v. 7/17/08

Engineering is Elementary

"Designing Parachutes" Assessment

Today the date is:

MONTH	DAY		YEAR
○ January			○ 2006
○ February			○ 2007
○ March	⓪	⓪	○ 2008
○ April	①	①	○ 2009
○ May	②	②	○ 2010
○ June	③	③	○ 2011
○ July		④	○ 2012
○ August		⑤	
○ September		⑥	
○ October		⑦	
○ November		⑧	
○ December		⑨	

My initials:

FIRST	MIDDLE	LAST
Ⓐ	Ⓐ	Ⓐ
Ⓑ	Ⓑ	Ⓑ
Ⓒ	Ⓒ	Ⓒ
Ⓓ	Ⓓ	Ⓓ
Ⓔ	Ⓔ	Ⓔ
Ⓕ	Ⓕ	Ⓕ
Ⓖ	Ⓖ	Ⓖ
Ⓗ	Ⓗ	Ⓗ
Ⓘ	Ⓘ	Ⓘ
Ⓙ	Ⓙ	Ⓙ
Ⓚ	Ⓚ	Ⓚ
Ⓛ	Ⓛ	Ⓛ
Ⓜ	Ⓜ	Ⓜ
Ⓝ	Ⓝ	Ⓝ
Ⓞ	Ⓞ	Ⓞ
Ⓟ	Ⓟ	Ⓟ
Ⓠ	Ⓠ	Ⓠ
Ⓡ	Ⓡ	Ⓡ
Ⓢ	Ⓢ	Ⓢ
Ⓣ	Ⓣ	Ⓣ
Ⓤ	Ⓤ	Ⓤ
Ⓥ	Ⓥ	Ⓥ
Ⓦ	Ⓦ	Ⓦ
Ⓧ	Ⓧ	Ⓧ
Ⓨ	Ⓨ	Ⓨ
Ⓩ	Ⓩ	Ⓩ

Do Not Mark

I was born in this month:

○ January	○ July
○ February	○ August
○ March	○ September
○ April	○ October
○ May	○ November
○ June	○ December

I am a: ○ Girl ○ Boy

Do Not Mark	Do Not Mark
⓪⓪⓪⓪⓪⓪	⓪⓪⓪⓪⓪
①①①①①①	①①①①①
②②②②②②	②②②②②
③③③③③③	③③③③③
④④④④④④	④④④④④
⑤⑤⑤⑤⑤⑤	⑤⑤⑤⑤⑤
⑥⑥⑥⑥⑥⑥	⑥⑥⑥⑥⑥
⑦⑦⑦⑦⑦⑦	⑦⑦⑦⑦⑦
⑧⑧⑧⑧⑧⑧	⑧⑧⑧⑧⑧
⑨⑨⑨⑨⑨⑨	⑨⑨⑨⑨⑨

Marking Instructions

- Use a No. 2 pencil or a blue or black ink pen only.
- Do not use pens with ink that soaks through the paper.
- Make solid marks that fill the response completely.
- Make no stray marks on this form.

CORRECT: ● **INCORRECT:** ⊘⊠◒◔

For each question below, fill in the bubble for the **BEST** answer.

1. The atmosphere on Mars is thinner than the atmosphere on Earth. How can Mr. Ino change a parachute that works well on Earth to help a robot land safely on Mars?

Ⓐ Use a parachute material that lets more air through.

Ⓑ Use a parachute material that weighs more.

Ⓒ Make the parachute larger.

Ⓓ All of the above.

2. On a planet the same size as Earth, where the atmosphere is thinner than it is on Earth, objects will:

Ⓐ fall faster.

Ⓑ fall slower.

Ⓒ fall at the same rate.

Ⓓ float.

3. At work, an aerospace engineer might:

Ⓐ fly space shuttles.

Ⓑ study a rock from Mars.

Ⓒ fix airplane engines.

Ⓓ figure out ways to help airplanes land safely.

4. **David and Dipa took two identical sheets of paper. They crumpled one into a ball and left one flat. They dropped them both at the same time. The crumpled paper ball dropped quickly straight down. The flat sheet of paper fell slowly and drifted to the ground. Why?**

Ⓐ The crumpled paper ball weighed less than the flat sheet of paper.

Ⓑ The crumpled paper ball was more dense than the flat sheet of paper.

Ⓒ More air got in the way of the flat sheet of paper and slowed it down.

Ⓓ The air was denser near the flat sheet of paper and slowed it down.

5. **Wilson constructed a model rocket. It didn't fly for as long as he wanted it to. He decided to change the shape of the fins on the rocket.**

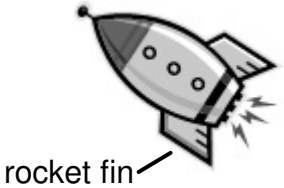
Based on his testing data (shown in the table), what should Wilson do to make his rocket fly longer?

Ⓐ Use rectangle-shaped fins.

Ⓑ Use curved fins.

Ⓒ Use triangle-shaped fins.

Ⓓ It is impossible to tell from the data.



Try #	Rocket Fin Shape	Length of Flight
1	Rectangle	7 seconds
2	Rectangle	8 Seconds
3	Rectangle	6 Seconds
4	Curved	7 Seconds
5	Curved	8 Seconds
6	Curved	7 seconds
7	Triangle	7 Seconds
8	Triangle	6 Seconds
9	Triangle	6 seconds

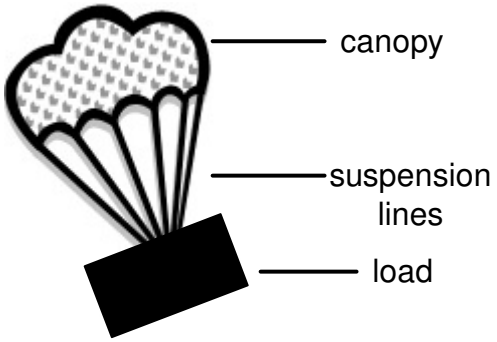
6. **Sven designed and created a parachute. When he tested it, he found that it fell too slowly. What would work BEST to make his parachute fall more quickly?**

Ⓐ Make the canopy smaller.

Ⓑ Make the suspension lines longer.

Ⓒ Drop the parachute from a lower spot.

Ⓓ Make the canopy out of a material that lets less air through it.



7. **Which of the following statements are true? Mark "T" for true and "F" for false for each statement.**

	True	False
Mars takes 365 days to circle the Sun.	Ⓣ	Ⓕ
Only Earth has an atmosphere.	Ⓣ	Ⓕ
Air can affect how things fall.	Ⓣ	Ⓕ
A parachute will work on a planet with no atmosphere.	Ⓣ	Ⓕ