Grading rubric
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You need to communicate your understanding to get full points, rather than just getting the right numerical result. To do this you need to show your work. Showing your work means both translating the problem into mathematical notation, identifying (and writing or naming) the correct methods, equations, formulas, or models, and explain each step. Most answers have both a left hand side (LHS) and a right hand side (RHS): include both in your answer.

Analytical problems will be scored on a 5-point scale (or multiples of 5):
   5   The student clearly understands and shows how to solve the problem and the answer is correct.
   4.75   The student clearly understands how to solve the problem. Minor mistakes and careless errors (e.g., "math typos") appear but they do not indicate a conceptual misunderstanding.
   4   The student understands the main concepts and problem-solving techniques, but has some minor yet non-trivial gaps in their analysis, reasoning and/or explanation.
   3   The student has partially understood the problem. The student is not completely lost, but requires tutoring in some of the basic concepts. The student may have missed a critical step or aspect of the problem. Or the student may have started out correctly, but gone on a tangent or may have not finished the problem.
   2   The student has a poor understanding of the problem. The student may have gone in a not-entirely-wrong but unproductive direction, or attempted to solve the problem using pattern matching or by rote. Or the student may have shown so little work that understanding cannot be determined even though the final answer is correct.
   1   The student did not understand the problem. They may have written some appropriate formulas or diagrams, but nothing further.
   0   The student wrote nothing or almost nothing relevant to the problem. Or, they have done something entirely wrong. Or the final answer is incorrect and the student may have shown so little work, or made significant notation errors, that the understanding cannot be determined.

For writing problems, a score of 5 meets the following criteria:
- **Appropriate:** Answer is appropriate to the question. Answer meets the length requirements of the assignment (not too long or too short).
- **Correct:** Content is factually correct. Accurately interprets evidence, statements, graphics, questions, etc. Draws warranted, judicious, non-fallacious conclusions.
- **Complete:** All portions of question are answered.
- **Well-written:** No punctuation, spelling errors, or structural mistakes. Sentences and paragraphs are complete and able to be understood.
- **Organized, understandable:** Content is well-organized and flows; information makes sense.
- **Supported by evidence:** The level of detail is sufficient to develop the conclusions. Justifies key results and procedures, explains assumptions and reasons. Each point supported with sufficient details and evidence.
- **Vocabulary**: The answer included correct scientific terminology (from the lesson that applied to the question asked) and the terms are used in the proper context

4: One element of a "5" score is missing, 3: Two elements of a "5" are missing, 2: Three elements of a "5" are missing, etc. Scores of 0-3 may also be given for significant errors in one of the criteria (e.g., major factual errors, incomprehensible writing).

+ Exceptional effort may be given additional points beyond the rubric.

In addition to the above performance criteria, all students are expected to meet a basic level of professionalism in their assignments. Failure to do so may result in deductions from your base score.

- Indicate your answer clearly. Depending on the format you can: circle your answer, draw an arrow, use a bold font or change the color, highlight it, or write "This is my answer."
- Follow the instructions (written and verbal instructions).
- Submit readable documents. Examples of poor document quality: missing name on papers, illegible handwriting, illegible scans, documents requiring rotation, pages out of order, documents uploaded as multiple files, lack of staples, etc.
- Correctly cite any outside materials used in assignments (other than the course materials).
- Maintain academic integrity at all times.

Example of "show your work" done well vs. poorly

Problem 2.18 in our textbook is: The number of system breakdowns occurring with a constant rate in a given length of time has a mean value of two breakdowns. What is the probability that in the same length of time, two breakdowns will occur?

Good solution which would receive full points:

Since the system breakdown occurs at a constant rate in a given length of time the r.v can be modeled using a Poisson distribution, which has pmf:

$$\Pr(x; \mu) = \begin{cases} \dfrac{e^{-\mu}\mu^{x}}{x!} & \text{for } \mu > 0, x = 0, 1, 2...n. \\ 0 & \text{otherwise} \end{cases}$$

Given that system breakdown occurs at a rate of : $\lambda = 2/period$ where the period is constant, t.
For the given process, $\mu = \lambda*t = (2/t)*t = 2$

Therefore, $\Pr(x = 2) = \dfrac{2^{2}*e^{-2}}{2!} = 2 * e^{-2} = 0.271$

Therefore, the probability that in the same length of time, two breakdowns will occur is Pr(x=2) = 0.271.

Solution which may not receive full points: Even though the answer is correct, you haven't explained enough to allow me to see that you have a conceptual understanding vs. just pattern matching. The solution is also missing important information on the left hand side of the equation. (what are you quantifying here? Where did this equation come from? Where did 2 come from?).

Given $\mu = 2$,

$$\dfrac{2^{2}e^{-2}}{2!} = 0.271$$