Practice quiz: ASQ Certified Six Sigma Green Belt (CSSGB)

10 questions. The answer key is on page 2.

Name _____ Date _____

1. **A payroll team processes 2,500 expense claims. Each claim has 5 opportunities for a defect, and the team finds 75 defects. What is the DPU?**
   A. 0.006
   B. 0.300
   C. 0.030
   D. 0.150

2. **A purchasing team issues 1,800 purchase orders. Each order has 6 opportunities for a defect, and an audit finds 27 defects. What is the DPMO?**
   A. 2,500
   B. 15,000
   C. 0.0025
   D. 25,000

3. **A process runs at a long-term 2,500 DPMO. An upper-tail area of 0.0025 corresponds to z = 2.81. Using the convention of adding a 1.5 sigma shift, what short-term sigma level is reported?**
   A. 2.81
   B. 1.31
   C. 5.62
   D. 4.31

4. **A claims process runs at 0.12 defects per unit, with defects spread at random (Poisson). Given e^(-0.12) = 0.8869, about what share of claims have no defects at all?**
   A. 88.0%
   B. 88.7%
   C. 12.0%
   D. 11.3%

5. **A lender promises a decision within 5.0 days (an upper limit only). Decision times have a mean of 3.2 days and an overall standard deviation of 0.5 days. What is Ppk?**
   A. 3.60
   B. 1.20
   C. 0.60
   D. 2.13

6. **A team computes capability for days to pay a supplier invoice, which has an upper limit of 10 days and no lower limit. Why can it report Cpk but not Cp?**
   A. Cp needs at least 100 readings
   B. Cp works only for manufactured parts
   C. Cp needs the process to be centered
   D. Cp needs both a lower and an upper limit

7. **A payroll file must reach the bank between 24 and 48 hours before payday. Send times have a mean of 40 hours before payday and a within-subgroup standard deviation of 2.0 hours. What is Cpk?**
   A. 1.33
   B. 2.00
   C. 2.67
   D. 0.67

8. **Time to answer a customer email has a mean of 15.0 minutes and an overall standard deviation of 2.5 minutes, with an upper limit of 22.5 minutes. The area beyond z = 3.00 is 0.00135. About how many emails per million exceed the limit?**
   A. 0.00135
   B. 13,500
   C. 1,350
   D. 998,650

9. **An invoice process has a Ppk of 1.10, set by its nearer limit, and almost nothing falls outside the far limit. Using the convention that adds a 1.5 sigma shift, what sigma level does it report?**
   A. 4.8
   B. 3.3
   C. 1.8
   D. 2.6

10. **For a loan-processing time, Cp is 1.50 but Pp is only 0.95. What does the gap most likely mean?**
    A. The gauge cannot tell readings apart
    B. The process mean shifts between subgroups over time
    C. The process is centered on its target
    D. The specification limits are set too wide

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Answer key

ASQ Certified Six Sigma Green Belt (CSSGB). One line of why for each answer.

1. **C** DPU = defects / units = 75 / 2,500 = 0.030.
2. **A** DPMO = 27 / (1,800 x 6) x 1,000,000 = 27 / 10,800 x 1,000,000 = 2,500.
3. **D** The long-term z for a tail of 0.0025 is 2.81.
4. **B** With Poisson defects, the share with zero defects = e^(-DPU) = e^(-0.12) = 0.8869, or 88.7%.
5. **B** With only an upper limit, Ppk = Ppu = (5.0 - 3.2) / (3 x 0.5) = 1.8 / 1.5 = 1.20.
6. **D** Cp divides the full tolerance (USL - LSL) by 6 sigma, so with no lower limit there is no tolerance width to divide.
7. **A** Upper side = (48 - 40) / (3 x 2.0) = 8 / 6 = 1.33.
8. **C** z = (22.5 - 15.0) / 2.5 = 7.5 / 2.5 = 3.00.
9. **A** The long-term z to the nearer limit = 3 x Ppk = 3 x 1.10 = 3.3.
10. **B** Cp uses within-subgroup spread; Pp uses the overall spread of all the data.

Full explanations

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