

**NOTE:** Cells marked green indicate instances that are not seen in the other approach

<b>Approach # 1</b>	Relation Cardinality
<b>Approach # 2</b>	Relation Multiplicity

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**Legal Instances with #1 (2 instances)**

Instance Description	#times found
Simple Replica -> Partition relation	1
Simple Broker -> Replica -> Partition	1

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**Violations found with #1 (4 violations)**

Instance Description	#times found
Replica is not associated with a partition	3
One replica stored on multiple brokers	2
Multiple brokers storing the same replica	1
Replica associated with multiple partitions	2

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**Legal Instances with #2 (4 instances)**

Instance Description	#times found
Simple Broker -> Replica -> Partition	2
Constraint 12: One partition has two replicas stored on separate brokers	1
Constraint 13: Broker -> Replica1 -> Partition0 and Replica0 -> Partition1	1
Constraint 14: Multiple partitions, with one replica each, both stored on the same broker	1

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**Violations found with #2 (5 Violations)**

Instance Description	#times found
Replica is not associated with a partition	5
One replica stored on multiple brokers	2
Two replicas of the same partition stored on a single broker	1
Replica associated with multiple partitions	5
Multiple brokers storing the same replica	2