Dying Stars and the Birth of Elements

Turn in one copy of this lab with each group member's printed name and signature. By signing, you certify that you have actively participated in the exercise and have put forth effort in equal share to your fellow group members.

Printed Name	**Signature**
______________________	______________________
______________________	______________________
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Table 1

	Knot 1	Knot 2	Knot 3	Knot 4	Average
kT					
nH					
Fe					
S					
Si					
Ca					
Mg					
Quality of Fit					

1. Look at the quality of fits for each knot. What things might affect the fits between different knots? *(If other groups are not done with their measurements, come back to this question later)*

2. Careful studies of the way stars explode show that before the explosion, the star has less iron in it than after it explodes. Where do you think the iron might come from?

3. Cas A is located in a relatively dense part of the Milky Way, where there is a lot of gas and dust, some of which will form new stars. How will the explosion of Cas A affect new stars that form after Cas A exploded?

4. The Milky Way is full of dust, which is made up of elements heavier than hydrogen and helium. How might you get those elements spread throughout the galaxy, instead of just in the small part of the galaxy right around a supernova?

5. The Sun has about the same abundance of iron in it as Cas A. What does this imply about the circumstances of the Sun's formation? (Think about this carefully, the answer is a little more complicated than it first appears!)

Given the mass of iron in the Sun and the mass of iron in Cas A that we observe, we can get 1 to 1.5 stars like the Sun from a supernova remnant like Cas A.

6. If the supernova rate in the Milky Way is 1 supernova every century, how many stars with the same iron abundance as the Sun could have been made given the age of the Milky Way (14 billion years)?

7. What assumption have you made in 6) about the elements created throughout the galaxy's existence? Is this a good assumption?