What are Lean and Six Sigma?

Worksheet

Lean removes waste to speed up processes; Six Sigma reduces defects through statistical control of variation. Lean Six Sigma merges both for maximum efficiency and quality.

Questions

1. Lean focuses on

A) reducing defects
B) eliminating waste
C) statistical control
D) cost reduction

2. Six Sigma aims for what defect rate?

A) 6 per 100
B) 3.4 per million
C) 0.1 per thousand
D) 1 per 10,000

3. DMAIC is used for

A) cost cutting
B) process improvement
C) product design
D) marketing

4. Lean Six Sigma is most valuable in

A) high-volume standardized processes
B) creative design work
C) strategic planning
D) R&D

5. A car manufacturer finds 2% of welds are defective (Six Sigma problem) and the welding line stops 3 times daily to rework (Lean problem). How does Lean Six Sigma help?

6. A hospital ER is slow (Lean) and makes prescription errors (Six Sigma). Apply Lean Six Sigma.

7. A bakery's dough quality varies (Six Sigma) and packaging wastes 15 minutes per 100 units (Lean). Lean Six Sigma approach?

8. Define: What is Lean?

9. Define: What is Six Sigma?

10. Define: DMAIC stands for?

Answer Key

1. B) eliminating waste - Lean targets waste (time, materials, effort) to accelerate flow.

2. B) 3.4 per million - Six Sigma = 99.9966% conformance = 3.4 defects per million opportunities.

3. B) process improvement - DMAIC is the structured problem-solving cycle in Six Sigma.

4. A) high-volume standardized processes - LLS excels where variability and waste matter - manufacturing, service operations, healthcare.

5. Measure: Current defect rate 2%, downtime 90 min/day. Analyze: Equipment calibration drift + operator fatigue cause defects. Improve: Auto-calibration system + shift rotation. Control: Statistical process control monitoring. Result: Defects drop to 0.1%, downtime cuts to 15 min/day.

6. Define: Reduce patient wait time and medication errors. Measure: Avg wait 4 hours, error rate 0.5%. Analyze: Redundant sign-off steps + manual record-keeping. Improve: Digital checklist + triage fast-track. Control: Dashboard tracking both metrics. Result: 2-hour wait, 0.05% errors.

7. Define goals: Consistency and speed. Measure: Weight SD 15g, 15 min packaging. Analyze: Temperature inconsistency, manual box folding. Improve: Oven thermostats + auto-folder. Control: SPC charts, time studies. Result: SD drops to 3g, packaging to 3 min.

8. Methodology to eliminate waste and accelerate process flow to deliver faster value to customers.

9. Data-driven approach to reduce variation and defects, aiming for 3.4 defects per million opportunities.

10. Define, Measure, Analyze, Improve, Control - the core improvement cycle.