1. **What is lift and why is it important in Association rules?**

**Association Rules:**

1. **Lift**:
   * Measures how much more likely item B is bought when item A is bought, compared to when item A is not bought. Lift (A,B) =Confidence(A→B)Support(B)Lift(A, B) = \frac{Confidence
   * (A \ Right-arrow B)} {Support(B)} Lift(A,B) =Support(B)Confidence(A→B)​
   * **Importance**: A lift greater than 1 indicates a strong association between A and B.
2. **What is support and Confidence. How do you calculate them?**
3. **Support and Confidence**:
   * **Support**: The proportion of transactions that contain a particular itemset. Support(A→B) =Transactions containing both A and B Total transactions Support (A \right-arrow B) = \frac {\text {Transactions containing both A and B}} {\text {Total transactions}} Support(A→B) =Total transactions & Transaction containing both A and B​
   * **Confidence**: The proportion of transactions containing A that also contain B. Confidence(A→B) =Transactions containing both A and B-Transactions containing A Confidence (A \Right-arrow B) = \frac {\text {Transactions containing both A and B}} {\text {Transactions containing A}} Confidence(A→B) =Transactions containing A Transactions containing both A and B​
4. **What are some limitations or challenges of Association rules mining?**

**Limitations of Association Rule Mining**:

* + **Scalability**: Can become computationally expensive as the number of items increases.
  + **Redundancy**: Can generate many rules that are not meaningful.
  + **Interpretability**: The rules may not always be intuitive, especially when multiple items are involved.