

Element Toss:

A Bean Bag Game Designed to Build Molecular Literacy



Periodic Table of the Elements

1	2	3	4	5	6	7	8
1 H 1.008	2 He 4.0026	3 Li 6.941	4 Be 9.0122	5 B 10.811	6 C 12.011	7 N 14.0064	8 O 15.9994
9 F 18.9984	10 Ne 20.1797	11 Na 22.98977	12 Mg 24.304	13 Al 26.981538	14 Si 28.0855	15 P 30.973762	16 S 32.065
17 Cl 35.453	18 Ar 39.948	19 K 39.0983	20 Ca 40.078	21 Sc 44.955912	22 Ti 47.88	23 V 50.9415	24 Cr 51.9961
25 Mn 54.938044	26 Fe 55.845	27 Co 58.933195	28 Ni 58.6934	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.64
33 As 74.9216	34 Se 78.96	35 Br 79.904	36 Kr 83.80	37 Rb 85.4678	38 Sr 87.62	39 Y 88.90584	40 Zr 91.224
41 Nb 92.90638	42 Mo 95.94	43 Tc 98.90625	44 Ru 101.07	45 Rh 102.9055	46 Pd 106.36	47 Ag 107.8682	48 Cd 112.4118
49 In 114.818	50 Sn 118.710	51 Sb 121.757	52 Te 127.60	53 I 126.90548	54 Xe 131.29	55 Ba 137.327	56 La 138.90471
57 Ce 140.12	58 Pr 140.90766	59 Nd 144.242	60 Pm 144.91288	61 Sm 150.35	62 Eu 151.964	63 Gd 157.25	64 Tb 158.92532
65 Dy 162.5001	66 Ho 164.93032	67 Er 167.259	68 Tm 168.93032	69 Yb 173.0547	70 Lu 174.967	71 Hf 178.49	72 Ta 180.94788
73 W 183.84	74 Re 186.207	75 Os 190.23	76 Ir 192.222	77 Pt 195.084	78 Au 196.96657	79 Hg 200.59	80 Tl 204.38
81 Pb 207.2	82 Bi 208.9804	83 Po 209	84 At 210	85 Fr 223	86 Ra 226	87 Ac 227	88 Th 232.0377
89 Pa 231.03688	90 U 238.02891	91 Np 237.04817	92 Pu 239.05216	93 Am 243.06138	94 Cm 247.07035	95 Bk 247.07035	96 Cf 251.07958
97 Es 252.0833	98 Fm 257.10	99 Md 258.10	100 No 259.10	101 Lr 260.10	102 Rf 261.10	103 Db 262.10	104 Sg 263.10
105 Bh 264.10	106 Hs 265.10	107 Mt 266.10	108 Ds 267.10	109 Rg 268.10	110 Cn 269.10	111 Nh 270.10	112 Fl 271.10
113 Mc 272.10	114 Lv 273.10	115 Ts 274.10	116 Og 275.10	117 Uu 286.10	118 Uub 287.10	119 Uut 288.10	120 Uuq 289.10

Atomic Number → **C** ← Symbol
 Average Atomic Mass → **12.01** ← Name
 Metals (blue), Nonmetals (green), Metalloids (yellow)

* Lanthanide series
 ** Actinide series

Periodic Table of the Elements

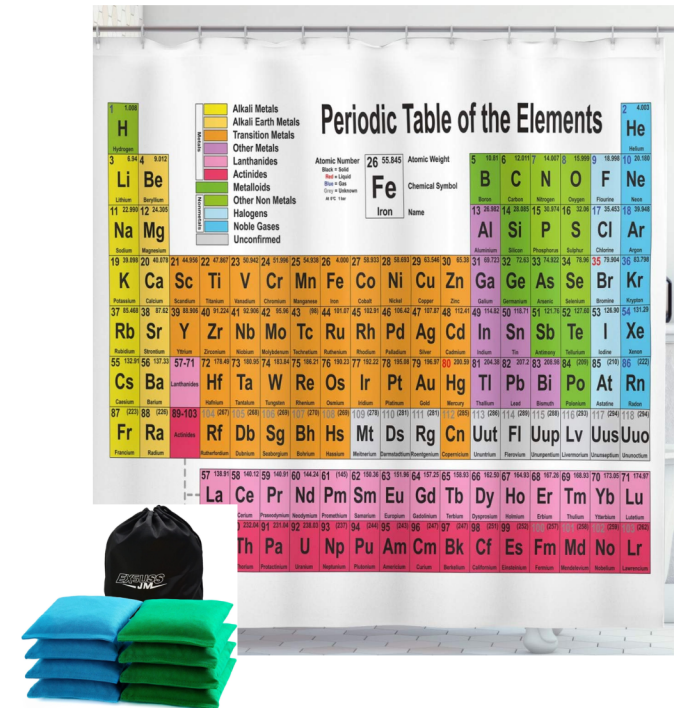
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* Lanthanide series
 ** Actinide series

Element Toss - Materials Needed

1. Two teams of players
2. A flat playing surface approximately 12 ft x 12 ft.
3. Each team will need a set of clue cards. These are found as printable cut-outs in this document.
Alternatively, each team can create their own set of clue cards.
4. Two large Periodic Tables. We recommend this one purchased from Amazon - <https://a.co/d/6bD7KtT>
5. Bean bags for tossing. We recommend dense bean bags about the size of a hand.



Element Toss - Game Set Up

1. Cut out the set of clue cards found in this document or make your own clue cards.
2. Create two teams of 1 - 6 players on each team. There should be close to the same number of players on each team. We recommend two teams of 4 players.
3. Set your large Periodic Tables on the ground with the top of the Periodic Tables facing each other.
4. Each team will need at least one bean bag to toss.

Team 1

Periodic Table of the Elements

Legend:

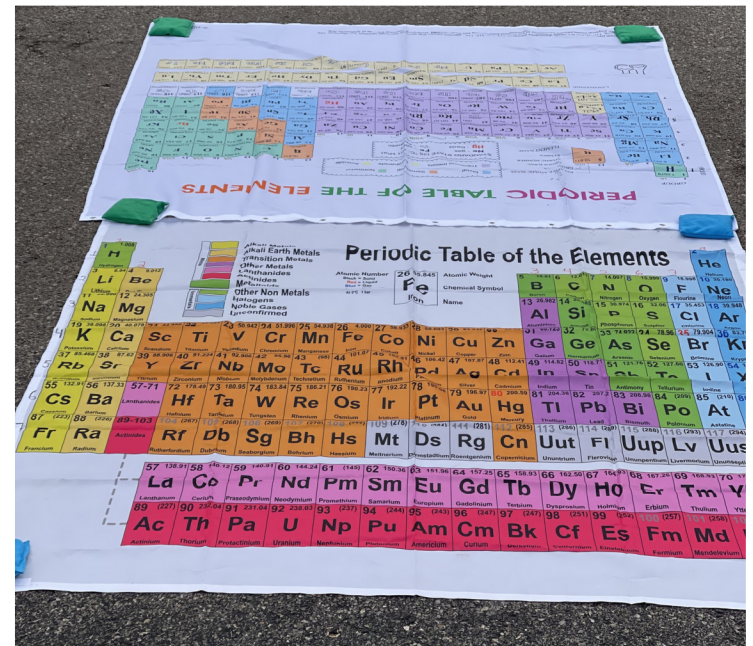
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Periodic Table of the Elements

Legend:

- Metals (Blue)
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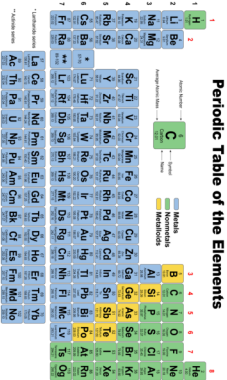
Team 2



Element Toss - How to Play

1. Each team lines up along the bottom edge of their Periodic Table.
2. Bean bags are tossed from behind their Periodic Table to land on the other team's Periodic Table.
3. A player from Team 2 reads a clue to a player from Team 1. Team 1 solves the clue and the player from Team 1 tosses the bean bag to land on the element that is the answer to the clue.
4. For example, a player from Team 2 would read this clue to a player from Team 1: *This element spells the word car without the "r"*. Team 1 would solve this clue to be the element **calcium, Ca**. The player from Team 1 stands behind the edge of the Periodic Table and tosses the bean bag across to land on Team 2's **Ca** on their Periodic Table.
5. If the bean bag lands on the correct element, the team that tossed the bean bag gets 1 point. If it does not land on the element, no points are scored.
6. The game continues so that each player has had at least 2 turns to toss the bean bag. It could also go longer if players want to keep playing. The team with the most points wins.

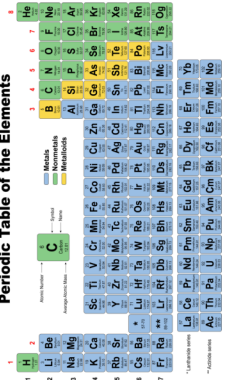
Team 1



Periodic Table of the Elements

A standard periodic table of elements oriented vertically. The elements are color-coded by groups: Group 1 (purple), Group 2 (orange), Groups 3-10 (yellow), Groups 11-18 (green), and Lanthanides/Actinides (blue). The element Calcium (Ca) is highlighted in yellow.

Team 2



Periodic Table of the Elements

A standard periodic table of elements oriented vertically. The elements are color-coded by groups: Group 1 (purple), Group 2 (orange), Groups 3-10 (yellow), Groups 11-18 (green), and Lanthanides/Actinides (blue). The element Calcium (Ca) is highlighted in yellow.

Element Toss - How to Play

To view a video explanation, scan the QR code
or visit our website at
<https://hewittresources.org/element-toss-game/>



Cut-Out Clues to go with

File 1: The Case of the Deadly Dials



Clue: This element was found in the Undark paint that the Radium Girls used to paint the watch dials.

Answer: Radium, Ra



Clue: This element is found in cheese and ice cream and helps keep your bones strong.

Answer: Calcium, Ca



Clue: This element was named after M.C. (Marie Curie).

Answer: Curium, Cm



Clue: This element's symbol is the first two letters of the number 10.

Answer: Tellurium, Te



Clue: This element lives at Period 1, Group 1.

Answer: Hydrogen, H



Clue: This element lives at Period 3, Group 3.

Answer: Aluminum, Al

Cut-Out Clues to go with

File 1: The Case of the Deadly Dials



Clue: This element's symbol is the first two letters of the number 6.

Answer: Silicon, Si



Clue: This element lives at Period 5, Group 8.

Answer: Xenon, Xe



Clue: This element's symbol is the middle two letters of the number 9.

Answer: Indium, In



Clue: This element lives at Period 6, Group 4.

Answer: Lead, Pb



Clue: This is the element that Poppi is named after.

Answer: Polonium, Po



Clue: This element's symbol is the second letter of the number 20.

Answer: Tungsten, W

Cut-Out Clues to go with

File 1: The Case of the Deadly Dials



Clue: This element's symbol is the last letter of the number 2.

Answer: Oxygen, O



Clue: This element lives at Period 4, Group 1.

Answer: Potassium, K



Clue: This element lives at Period 1, Group 8.

Answer: Helium, He



Clue: This element's symbol spells the word hug without the u.

Answer: Mercury, Hg



Clue: This element's symbol is the first two letters of the number 9.

Answer: Nickel, Ni



Clue: This element's symbol is the first two letters of someone who is your mom or dad's sister.

Answer: Gold, Au [Aunt]

Cut-Out Clues to go with

File 1: The Case of the Deadly Dials



Clue: This element's symbol is the first letter of someone who is your mom or dad's brother.

Answer: Uranium, U [Uncle]



Clue: This element's symbol is the first two letters of the opposite of hot.

Answer: Cobalt, Co [cold]



Clue: This element's symbol is the last two letters of the animal that says "meow".

Answer: Astatine, At [cat]



Clue: This element's symbol is the last two letters of the animal that says "wuff wuff".

Answer: Oganesson, Og [dog]



Clue: This element's symbol is the first two letters of the number 7.

Answer: Selenium, Se



Clue: This element's symbol is the first two letters of the a way to move that is faster than a walk or jog.

Answer: Ruthenium, Ru [run]

Cut-Out Clues to go with

File 2: The Case of the Missing (Atomic) Model



Clue: This element is named after Niels Bohr.

Answer: Bohrium, Bh



Clue: This element is named after Albert Einstein.

Answer: Einsteinium, Es



Clue: This element has 18 electrons.

Answer: Argon, Ar



Clue: This element has 6 electrons.

Answer: Carbon, C



Clue: This element has 26 protons.

Answer: Iron, Fe



Clue: This element has an atomic weight of 1.

Answer: Hydrogen, H

Cut-Out Clues to go with

File 2: The Case of the Missing (Atomic) Model



Clue: This element has 39 protons.

Answer: Yttrium, Y



Clue: This element has 29 electrons.

Answer: Copper, Cu



Clue: This element has 2 neutrons.

Answer: Helium, He



Clue: This element has 15 electrons.

Answer: Phosphorous, P



Clue: This element has 7 protons.

Answer: Nitrogen, N



Clue: This element has an atomic weight of 40.

Answer: Calcium, Ca

Cut-Out Clues to go with

File 2: The Case of the Missing (Atomic) Model



Clue: This element has 3 protons.

Answer: Lithium, Li



Clue: This element has 23 electrons.

Answer: Vanadium, V



Clue: This element has 22 protons.

Answer: Titanium, Ti



Clue: This element has 33 electrons.

Answer: Arsenic, As



Clue: This element has 14 protons.

Answer: Silicon, Si



Clue: This element has an atomic weight of 295.

Answer: Oganesson, Og

Cut-Out Clues to go with

File 2: The Case of the Missing (Atomic) Model



Clue: This element has 4 protons.

Answer: Beryllium, Be



Clue: This element has 12 electrons.

Answer: Magnesium, Mg



Clue: This element has 88 protons.

Answer: Radium, Ra



Clue: This element has 47 electrons.

Answer: Silver, Ag



Clue: This element has 30 protons.

Answer: Zinc, Zn



Clue: This element has an atomic weight of 16.

Answer: Oxygen, O

Cut-Out Clues to go with

File 3: The Case of the Pillaging Pirates



Clue: This element was being held hostage by Clive and his crew.

Answer: Xenon, Xe



Clue: This element looks like a walking sushi-pirate.

Answer: Iodine, I



Clue: This element looks like a vacuum cleaner because he's really good at vacuuming up 1 electron.

Answer: Fluorine, F



Clue: This element looks like a tiny, grey, buttery block. He is Clive's sidekick.

Answer: Sodium, Na



Clue: This element is a brown, walking drop of liquid. He is also a ghost.

Answer: Bromine, Br



Clue: This element is a big, blue Ox.

Answer: Oxygen, O

Other Ideas for Clues - Can be Used with All Files



Clue: This element is the first letter of my first name.

Answer:



Clue: This element is the first letter of my last name.

Answer:



Clue: This element element is the first letter of the state we live in.

Answer:



Clue: This element is the first letter of the color of my shirt.

Answer:



Clue: This element is the first letter of this month.

Answer:



Clue: This element is my favorite.

Answer: