

Name _____

3D Printing's Limitations: Where It Falls Short of Perfection

Open-Ended Response Answer Key

1. Possible Answer: Material constraints in 3D printing mean that certain high-performance materials required in industries like aerospace or medicine may not be compatible. This limits the range of applications in these industries where specific materials are essential for safety and performance.
2. Possible Answer: 3D printing might not be the best choice for this task because it is slower compared to traditional manufacturing methods like injection molding. Producing 10,000 identical toy cars using 3D printing would take a significantly longer time and may not be cost-effective due to the time and material costs involved.
3. Possible Answer: Strategies and technologies that could address these limitations include improved printing techniques to reduce layer lines, the development of larger-scale 3D printers, and advancements in materials to expand the range of compatible substances.
4. Possible Answer: The trade-offs involve choosing between the benefits of precision and complexity that 3D printing offers and the limitations related to material constraints and slower production speeds. Manufacturers must decide when to prioritize quality and customization over speed and material variety based on their specific needs.

