# 1.6 Sigma Quality Level (SQL)

**MBC 638** 

**Data Analysis and Decision Making** 

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Sigma quality level (SQL) is a quantitative measure of the capability of any process.

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### Defects per Million Opportunities (DPMO)

• Q: What is a defect?

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- A: Not meeting customer requirements

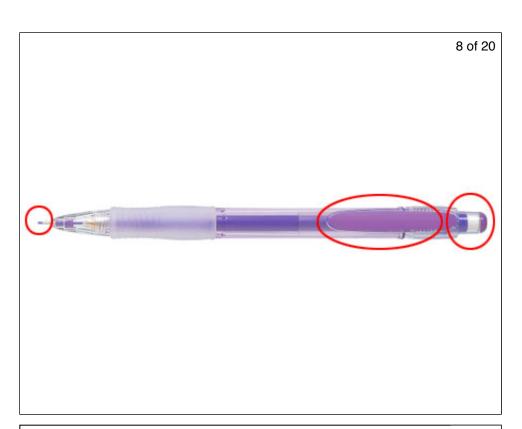
## Defects per Million Opportunities (DPMO)

- Q: What is a defect?
- A: Not meeting customer requirements
- Sigma quality levels are based on DPMO.

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# **Example: DPMO and SQL**





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- 2. Units produced per day: U = 100

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7. SQL value (from <u>SQL table</u>) =

DPMO	S.Q.L.	Yield	DPMO	S.Q.L.	Yield	DPMO	S.Q.L.	16 of 20
934,000	0	6.60%	308,000	2	69.20%	6,210	4	99.40%
920,000	0.1	8.00%	274,000	2.1	72.60%	4,660	4.1	99.50%
900,000	0.2	10.00%	242,000	2.2	75.80%	3,460	4.2	99.70%
880,000	0.3	12.00%	212,000	2.3	78.80%	2,550	4.3	99.75%
860,000	0.4	14.00%	184,000	2.4	81.60%	1,860	4.4	99.81%
840,000	0.5	16.00%	158,000	2.5	84.20%	1,350	4.5	99.87%
810,000	0.6	19.00%	135,000	2.6	86.50%	960	4.6	99.90%
780,000	0.7	22.00%	115,000	2.7	88.50%	680	4.7	99.93%
750,000	8.0	25.00%	96,800	2.8	90.30%	480	4.8	99.95%
720,000	0.9	28.00%	80,800	2.9	91.90%	330	4.9	99.97%
690,000	1	31.00%	66,800	3	93.30%	230	5	99.98%
650,000	1.1	35.00%	54,800	3.1	94.50%	150	5.1	99.99%
610,000	1.2	39.00%	44,600	3.2	95.50%	100	5.2	99.99%
570,000	1.3	43.00%	35,900	3.3	96.40%	70	5.3	99.99%
540,000	1.4	46.00%	28,700	3.4	97.10%	40	5.4	99.996%
500,000	1.5	50.00%	22,700	3.5	97.70%	30	5.5	99.997%
460,000	1.6	54.00%	17,800	3.6	98.20%	20	5.6	99.998%
420,000	1.7	58.00%	13,900	3.7	98.60%	10	5.7	99.999%
382,000	1.8	61.80%	10,700	3.8	98.90%	8	5.8	99.999%
344,000	1.9	65.60%	8,190	3.9	99.20%	5	5.9	99.9995%
						3.4	6	99.9997%

#### **SQL Table**

DPMO	SQL	Yield
135,000	2.6	86.70%
115,000	2.7	88.70%
96,800	2.8	90.30%
80,800	2.9	91.90%
66,800	3	93.30%
54,800	3.1	94.70%
44,600	3.2	95.70%
35,900	3.3	96.40%
28,700	3.4	97.10%

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- Most companies' processes have SQL between 1.0 and 2.0.
- All companies strive for a six sigma level of efficiency (very low DPMO).