Six Sigma Numerical Example Handout

Six Sigma Numerical Example — Step-by-Step Explained (Handout)

1. Process Description

A company processes invoices manually. Each invoice must pass 3 checks:

1. Customer information
2. Invoice amount
3. Authorization signature

Opportunities per invoice: 3

Total invoices: 2,000

Total Opportunities = 2,000 × 3 = 6,000

2. Count the Actual Defects

80 invoices had 1 defect each.

40 invoices had 2 defects each.

Total Defects = (80 × 1) + (40 × 2) = 160 defects.

3. Calculate DPMO

DPMO = (Defects / Opportunities) × 1,000,000

DPMO = (160 / 6,000) × 1,000,000 = 26,667

4. Sigma Level

26,667 DPMO ≈ 3.3 sigma.

5. Yield

Defect Rate = 160 / 6,000 = 0.0267

Yield = 1 – 0.0267 = 0.9733 = 97.33%

6. Improvement Actions

After process improvements, defects reduced to 30.

7. New DPMO

New DPMO = (30 / 6,000) × 1,000,000 = 5,000.

8. New Sigma Level

5,000 DPMO ≈ 4.1 sigma.

9. New Yield

New Defect Rate = 30 / 6,000 = 0.005

New Yield = 1 – 0.005 = 0.995 = 99.5%

10. Summary

Before → After:

Defects: 160 → 30

DPMO: 26,667 → 5,000

Sigma: 3.3 → 4.1

Yield: 97.33% → 99.5%