CONTEST ENTRY PLANNER

Use these prompts to help you brainstorm and develop a successful entry for the **Innovators of Tomorrow Contest**.

Be creative! It's OK if your innovation won't actually work in real life (yet!), but it should solve a real-life problem. Is it a super-flexible material with a chemical structure that resists melting, perfect for fightfighter suits? Or a 3D printer that can print cells at the molecular level and keep blood banks stocked? Whatever your idea, **think big!**

1 Brainstorm a few problems you'd like to solve with advanced manufacturing. Consider:

- What obstacles are people facing?
- What tasks are dangerous, difficult, or time-consuming for humans?
  - **Is the challenge the location?**
    - Examples: extreme pressure in oceans or zero gravity in space
  - **Is the challenge the task?**
    - Examples: medical procedures, construction, or even repetitive household tasks

2 Think about how you might use advanced manufacturing to solve the problems you identified. Then choose one problem and solution to develop further.

- What is your innovation (a machine? a robot? a new material?) and how does it solve your problem?

3 Refine your innovation. Consider types of functionality. Will it need to:

- **Make decisions (artificial intelligence)?**
- **Be flexible, waterproof, portable?**
- **Exert force, withstand pressure, carry heavy weight?**

Examples of real-life technologies:

Advanced Material	Properties
Carbon fiber reinforced polymer	Strong, light, flexible plastic
Metal foam	Strong, light, impact absorbent, withstands high heat
Advanced thermal coating	Prevents metal from melting at its normal melting point

Advanced Process	Description
Additive manufacturing (3D printing)	Lays down superthin layers of material until a 3D object is created
Factory robots	Can autonomously perform challenging manufacturing tasks
Supercritical drying	Transforms a substance's liquid into gas to produce strong, ultralight aerogels

4 What materials or combination of materials will you need to use or invent in order to create your innovation?

5 What do you need to consider from a business perspective?

- Audience: Who will buy or use your invention? (Examples: government, factory, consumers, etc.)
- General price estimate (research and consider the cost of materials, process, and labor)

Note Do not submit this planner sheet as part of your contest entry.