

One of the most essential tools in chemistry is the periodic table of the elements! In this lesson, we'll explore what the periodic table is, its history, and its structured layout that organizes all known chemical elements in the universe. This useful chart reveals patterns and relationships among elements, making it easier to predict their behaviors in reactions.

# Recommended Reading

- The Periodic Table, by Daniel Faust
- The Illustrated Encyclopedia of the Elements, by Lisa Congdon, pp. 14-17
- Chemistry for Curious Kids, by Lynn Huggins-Cooper, pp. 28-29
- Elements and the Periodic Table, by Suzanne Slade, pp. 4-11
- The Periodic Table: Mapping the Elements, by Sharon Katz Cooper, pp. 1-15 and 38-44

# **Egg Carton Elements:** An Exploration of the Periodic Table (Part 1)

Today you'll begin building your very own version of the periodic table using egg cartons! In the first part of this activity, we'll focus on the layout. You'll get to create the "grid" of the periodic table, matching the correct number of rows and columns. This will set the stage for the exciting work ahead. This will help you understand how the periodic table is organized. By the end of this three-part lab, you'll have your very own physical representation of the periodic table, helping you see how the elements are grouped and arranged. Today you'll get started by setting up the base for your periodic table!

### **SUPPLIES**

- Piece of cardboard approx 45 in. x 35 in.
- # 11 flat-bottomed, cardboard egg cartons
- Scissors or craft knife
- Kilz<sup>®</sup> white paint
- Paintbrush
- Hot glue gun and glue sticks

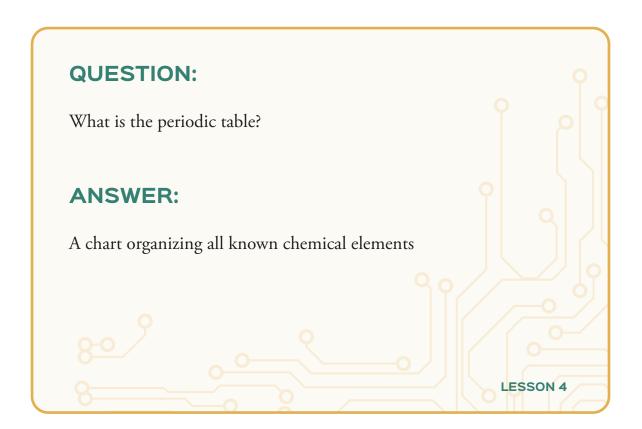
## INSTRUCTIONS

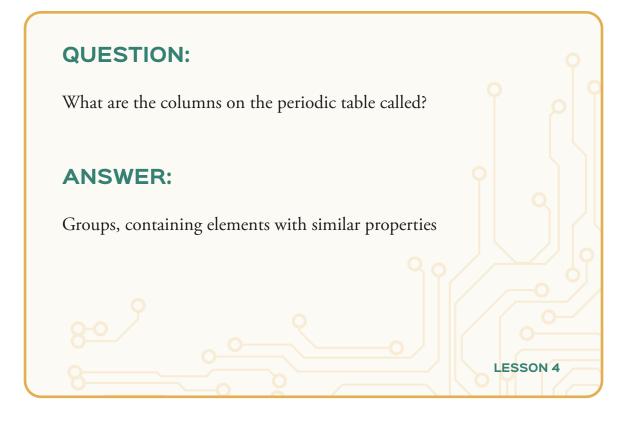
- 1. Use a very large box to create a 45" x 35" piece of cardboard for your base.
- 2. Cut the egg cartons so they will lie flat on your board. You may need to cut or tear out peaks inside the egg cartons.
- 3. Place the cut egg cartons on the cardboard to match the layout of the periodic table, being sure you have the correct number of element boxes and the correct number of columns and rows. Refer to the periodic table graphic provided.
- 4. Use hot glue to secure each egg carton in place, ensuring they are arranged exactly to match the rows and columns of the periodic table.
- 5. Apply a coat of white paint (Kilz or similar) to all the cartons. This will create a uniform foundation for the next layer of colors you'll be adding next week. Allow to dry completely.

# THE PERIODIC TABLE OF ELEMENTS

helium 2 2 4.0026	Neon 10 T	20.180 argon	<b>A</b> 39.948	krypton <b>36</b>	7	xenon <b>54</b>	<b>Xe</b>	radon <b>86</b>	<b>Rn</b>	oganesson 118	Ogo	[294]
	fluorine 9	18.998 chlorine	35.453	bromine <b>35</b>	<b>B</b>	iodine 53	126.90	astatine <b>85</b>	<b>At</b> [210]	tennessine 117	Ts	[2, <del>2</del> ]
	<b>8</b>	15.999 sulfur	32.065	selenium <b>34</b>	Se	tellurium <b>52</b>	<b>T</b>	polonium <b>84</b>	<b>Po</b> [209]	livermorium 116	<b>\</b>	[293]
	nitrogen 7	14.007 phosphorus	30.974	arsenic <b>33</b>	As	antimony 51	<b>Sb</b>	bismuth <b>83</b>	208.98	moscovium 115	MC	[289]
	carbon	12.011 silicon	28.086	germanium <b>32</b>	<b>Ge</b>	tin <b>50</b>	<b>Sn</b>	lead <b>82</b>	<b>Pb</b> 207.2	flevorium 114		[289]
	boron 5	10.811 aluminium	<b>A</b>	gallium <b>31</b>	<b>Ga</b>	indium 49	<b>T</b>	thallium <b>81</b>	204.38	nihonium 113	Z S	[286]
				zinc <b>30</b>	ZuZ	cadmium 48	11241	mercury <b>80</b>	<b>T</b>	copernicium 112	ט ט	[285]
						_		_	<b>Au</b>	_		
				nickel <b>28</b>	<b>Z</b> 5985	palladium 46	<b>Pd</b>	platinum <b>78</b>	<b>195.08</b>	darmstadtium 110	Ds	[281]
				cobalt 27	0	rhodium 45	<b>8</b> 102.91	iridium 77	192.22	meitnerium 109	M M	[2/8]
				iron <b>26</b>	<b>F</b>	ruthenium	<b>70.101</b>	osmium <b>76</b>	190.23	hassium 108	Hs	[2//]
				manganese 25				_	<b>Re</b> 186.21	bohrium 107	B	[264]
				chromium 24	<b>ל</b>	molybdenum 42	<b>M</b> 0	tungsten <b>74</b>	<b>\$</b>	seaborgium 106	Sg	[269]
				vanadium 23	> 6	niobium 41	<b>N</b> 92.906	tantalum 73	<b>L</b>			
				titanium 22	<b>—</b> 47.867	zirconium 40	<b>Z</b> 7	hafnium 72	<b>H</b>	rutherfordium <b>104</b>	Rf	[261]
				scandium 21	SC 44 %56	yttrium 39	> 88.906	57-71	2	89-103		
	beryllium 4 <b>Be</b>	9.0122 magnesium	<b>M9</b>	calcium <b>20</b>	<b>S</b>	strontium 38	<b>S</b>	barium <b>56</b>		radium <b>88</b>	Ra	[226]
hydrogen 1.0079	lithium 3	6.941 sodium	<b>E</b> 22.990	potassium 19	<b>Y</b> 80 8	rubidium 37	<b>Rb</b>	caesium <b>55</b>	<b>CS</b>	francium 87	L S	[223]
	•	•				•		-		•		

174.97	lawrencium 103
ytterbium 70 70 Y0 173.05	102 102 NO
thulium 69 69 168.93	nendelevium 101 Md
68 68 FT 167.26	fermium 100 FM [257]
67 67 164.93	einsteinium 99 ES
dysprosium 66  Dy 162.50	californium 98 Cf [251]
65 65 158.93	97 97 BK [247]
gadolinium 64 <b>Gd</b>	curium 96 <b>Cm</b> [247]
63 63 EU	95 Am
Samarium 62 <b>Sm</b> 150.36	⊆
61 61 Pm	c _
60 60 Nd 144.24	uranium 92 U
praseodymium 59 Pr 140.91	Potactinium 91 Pa 231.04
58 58 140.12	thorium 90
57 57 138.91	89 89 AC [227]





# **QUESTION:**

What are the rows on the periodic table called?

# **ANSWER:**

Periods, showing the number of electron shells in each element

LESSON 4

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The periodic table of elements is a remarkable— solthat gives as insight into the very nature— [-the universe			
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# THE POWER OF THE PERIODIC TABLE Lesson 4 Quiz

# 1. What does the periodic table show?

- A) Types of animals
- B) All the known chemical elements
- C) All the plants
- D) Different types of rocks

### 2. What is the atomic number?

- The number of neutrons in an atom
- B) The number of electrons in an atom
- C) The number of protons in an atom
- D) The weight of an atom
- 3. The further away from the nucleus electrons are, the lower the amount of energy they have.
  - A) True
  - B) False

# 4. The rows on the periodic table are called:

- A) periods
- B) groups
- C) columns
- D) electron shells

# 5. Who is known for creating the first periodic table?

- A) Albert Einstein
- B) Dmitri Mendeleev
- C) Isaac Newton
- D) Galileo Galilei

# 6. What do electron shells represent?

- A) A covering that protects an atom
- B) The center of the atom
- C) Layers where the electrons live
- D) The particles that make up neutrons

# 7. What do scientists use the periodic table for?

- A) To measure temperature
- B) To calculate time
- C) To identify animals
- D) To understand the elements and their relationships