

Slow Leak

This task assesses your **problem-solving** ability.

STUDENTS:

Your response will be scored using the **Solves Problems** Scoring Guide. Show your best work by:

- thoroughly investigating the situation;
- using all appropriate information;
- using appropriate mathematical concepts and procedures;
- being clear and complete.

Robin's car has one tire that slowly leaks air.

The tire holds 35 pounds of air, but leaks 0.7 pounds of air every day.

On Friday there are 35 pounds of air in the tire.

On the third day after that (Monday), Robin adds two pounds of air to the tire.

He continues to add two pounds of air every three days.

How much air must Robin add to the tire after 27 days to fill the tire to exactly 35 pounds? Show and explain all steps to your solution.



Slow Leak continued ...

Reflections

My response is good because I ...

- thoroughly investigated the situation;
- used all appropriate information;
- used appropriate mathematical concepts and procedures;
- clearly and completely described how I solved this problem.

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	Criteria	4 Points <i>very fine work</i>	3 Points <i>fully acceptable work</i>	2 Points <i>partially acceptable</i>	1 Point <i>response attempted</i>	0 Points <i>none or insufficient</i>
Solution	<ul style="list-style-type: none"> Is a solution identified and correct? 	<ul style="list-style-type: none"> correctly identifies the amount of air that must be added; AND 	<ul style="list-style-type: none"> correctly identifies the amount of air that must be added; <u>or</u> incorrectly identifies the amount of air that must be added as 0.9 pounds (does not include the 2 pounds of air added on the last day); AND 	<ul style="list-style-type: none"> identifies an incorrect amount of air that must be added due to computational errors; AND 	<ul style="list-style-type: none"> identifies an amount of air that must be added but shows conceptual misunderstandings; AND 	<ul style="list-style-type: none"> does not attempt to answer the question; <u>or</u> if attempt is made, work is irrelevant; OR
Process	<ul style="list-style-type: none"> Is the problem solving process systematic and does it support the solution? 	<ul style="list-style-type: none"> uses a systematic strategy (e.g., uses a chart, list, equations, etc.); AND 	<ul style="list-style-type: none"> uses a systematic strategy (e.g., uses a chart, list, equations, etc.); AND 	<ul style="list-style-type: none"> uses a systematic strategy to determine a solution, but errors and misunderstandings exist (e.g., misinterprets the pattern of every 3rd day or forgets that 0.7 pounds of air is lost on the first day); AND 	<ul style="list-style-type: none"> lacks a systematic strategy to determine a solution or uses one that demonstrates a misunderstanding of the data (e.g., identifies a solution of 18.9 pounds as a result of not accounting for the 2 pounds of air added every 3 days); AND 	<ul style="list-style-type: none"> may or may not attempt to solve the problem; OR
Expresses Ideas	<ul style="list-style-type: none"> Are explanations clear? 	<ul style="list-style-type: none"> uses calculations and words to clearly explain how the solution was found. 	<ul style="list-style-type: none"> work clearly shows how the solution was found, but may or may not include a narrative. 	<ul style="list-style-type: none"> shows some work, but lacks organization and requires interpretation. 	<ul style="list-style-type: none"> explanation of steps used to determine the solution is confusing, inaccurate or nonexistent. 	<ul style="list-style-type: none"> restates the problem, incomplete, not enough information is given to evaluate, or no evidence of an attempt to solve the problem.

Numerical part of answer:
 2.9 pounds of air must be added to fill the tire to exactly 35 pounds.

Please note: Friday is Day 1 and Monday is Day 4. Beginning Monday, two pounds of air is added every three days — on Days 7, 10, 13, 16, 19, 22, 25, and 28. On Day 27 the tire pressure is 32.1. On Day 28 (after 27 days), 2.9 pounds of pressure must be added to fill the tire to exactly 35 pounds.