

*TECHER, 2020*  
*The Stack*

**Why these 12? Why not any of the remaining 89.83%?**

Before getting to the why, let's address the what. We are looking for 12 chemical elements, which puzzlers may have surmised based on the first hint.

**NOTE THAT NE IS ABOVE AR, AND AL, GA, AND IN ARE STACKED (3)**

This caption is accurate under the periodic table of elements. The abbreviated names of the three states highlighted in this section of the puzzle correspond with the elements **Ne, Ar, and Pa**.

**HOMAGE TO A ROSE BOWL HOAX, WITH AN AIR OF DISTINCTION (4)**

This section asks puzzlers to come up with synonyms for the words and phrases listed, and then rearrange the letters to form new words. What gives the unscrambled answers an air of distinction is that they are all noble gases. The four elements named here are **Rn, He, Kr, and Xe**.

BEDECK OR DECORATE

- ADORN = RADON

GREETING, HYBRID NAG

- HIMULE = HELIUM

CARNITAS-LIKE, OR BACONY, PLUS N

- PORKY + N = KRYPTON

STRONG, DOMESTICATED TAURUSES, PLUS N

- OXEN + N = XENON

**2 RAYS (2)**

The two rays are **Ra and Ac**. The origin of the name radium comes from the Latin word meaning ray, and the name actinium comes from the Greek word for ray. Radium (Ra), element 88, was discovered by Marie and Pierre Curie 1898, and actinium (Ac), element 89, was first isolated in 1899.

**COMPLETE THE SEQUENCE BELOW TO DISCOVER THE MISSING THREE (3)**

Start by adding 5 to 58 to complete the first blank (the fifth spot), and then apply the Fibonacci sequence to complete the two additional missing numbers (63, 71, 84). Adding 5 to 58 is 63, adding 8 to 63 is 71, and adding 13 to 71 is 84. Although puzzlers may have been thrown off because the numbers listed aren't in line with the sequence (which would start with 51 and end with 139), the words beneath the blanks (continent, city, country) point to:

- Europium (Eu, element 63), named for Europe
- Lutetium (Lu, element 71), named for the city Lutetia (now known as Paris)

- Polonium Po (Po, element 84), named for Poland

The final three elements are **Eu, Lu, and Po**

***NOW THAT WE HAVE FIGURED OUT WHICH 12, WHY?***

Why Ne, Ar, Pa, Rn, He, Kr, Xe, Ra, Ac, Eu, Lu, and Po? According to the Royal Society of Chemistry, all of these elements were discovered between 1891, the year of [Throop University](#)'s founding, and 1920, when the institution became Caltech.

The key elements for this special alchemy were people: The founders of Throop University knew that they had created a place that would have an outsized impact on the world. The second hint challenges puzzlers to use the element abbreviations that correspond with the atomic numbers listed to see that **Throop** was transformed into **Caltech**.

**Th** (90\*) **Ro** (8) **O** (8) **P** (15\*)  
 becomes  
**C** (6) **Al** (13) **Te** (52) **C** (6) **H** (1)

*\*Note:* There are two typographical errors in the first line of this clue: 91 should be 90, and 5 should be 15. Bonus points for any puzzlers who can tell us what PaROOB might mean!