Accuracy Comparison Report (Task 13 – PCA)

Dataset Used
Dataset: ASL-68287-train.csv
Type: Image pixels dataset (flattened into feature vectors)
Model: Logistic Regression
Scaling: StandardScaler (before PCA)

Models Compared
1. Baseline Model (Without PCA): Logistic Regression trained on original features.
2. PCA Reduced Models: Logistic Regression trained after applying PCA with different components: PCA(2), PCA(10), PCA(30), PCA(50).

Accuracy Results Table

Model	No. of Features	Accuracy
Logistic Regression (Original)	Full features	(your output here)
Logistic Regression + PCA(2)	2	(your output here)
Logistic Regression + PCA(10)	10	(your output here)
Logistic Regression + PCA(30)	30	(your output here)
Logistic Regression + PCA(50)	50	(your output here)

Observations
- The original dataset usually gives the highest accuracy because no information is lost.
- PCA reduces dimensionality and compresses data, so PCA(2) gives very low accuracy.
- PCA(10) improves accuracy.
- PCA(30) and PCA(50) usually give good accuracy with fewer features.
- PCA helps reduce computation time and memory usage.

Conclusion
PCA successfully reduced the dataset dimensionality while maintaining reasonable accuracy. This demonstrates the trade-off between accuracy and feature compression.