Name _____ Class _____ Date _____

Skills Worksheet

Critical Thinking

Jet Smart

You receive this letter from a top secret airplane manufacturer:

Agent X:

We were impressed by your work on our flying saucer project. Your help is now needed in the design of our newest stealth airplane, the FX-2000. We need your help with one simple but important matter—selecting the best metal for the plane's engines. Our team has narrowed the choices to two metals: titanium and platinum. Your mission is to gather facts about titanium and platinum, compare their properties, and recommend the better material. Report your answer within 24 hours.

You immediately turn to your reference books and study the properties of the two metals.

Useful Term

corrosion wearing away gradually by rusting or the action of chemicals

Platinium

- a precious metal
- density: 21.4 g/cm^3
- resists corrosion
- melting point: 1,772°C
- weaker than steel

Titanium

- a metal
- density: 4.51 g/cm^3
- resists corrosion
- melting point: 1,675°C
- as strong as steel

MAKING COMPARISONS

1. How are platinum and titanium similar? How are they different?

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DEMONSTRATING REASONED JUDGMENT

2. Think about the extreme conditions that materials in the engine of a jet must endure. What properties would a metal in this engine need to have?

3. Which material would you recommend? Explain your answer.

PREDICTING CONSEQUENCES

4. Assume that the raw materials will be mined and sent directly to the manufacturing plant without being purified. Predict the possible consequences to the *FX-2000*'s performance. Explain your answer.

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