LC1	LC2	Sum	LC3												
Δ_{x} (mm)	0																
Δ_{y} (mm)	0														()	

Comments (Superposition of Nodal Displacements for LC1 + LC2 - comparison with LC3 Res									

		Name:											
								Group	o:	Date:			
Sum of Observed Me	ember	Eleng	ations	/Force	s and	Reacti	ons fo	r LC1 a	nd LC2	2 comp	ared v	with LC	3
Reaction/ Member	H1		V	' 1			V	/5			:	1	
Load Case		LC1	LC2	Sum	LC3	LC1	LC2	Sum	LC3	LC1	LC2	Sum	LC3
Member δ_m (mm)													
$F = K_m \delta_m (N)$													
Member			2			3			4				
Load Case		LC1	LC2	Sum	LC3	LC1	LC2	Sum	LC3	LC1	LC2	Sum	LC3
Member δ_m (mm)													
$F = K_m \delta_m (N)$													
Member				5		6					7		
Load Case		LC1	LC2	Sum	LC3	LC1	LC2	Sum	LC3	LC1	LC2	Sum	LC3
Member δ_m (mm)													
$\mathbf{F} = \mathbf{K}_{m} \delta_{m} (N)$													
Comments (Superpo	ositio	n of M 	embe	r Elon	gation	s for L	.C1 + L	.C2 - co	ompai	ison v	vith LC	C3 Resi	ults) -

- comparison with LC3 Results)

Comments (Superposition of Member/Reaction Forces for LC1 + LC2

5

Name:			6
	Group:	Date:	

Supporting Material

Name:_			7
	Group:	Date:	

Supporting Material

lame:_			8
	Group:	Date:	

Supporting Material