1. Technical Analysis Prompt:
   "Analyze this Python code and suggest optimizations for better performance and readability:

```
def fibonacci(n):
    if n <= 0: return []
    elif n == 1: return [0]
    sequence = [0, 1]
    while len(sequence) < n:
        sequence.append(sequence[-1] + sequence[-2])
    return sequence
```"

2. Creative Writing Prompt:
"Write a 250-word story that begins with 'The old clock struck midnight' and must include these elements: a mysterious package, a talking cat, and a forgotten memory. Make it both whimsical and slightly suspenseful."

3. Mathematical Problem-Solving:
"A cylindrical water tank has a radius of 3 meters and a height of 8 meters. If water is flowing into the tank at a rate of 2 cubic meters per minute, and simultaneously draining at 1.5 cubic meters per minute, how long will it take to fill the tank if it starts empty? Show your step-by-step calculations."

4. Ethical Analysis:
"Consider the ethical implications of using AI in hiring decisions. What are the potential benefits and risks? How might this impact different demographic groups? Provide a balanced analysis with specific examples."

5. Cross-Domain Integration:
"Explain how the principles of evolution in biology could be applied to improve urban planning and city development. Provide specific examples and draw parallels between biological and urban systems."

6. Code Generation with Requirements:
"Create a React component that displays a dynamic calendar. It should allow users to switch between months, highlight current date, and mark events. Include proper error handling and accessibility features. The component should work without any external libraries except React itself."

7. Scientific Explanation with Analogy:
"Explain quantum entanglement to a 12-year-old using an analogy involving

everyday objects. The explanation should be scientifically accurate while being engaging and understandable."

8. Data Analysis and Visualization:
"Given this dataset of monthly sales figures:
[{'month': 'Jan', 'sales': 12000}, {'month': 'Feb', 'sales': 15000}, {'month': 'Mar', 'sales': 11000}, {'month': 'Apr', 'sales': 18000}]
Create a visualization recommendation and provide code to analyze trends, calculate growth rates, and identify patterns. Explain what insights can be drawn from this data."

9. Language Translation and Cultural Context:
"Translate this English idiom: 'It's raining cats and dogs' into Mandarin Chinese, Spanish, and French. Explain the cultural equivalent expressions in each language and their literal meanings. Also suggest when it would be appropriate to use each expression."

10. Problem-Solving with Constraints:
"Design a sustainable tiny house (200 sq ft) that must include: a full kitchen, bathroom, sleeping area for two, and work-from-home space. The house must be energy-efficient and use renewable materials. Provide a detailed layout description and explain how each requirement is met while maximizing space efficiency."

These prompts test different capabilities:
- Technical understanding and code optimization
- Creative writing and storytelling
- Mathematical problem-solving
- Ethical reasoning
- Cross-domain thinking
- Practical coding skills
- Explanation and analogy creation
- Data analysis
- Language and cultural knowledge
- Design thinking with constraints