

# 3-11 Matchings and Factors

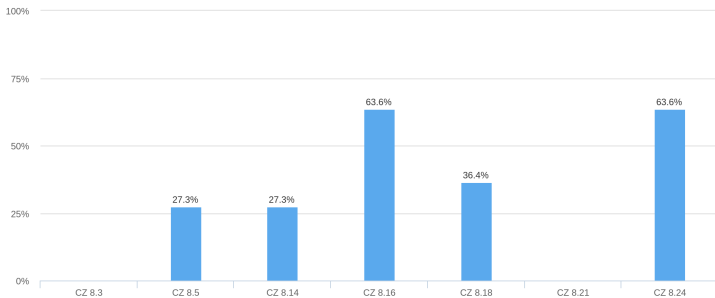
## (Part I: Matchings and Covers)

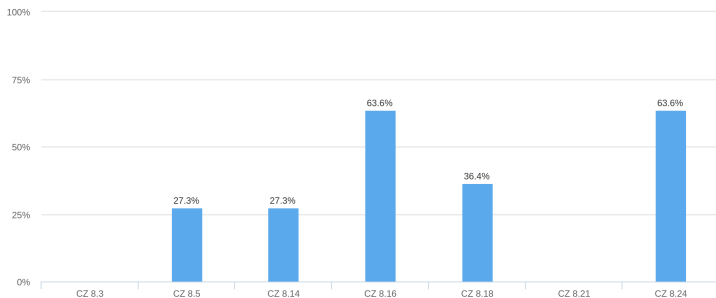
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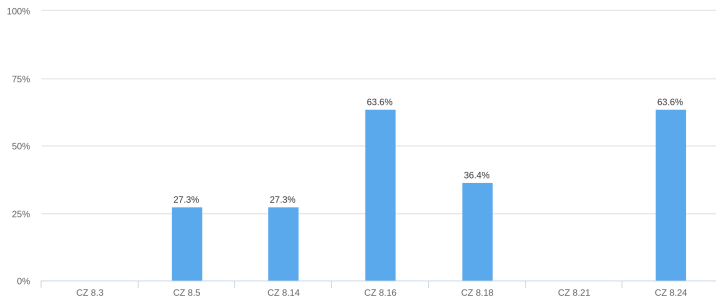
December 10, 2018







8.5      8.14      8.16  
8.18      8.24      (Next Class)



8.5      8.14      8.16      Chinese Postman Problem  
8.18      8.24      (Next Class)

## Theorem (Hall's Theorem, 1935; Theorem 8.3)

Let  $G$  be a *bipartite graph* with partite sets  $U$  and  $W$  such that  $r = |U| \leq |W|$ .

$G$  contains a matching of cardinality  $r \iff G$  satisfies *Hall's Condition*:

$$\forall X \subseteq U : |N(X)| \geq |X|$$

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TONCAS

(The Obvious Necessary Conditions are Also Sufficient)

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## TONCAS

(The Obvious Necessary Conditions are Also Sufficient)



Other TONCAS?

















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