

Name: _____

Collisions Username: _____

Class: _____

Ions Quest

Complete this quest using Challenge Levels 6 - 14 and the Ions to Atoms Connected Levels in the Ions game.

MISSION 1. GATHER YOUR INTEL

Use your Collisions gameplay experience to gather the following intel:

1. Label the correct element symbol in the large square.
2. Write the ion charge in the smaller, dashed box.
3. List the # of protons in the ion.
4. List the # of electrons in the ion.
5. Check if energy was used or released.

Sample Target



of Protons: 53

of Electrons: 54

Energy was:

 Used X Released

MISSION 2. EXPOSE THE DETAILS

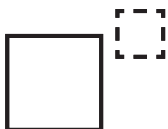
Use your expertise to expose the following information for each target ion.

	Sample Target
Common Ion Name	Iodide ion
Type of Ion (Cation or Anion)	Anion
Lost or Gained Electrons?	Gained Electrons
Formation Reaction	$I + e^- \rightarrow I^-$
Endothermic or Exothermic?	Exothermic
The ionic radii is (> or <) than the parent's atomic radii.	$I^- > I$
What noble gas is isoelectronic with this ion?	Xenon

Ions - Challenge Level 9

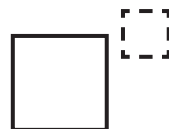
MISSION 1. GATHER YOUR INTEL

Target 1



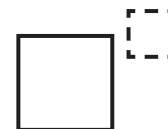
of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 2



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 3



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Common Ion Name			
Type of Ion (Cation or Anion)			
Lost or Gained Electrons?			
Formation Reaction			
Endothermic or Exothermic?			
The ionic radii is (> or <) than the parent's atomic radii.			
What noble gas is isoelectronic with this ion?			

Ions - Challenge Level 10

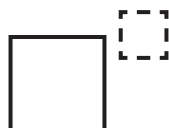
MISSION 1. GATHER YOUR INTEL

Target 1



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 2



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 3



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 4



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

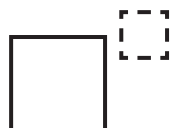
MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3	Target 4
Common Ion Name				
Type of Ion (Cation or Anion)				
Lost or Gained Electrons?				
Formation Reaction				
Endothermic or Exothermic?				
The ionic radii is (> or <) than the parent's atomic radii.				
What noble gas is isoelectronic with this ion?				

Ions - Challenge Level 11

MISSION 1. GATHER YOUR INTEL

Target 1



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 2



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 3



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 4



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3	Target 4
Common Ion Name				
Type of Ion (Cation or Anion)				
Lost or Gained Electrons?				
Formation Reaction				
Endothermic or Exothermic?				
The ionic radii is (> or <) than the parent's atomic radii.				
What noble gas is isoelectronic with this ion?				

Ions - Challenge Level 12

MISSION 1. GATHER YOUR INTEL

Target 1



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 2



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 3



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 4



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

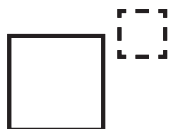
MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3	Target 4
Common Ion Name				
Type of Ion (Cation or Anion)				
Lost or Gained Electrons?				
Formation Reaction				
Endothermic or Exothermic?				
The ionic radii is (> or <) than the parent's atomic radii.				
What noble gas is isoelectronic with this ion?				

Ions - Challenge Level 13

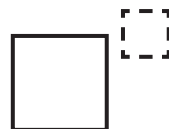
MISSION 1. GATHER YOUR INTEL

Target 1



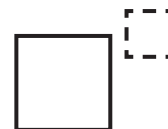
of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 2



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 3



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Common Ion Name			
Type of Ion (Cation or Anion)			
Lost or Gained Electrons?			
Formation Reaction			
Endothermic or Exothermic?			
The ionic radii is (> or <) than the parent's atomic radii.			
What noble gas is isoelectronic with this ion?			

Ions - Challenge Level 14

MISSION 1. GATHER YOUR INTEL

Target 1



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 2



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 3



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 4



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3	Target 4
Common Ion Name				
Type of Ion (Cation or Anion)				
Lost or Gained Electrons?				
Formation Reaction				
Endothermic or Exothermic?				
The ionic radii is (> or <) than the parent's atomic radii.				
What noble gas is isoelectronic with this ion?				

Ions - Challenge Level 15

MISSION 1. GATHER YOUR INTEL

Target 1



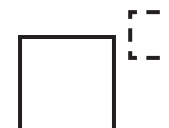
of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 2



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 3



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Common Ion Name			
Type of Ion (Cation or Anion)			
Lost or Gained Electrons?			
Formation Reaction			
Endothermic or Exothermic?			
The ionic radii is (> or <) than the parent's atomic radii.			
What noble gas is isoelectronic with this ion?			

Ions to Atoms - Connected Level 1

MISSION 1. GATHER YOUR INTEL

Target 1



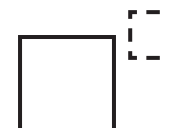
of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 2



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 3



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

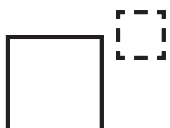
MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Common Ion Name			
Type of Ion (Cation or Anion)			
Lost or Gained Electrons?			
Formation Reaction			
Endothermic or Exothermic?			
The ionic radii is (> or <) than the parent's atomic radii.			
What noble gas is isoelectronic with this ion?			

Ions to Atoms - Connected Level 2

MISSION 1. GATHER YOUR INTEL

Target 1



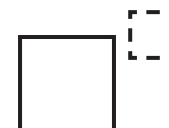
of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 2



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

Target 3



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___ Used ___ Released

MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3
Common Ion Name			
Type of Ion (Cation or Anion)			
Lost or Gained Electrons?			
Formation Reaction			
Endothermic or Exothermic?			
The ionic radii is (> or <) than the parent's atomic radii.			
What noble gas is isoelectronic with this ion?			

Ions to Atoms - Connected Level 3

MISSION 1. GATHER YOUR INTEL

Target 1



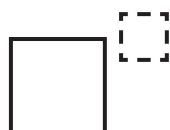
of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 2



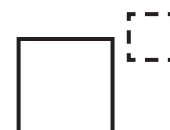
of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 3



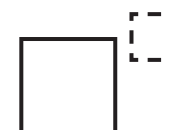
of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 4



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

Target 5



of Protons: ____
 # of Electrons: ____
 Energy was:
 ___Used ___Released

MISSION 2. EXPOSE THE DETAILS

	Target 1	Target 2	Target 3	Target 4	Target 5
Common Ion Name					
Type of Ion (Cation or Anion)					
Lost/Gained Electrons?					
Formation Reaction					
Endothermic or Exothermic?					
The ionic radii is (> or <) than the parent's atomic radii?					
What noble gas is isoelectronic with this ion?					