Enhancing Engineering Designs with CAD Software

Part 1: Roleplay Dialogue

Characters:

- *Daniel* – Civil Engineer
- *Mia* – Junior Engineer

Dialogue:

Daniel: Hey Mia, have you started working on the structural plans for the new bridge? I assume you're using **CAD (Computer-Aided Design)** to draft the initial layout?

Mia: Yes, I started this morning. I've been focusing on **drafting** the foundation and support beams. I want to make sure the dimensions are precise before moving on.

Daniel: That's a good approach. Once you finalize the **3D modeling**, we can run simulations to check stress distribution. Have you tried incorporating terrain data?

Mia: Not yet. I was planning to do that after I complete the initial **rendering**. I want to make sure all elements align properly before adding external factors.

Daniel: Sounds good. Also, consider **design optimization** techniques. We might be able to reduce material costs while maintaining structural integrity.

Mia: That makes sense. If we refine the design early, it'll save us from making expensive changes later.

Daniel: Exactly. Let's meet later to review your progress. We'll check if any refinements are needed before moving to the next phase.

Mia: Perfect! I'll complete the adjustments and send you the file before our review session.

Daniel: Great. Looking forward to seeing how it turns out!

Mia: Me too! Thanks for the input, Daniel.

Part 2: Comprehension Questions

1. What software is Mia using for her structural plans?
    - (A) Word Processing Software
    - (B) CAD (Computer-Aided Design)
    - (C) Spreadsheet Software
    - (D) Presentation Software
2. Why does Daniel suggest using design optimization?
    - (A) To add more complex features
    - (B) To change the entire design
    - (C) To reduce material costs while maintaining integrity
    - (D) To increase the weight of the structure
3. What does Mia want to do before adding terrain data?
    - (A) Complete the rendering
    - (B) Change the entire layout
    - (C) Conduct on-site inspections
    - (D) Review financial estimates
4. What will happen after Mia finishes her adjustments?
    - (A) The project will be canceled
    - (B) The team will move directly to construction
    - (C) She will submit the file for a review session
    - (D) Daniel will send the designs to the city council

Part 3: Key Vocabulary with Japanese Definitions

1. CAD (Computer-Aided Design) – コンピュータ支援設計
2. Drafting – 製図
3. 3D modeling – 3D モデリング
4. Rendering – レンダリング
5. Design optimization – 設計最適化

Part 4: Answer Key

1. **What software is Mia using for her structural plans?**
   ✅ (B) **CAD (Computer-Aided Design)**
2. **Why does Daniel suggest using design optimization?**
   ✅ (C) To reduce material costs while maintaining integrity
3. **What does Mia want to do before adding terrain data?**
   ✅ (A) Complete the **rendering**
4. **What will happen after Mia finishes her adjustments?**
   ✅ (C) She will submit the file for a review session