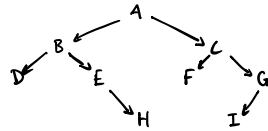


Vegleiðandi multiple choice round 7

1.

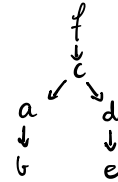


Postorder:

DHEBFIGCA

2. Which relation on $A = \{a, b, c, d, e, f\}$ is a (directed) tree?

$$R = \{(a, b), (c, a), (c, d), (d, e), (f, c)\}$$



3.

$$M = \begin{bmatrix} 1 & 1 & 0 & 0 & 0 & 1 \\ 1 & 1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

Reflexive and symmetric.

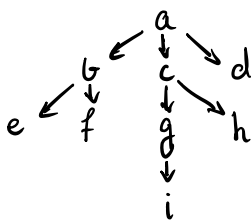
$$M \circ M = \begin{bmatrix} 1 & 1 & 0 & 0 & 0 & 1 \\ 1 & 1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} = M$$

M is an equivalence relation.

4. For D_{45} consisting of positive divisors of 45 with $|$, which is true?

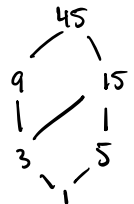
$9 \vee 15 = 45$, the join of 9 and 15 is their LUB.

5.

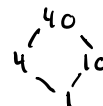


3-tree
5 leaves
3 height

$$45 = 3^2 \cdot 5$$

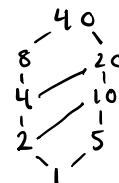


6. Equip $A = \{1, 4, 10, 40\}$ with $a \leq b \iff a|b$. Which is false?

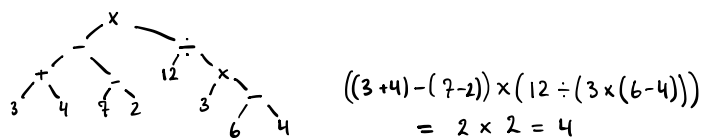


A is a sublattice of D_{40} .

$$40 = 2^3 \cdot 5$$

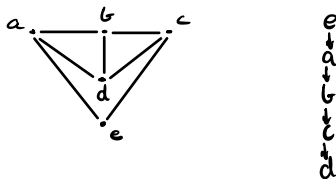


7.3.19 Evaluate $x - + 34 - 72 \div 12 \times 3 - 64$ (Preorder)

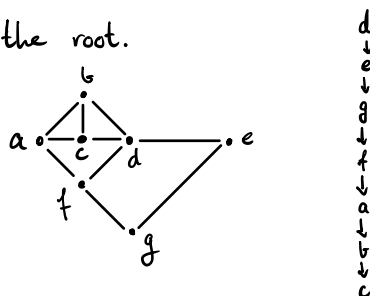


7.4.11-12 Use Prim's algorithm.

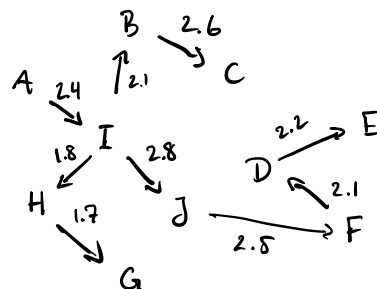
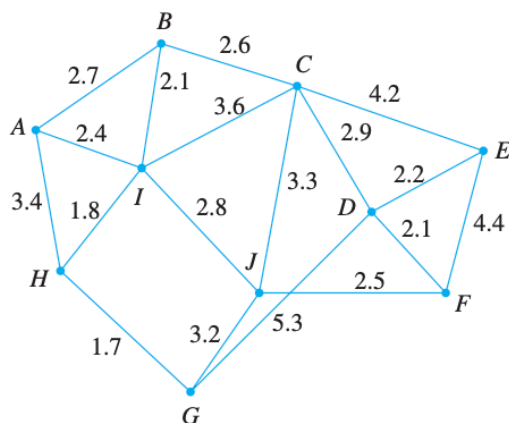
11. Use e as the root.



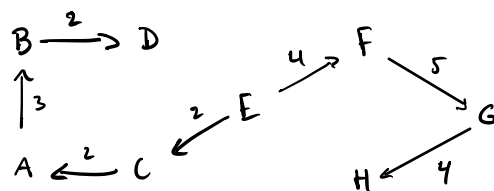
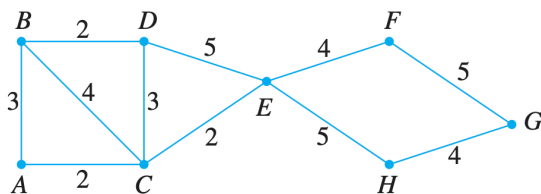
12. Use d as the root.



7.5.2 Begin at A , use Prim's alg.

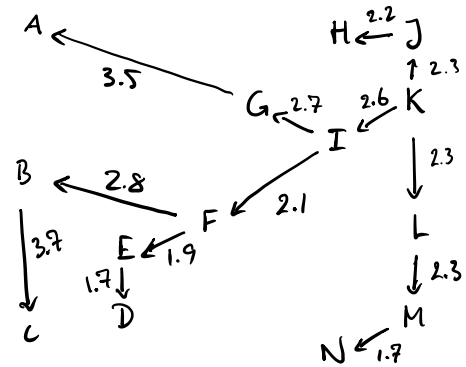
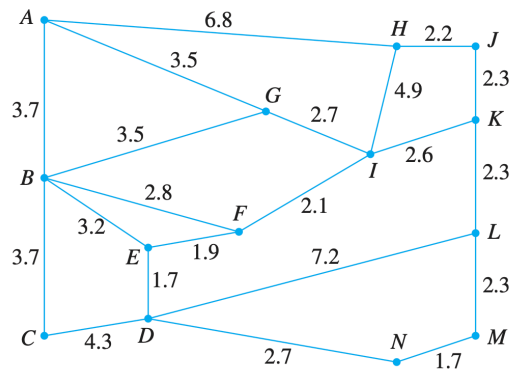


7.5.4 Begin at E .



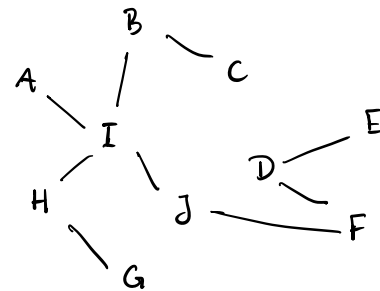
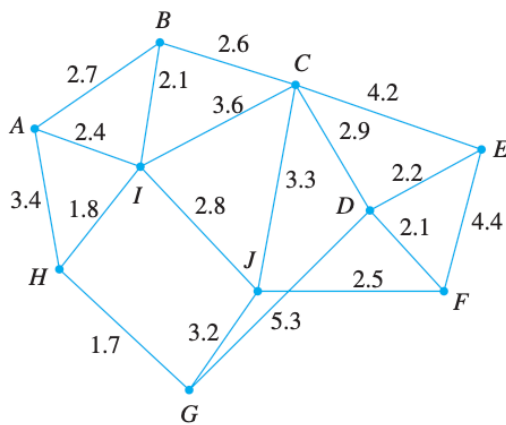
7.5.5

Begin at K

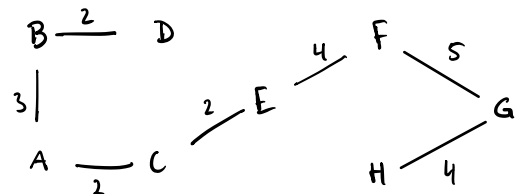
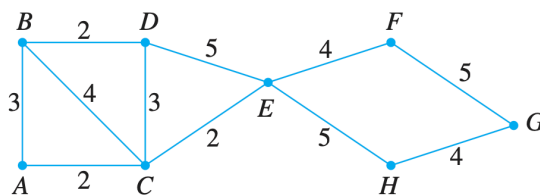


7.5.10-12 Use Kruskal's alg.

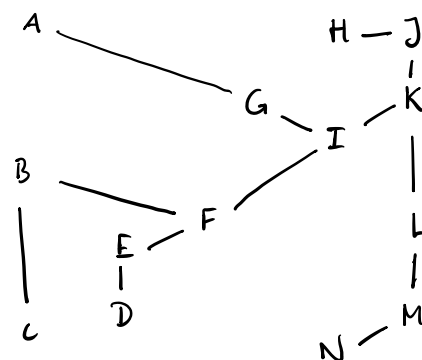
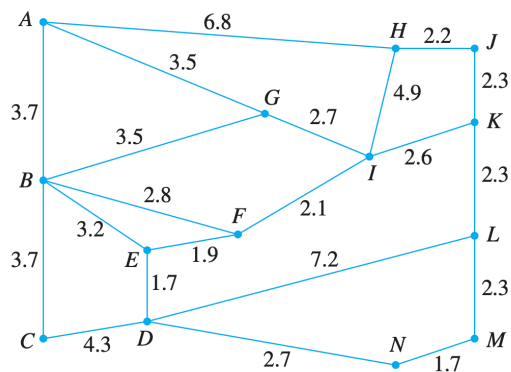
10.



11.



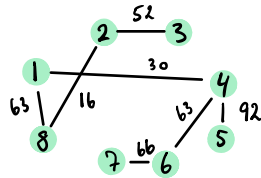
12.



7.5.13 Distances between 8 cities.

	Abbeville	Aiken	Allendale	Anderson	Asheville	Athens	Atlanta	Augusta
1	Abbeville	69	121	30	113	70	135	63
2	Aiken	69	52	97	170	117	163	16
:	Allendale	121	52	149	222	160	206	59
:	Anderson	30	97	149	92	63	122	93
:	Asheville	113	170	222	92	155	204	174
:	Athens	70	117	160	63	155	66	101
:	Atlanta	135	163	206	122	204	66	147
8	Augusta	63	16	59	93	174	101	147

Find a minimal spanning tree, and what is the minimal distance?



382