A rough formula for picking the number of partitions is based on throughput (Number of Input to Output Ratio).

You measure the throughout that you can achieve on a single partition for production (call it p) and consumption (call it c). Let’s say your target throughput is t. Then you need to have at least max(t/p, t/c) partitions.

Ex:

Producer Capacity = 10 messages/second.

Consumer Capacity = 20 messages/second.

If Throughput needed is 100 messages/second.

Max(100/10, 100/20) = 10 is the required partition.

<https://www.confluent.io/blog/how-to-choose-the-number-of-topicspartitions-in-a-kafka-cluster/>