
Welcome!

This is a chemistry lesson, covering *how to write the chemical formula for ionic compounds containing transition metals*.

I will guide you step-by-step.

I will be asking you many questions along the way.

Each time I ask a question, **you should attempt to answer the question on your own** before you scroll down to view my answer.

This is a lesson in the chapter “Atoms, Molecules, and Compounds”, which is part of the series “Chemistry, Explained Step by Step”.

This lesson builds on the material covered in the previous lessons:
Naming Ionic Compounds
Writing Formulas for Ionic Compounds

You should complete those lessons before attempting this lesson.

This lesson was written by Freelance-Teacher.

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Take a look at your periodic table.

The two columns on the far left,
and the six columns on the far right,
are referred to as the *main group elements* (also called the *representative elements*).

The ten columns in the middle of the table
are referred to as the *transition elements*.

For example, in the fourth row of the table, the main group elements are:
K, Ca, Ga, Ge, As, Se, Br, Kr

In the fourth row of the table, the transition elements are:
Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn

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1. Label each of the following as a main group element or a transition element:
Sr, Y, Cd, In

The two columns on the far left, and the six columns on the far right,
are referred to as the *main group elements*.

The ten columns in the middle of the table are referred to as the transition elements.

Sr (strontium) is part of the two columns on the left,
so Sr is a *main group* element.

Y (yttrium) is part of the ten columns in the middle,
so Y is a *transition* element.

Cd (cadmium) is part of the ten columns in the middle,
so Cd is a *transition* element.

In (indium) is part of the six columns on the right,
so In is a *main group* element.

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2. True or False: The top three *rows* of the periodic table contain only main group elements; there are no transition elements in the top three rows.

True.

The first transition elements are Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, and Zn in the *fourth* row.

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3. True or False? If false, how would you rewrite the statement so that it is true?
The transition elements are all metals.

True, the transition elements are all metals.

Therefore, the transition elements are sometimes referred to as the “transition metals”.

At this point, you will need to memorize the names and atomic symbols for some of the transition metals:

cadmium = Cd
chromium = Cr
cobalt = Co
copper = Cu
iron = Fe
silver = Ag
zinc = Zn

For this lesson you will also need to know the names and symbols for two more main-group elements:

lead = Pb
tin = Sn

If given the symbol, you need to be able to provide the name.
If given the name, you need to be able to provide the atomic symbol.

Please memorize all of these names and symbols now.

Now I will quiz you on the names for these elements.

What is the name of the element whose atomic symbol is Pb?

Pb represents the element *lead*.

What is the name of the element whose atomic symbol is Fe**?**

Fe represents the element *iron*.

What is the name of the element whose atomic symbol is Sn?

Sn represents the element *tin*.

What is the name of the element whose atomic symbol is Cd?

Cd represents the element *cadmium*.

What is the name of the element whose atomic symbol is Zn?

Zn represents the element *zinc*.

What is the name of the element whose atomic symbol is Cu?

Cu represents the element *copper*.

What is the name of the element whose atomic symbol is Cr?

Cr represents the element *chromium*.

What is the name of the element whose atomic symbol is Ag?

Ag represents the element *silver*.

What is the name of the element whose atomic symbol is Co?

Co represents the element *cobalt*.

Now I will quiz you on the symbols for these elements.

What is the atomic symbol for the element zinc?

The symbol for zinc is Zn.

What is the atomic symbol for the element copper?

The symbol for copper is Cu.

What is the atomic symbol for the element cobalt?

The symbol for cobalt is Co.

What is the atomic symbol for the element silver?

The symbol for silver is Ag.

What is the atomic symbol for the element lead?

The symbol for lead is Pb.

What is the atomic symbol for the element iron?

The symbol for iron is Fe.

What is the atomic symbol for the element cadmium?

The symbol for cadmium is Cd.

What is the atomic symbol for the element tin?

The symbol for tin is Sn.

What is the atomic symbol for the element chromium?

The symbol for chromium is Cr.

In the lesson on Ions,
we learned that you can determine the charge that a monatomic ion is likely to take
from its position in the periodic table.

For example, it takes one step to get from Cl to the noble gas column, moving rightwards,
so a Cl ion has a -1 charge: Cl^{-}.

It takes two steps to get from Mg to the noble gas column, moving leftwards,
so a magnesium ion has a +2 charge: Mg^{2+}

However, it turns out that this method for determining the charge on an ion from its position in the periodic table only works for *main group* elements.

You cannot determine the charge on the ion for a *transition group* element from its position in the periodic table.

Actually, there are also two *main group* elements for which you can *not* determine the charge on the ion from the periodic table:
lead (Pb) and tin (Sn).

So, to summarize, here are the rules:

For a transition element, you *cannot* determine the charge on the ion from the periodic table.

For a main group element, you *can* determine the charge on the ion from the periodic table.

Exceptions:
For lead (Pb) and tin (Sn), you *cannot* determine the charge on the ion from the periodic table,
even though lead and tin are main group elements.

(These rules apply to the elements you are likely to encounter in this chapter of your General Chemistry course.)

You will need to know that lead (Pb) and tin (Sn) are both metals.

You can see that they are to the left of the zig-zag diagonal metal-nonmetal boundary in this periodic table.
https://chem.libretexts.org/Courses/Heartland_Community_College/HCC%3A_Chem_161/2%3A_Atoms_Molecules_and_Ions/2.5%3A_The_Periodic_Table#:~:text=Metals%20are%20located%20on%20the,a%20diagonal%20band%20of%20semimetals

And you should also know from your everyday knowledge that lead and tin are metallic substances.

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4. Use the periodic table to determine the charge on the ion likely to be formed by calcium.
Or say if the periodic table cannot be used to determine the charge for this element's ion.

Calcium (Ca) is a main group element, so we can use the periodic table to determine the charge for its ion.

It takes two steps to get from Ca to the noble gas column, moving leftwards, so a calcium ion has a +2 charge: Ca^{2+}

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5. Use the periodic table to determine the charge on the ion likely to be formed by chromium.
Or say if the periodic table cannot be used to determine the charge for this element's ion.

Chromium (Cr) is a transition element, so we cannot use the periodic table to determine the charge for its ion.

Since chromium is a metal, we expect it to lose electrons and become a cation, not an anion.

But we cannot use the periodic table to figure out *how big* the charge on the cation will be.

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6. Use the periodic table to determine the charge on the ion likely to be formed by zinc.
Or say if the periodic table cannot be used to determine the charge for this element's ion.

Zinc (Zn) is a transition element, so we cannot use the periodic table to determine the charge for its ion.

Since zinc is a metal, we expect it to lose electrons and become a cation, not an anion.
But we cannot use the periodic table to figure out how big the charge on the cation will be.

**7. Use the periodic table to determine the charge on the ion likely to be formed by aluminum.
Or say if the periodic table cannot be used to determine the charge for this element's ion.**

Aluminum (Al) is a main group element, so we can use the periodic table to determine the charge for its ion.

It takes three steps to get from Al to the noble gas column, moving leftwards, so an aluminum ion has a +3 charge: Al^{3+}

**8. Use the periodic table to determine the charge on the ion likely to be formed by nitrogen.
Or say if the periodic table cannot be used to determine the charge for this element's ion.**

Nitrogen (N) is a main group element, so we can use the periodic table to determine the charge for its ion.

It takes three steps to get from N to the noble gas column, moving rightwards, so a nitrogen ion has a -3 charge: N^{3-}

**9. Use the periodic table to determine the charge on the ion likely to be formed by tin.
Or say if the periodic table cannot be used to determine the charge for this element's ion.**

We have learned the following "exceptions":
For lead (Pb) and tin (Sn), you *cannot* determine the charge on the ion from the periodic table,
even though lead and tin are main group elements.

Based on the "exception" stated above,
we know that we *cannot* use the periodic table to determine the charge on tin's ion,
even though tin is a main group element.

Since tin is a metal, we expect it to lose electrons and become a cation, not an anion.
But we cannot use the periodic table to figure out how big the charge on the cation will be.

If you can't use the periodic table to determine the charge on a transition element's ion
… then how *can* you determine the ion's charge?

Answer: You can look it up in your textbook!

Here is a table showing the charges for some transition elements, and for tin and lead.

Table of Special Charges

Element	Common Charge(s)
cadmium (Cd)	+2
chromium (Cr)	+2 or +3
cobalt (Co)	+2 or +3
copper (Cu)	+1 or +2
iron (Fe)	+2 or +3
lead (Pb)	+2 or +4
silver (Ag)	+1
tin (Sn)	+2 or +4
zinc (Zn)	+2

You can see that the ions for some of the elements can take *two* different charges.

For reference, we will call this the "Table of Special Charges".

We will discuss what parts of this table you do and don't need to memorize later in this lesson.
For the time being, feel free to consult the table when answering questions.

Page

Here again is our Table of Special Charges.

Table of Special Charges

Element	Common Charge(s)
cadmium (Cd)	+2
chromium (Cr)	+2 or +3
cobalt (Co)	+2 or +3
copper (Cu)	+1 or +2
iron (Fe)	+2 or +3
lead (Pb)	+2 or +4
silver (Ag)	+1
tin (Sn)	+2 or +4
zinc (Zn)	+2

How do you name a cation?
Do you remember the rule we learned in the previous lesson on Naming Ionic Compounds?

Rule for Directly Naming Monatomic Cations:
The name of a cation is the same as the name of the element,
plus the word "ion" (or, "cation").

But if you think about it, you will see that this rule is not adequate for some of the new elements we have just learned about.

**10. Suppose a lab report indicates that an experiment involved a “chromium ion”.
Why is that *not* an adequate name for the ion?”**

From reading the lab report,
we would know that the experiment involves a chromium ion.

But chromium can form two different ions: Cr^{2+} and Cr^{3+}.

From the information given in the lab report,
we would still have no idea whether the experiment involves Cr^{2+} or Cr^{3+}.

So it is not adequate the call the ion a “chromium ion”
because that doesn’t give the reader enough information to identify whether the ion is Cr^{2+} or Cr^{3+}.

We’ve decided that it is not adequate to name an ion formed by chromium a “chromium ion”.

What would be a better approach?

The better approach is that
we can give Cr^{2+} the name “chromium(II) ion”, and
we can give Cr^{3+} the name “chromium(III) ion”.

If we read a lab report about an experiment with “chromium(III) ion”,
we know that the experiment involved Cr^{3+}, not Cr^{2+}.

In this chapter, roman numerals stand for positive charges.

I = +1 charge
II = +2 charge
III = +3 charge
IV = +4 charge

Here again is our Table of Special Charges.

Table of Special Charges

Element	Common Charge(s)
cadmium (Cd)	+2
chromium (Cr)	+2 or +3
cobalt (Co)	+2 or +3
copper (Cu)	+1 or +2
iron (Fe)	+2 or +3
lead (Pb)	+2 or +4
silver (Ag)	+1
tin (Sn)	+2 or +4
zinc (Zn)	+2

When naming a cation,
when should we use a roman numeral in the name, and
when should we avoid using a roman numeral in the name?

If an element's ion can take *two different charges*,
then we *must* include a roman numeral in the name of the ion.
Otherwise, the reader won't know what the charge on the ion is.

If an element's ion can take only *one* charge,
then a roman numeral is unnecessary.
(The reader will know the charge on the ion anyway,
either from the element's position in the periodic table,
or from the Table of Special Charges.)

We can summarize our conclusions as follows.

Complete Rules for Directly Naming Monatomic Cations:

If an element’s ion has *only one* common charge,
then the cation’s name is: the element’s name + "ion"
(like calcium ion or silver ion).

If an element can commonly have *more than one* charge,
you need to say which one, using Roman numerals in parentheses
(like chromium(II) ion vs. chromium(III) ion).

Complete Rules for Directly Naming Monatomic Cations:

If an element's ion has *only one* common charge,
then the cation's name is: the element's name + "ion"
(like calcium ion or silver ion).

If an element can take *more than one* charge,
you need to say which one, using Roman numerals in parentheses
(like chromium(II) ion vs. chromium(III) ion).

To illustrate these rules, let's list the names of all the monatomic cations we will be dealing with in this lesson.

Here are the monatomic cations of the main group elements whose charges can be determined from the element's position in the periodic table, along with their correct names:
Li^{+}, lithium ion
Na^{+}, sodium ion
K^{+}, potassium ion
Mg^{2+}, magnesium ion
Ca^{2+}, calcium ion
Sr^{2+}, strontium ion
Ba^{2+}, barium ion
Al^{3+}, aluminum ion

And here is the Table of Special Charges, updated with the correct name for each ion:

Element	Common Charge(s)	Name(s)
cadmium (Cd)	+2	cadmium ion
chromium (Cr)	+2 or +3	chromium(II) ion, chromium(III) ion
cobalt (Co)	+2 or +3	cobalt(II) ion, cobalt(III) ion
copper (Cu)	+1 or +2	copper(I) ion, copper(II) ion
iron (Fe)	+2 or +3	iron(II) ion, iron(III) ion
lead (Pb)	+2 or +4	lead(II) ion, lead(IV) ion
silver (Ag)	+1	silver ion
tin (Sn)	+2 or +4	tin(II) ion, tin(IV) ion
zinc (Zn)	+2	zinc ion

Study all these names carefully.

Make sure you understand how all the names are consistent with our "Complete Rules for Directly Naming Monatomic Cations" described above.

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11. What is the name of Co^{3+}?

Answer: The name of Co^{3+} is *cobalt(III) ion*.

Analysis:
From the Table of Special Charges,
we know that cobalt (Co) ions can take two different charges.

Therefore, we need to include a roman numeral in the name
to let the reader know what the charge of the ion is.

So the correct name for the Co^{3+} ion is *cobalt(III) ion*.

---

12. What is the name of Cd^{2+}?

Answer:
The name of the Cd^{2+} is *cadmium ion*, with no roman numeral.

Analysis:
From the Table of Special Charges,
we know that cadmium (Cd) ions commonly take only one charge (+2).

Therefore, no roman numeral is necessary in the name,
and the conventional name for the ion does *not* include a roman numeral.

The reader will know what the charge on the ion is,
without need for a roman numeral,
from the Table of Special Charges.

So the correct name for the Cd^{2+} ion is *cadmium ion*, with no roman numeral.

---

13. What is the name of Pb^{4+}?

Answer:
The name of Pb^{4+} is *lead(IV) ion*.

Analysis:
From the Table of Special Charges,
we know that lead (Pb) ions can take two different charges.

Therefore, we need to include a Roman numeral in the name
to let the reader know what the charge of the ion is.

So the correct name for the Pb^{4+} ion is *lead(IV) ion*.

----

14. What is the name of Ca^{2+}?

Answer:
The name of Ca^{2+} is *calcium ion*, with no roman numeral.

Analysis:
Calcium is a normal main group element.
Therefore, calcium ions commonly take only one possible charge (+2).

Therefore, no roman numeral is necessary in the name,
and the conventional name for the ion does *not* include a roman numeral.

The reader will know what the charge on the ion is,
without need for a roman numeral,
from calcium's position in the periodic table.

So the correct name for the Ca^{2+} ion is *calcium ion*, with no roman numeral.

Here once again is our Table of Special Charges:

Element	Common Charge(s)	Name(s)
cadmium (Cd)	+2	cadmium ion
chromium (Cr)	+2 or +3	chromium(II) ion, chromium(III) ion
cobalt (Co)	+2 or +3	cobalt(II) ion, cobalt(III) ion
copper (Cu)	+1 or +2	copper(I) ion, copper(II) ion
iron (Fe)	+2 or +3	iron(II) ion, iron(III) ion
lead (Pb)	+2 or +4	lead(II) ion, lead(IV) ion
silver (Ag)	+1	silver ion
tin (Sn)	+2 or +4	tin(II) ion, tin(IV) ion
zinc (Zn)	+2	zinc ion

You need to memorize that the following elements can take two different charges:
chromium, Cr
cobalt, Co
copper, Cu
iron, Fe
lead, Pb
tin, Sn

Furthermore, you need to memorize the following information:
In common practice
silver ions always take the form of Ag^{+},
cadmium ions always take the form of Cd^{2+}, and
zinc ions always take the form of Zn^{2+}.

Notice that you *do* need to memorize the *specific* charges that are possible for
silver, cadmium, and zinc.

However, it is **not** necessary to memorize
the *specific* charges that are possible for
chromium, cobalt, copper, iron, lead, and tin ions.
You just need to know that two charges are possible for each of those elements.

Please memorize the necessary information now.

---

15. Answer from memory:
List all the elements that commonly take two possible charges.

---

chromium, Cr
cobalt, Co
copper, Cu
iron, Fe
lead, Pb
tin, Sn

You don't need to memorize the specific charges that are possible for each of these elements.

Notice that cadmium, chromium, cobalt, copper, and iron are transition elements,
but lead and tin are main-group elements.

---

16. Answer from memory:
What are the transition metals that commonly take only *one* charge?
List the specific charge that is possible for each of these elements.

Here is a list of the transition metals that commonly take only one charge,
together with the specific charge that is possible for each element.

In common practice,
silver ions always take the form of Ag^{+},
cadmium ions always take the form of Cd^{2+}, and
zinc ions always take the form of Zn^{2+}.

---

17. In this chapter, what do the roman numerals I, II, III, and IV stand for?

In this chapter, roman numerals stand for positive charges.
I = +1 charge
II = +2 charge
III = +3 charge
IV = +4 charge

----

18. What is the chemical formula for iron(III) oxide?

Answer:
The chemical formula for iron(III) oxide is Fe_2O_3.

Analysis:
First, check whether you're dealing with an ionic or a covalent compound.
Iron (Fe) is a metal, and oxygen (O) is a nonmetal, so
iron(III) oxide is an ionic compound.

When writing the formula for an *ionic* compound, it is your job to figure out the subscripts.
(This will not be the case when we are writing the formula for a covalent compound.)

For now we leave the subscripts blank,
to indicate that so far the subscripts are unknown.
From the roman number III in its name,
we know that the charge on each *individual* iron(III) cation is +3.
From the position of oxygen in the periodic table,
we know that the charge on each *individual* oxide anion is -2.

group charges		
	Fe	O
individual charges	+3	-2

Now, *we have to choose subscripts that will result in a compound with a net charge of zero*.

Let's *guess* that the correct subscripts
are $_2$ for the iron ion and $_3$ for the oxide ion.

group charges		
	Fe_2	O_3
individual charges	+3	-2

group charges		
	Fe_2	O_3
individual charges	+3	-2

Now we need to *check* whether those subscripts result in a net charge of zero.

Based on our guess for the subscripts,
there would be two iron ions, each with a +3 charge,
so the *group* of two iron ions would have a charge of 2(+3) = +6;
and there would be three oxide ions, each with a -2 charge,
so the entire *group* of three oxide ions would have a charge of 3(-2) = -6.

group charges	+6	-6
	Fe_2	O_3
individual charges	+3	-2

So: net charge = +6 + (-6)
So: net charge = 0.

We have confirmed that,
if the subscripts were $_2$ for iron and $_3$ for oxide,
then the net charge *would be* zero.

That was the outcome we were hoping for.
So we conclude that $_2$ and $_3$ are the *correct* subscripts.

Our final answer is that the chemical formula for iron(III) oxide is Fe_2O_3.

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19. True or False? If false, rewrite the statement so that it is true.
In the name iron(III) oxide, the roman numeral III tells you that, in the chemical formula for the compound, the subscript for Fe should be $_3$

False.
Roman numerals do *not* indicate subscripts.
Instead, roman numerals indicate positive charges on cations.

The roman numeral III does *not* indicate that the subscript for Fe should be $_3$;
in fact, as we saw in the previous problem, the correct subscript for Fe was $_2$.
Instead, the roman numeral III told us that that this compound involves Fe^{3+}, rather than Fe^{2+}.

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20. What is the chemical formula for lead(IV) sulfide?

Answer:
The chemical formula for lead(IV) sulfide is PbS_2.

Analysis:
First, check whether you're dealing with an ionic or a covalent compound.
Lead(IV) sulfide contains a metal (lead) and a nonmetal (sulfur), so lead(IV) sulfide is an ionic compound.

When writing the formula for an *ionic* compound, it is your job to figure out the subscripts.

From the roman numeral IV in its name,
we know that the charge on each individual lead(IV) cation is +4.
From the position of sulfur in the periodic table,
we know that the charge on each individual sulfide anion is -2.

group charges		
	Pb	S
individual charges	+4	-2

Now, *we have to choose subscripts that will result in a compound with a net charge of zero*.

Let's *guess* that the correct subscripts
are $_1$ for the lead ion and $_2$ for the sulfide ion.

group charges		
	Pb_1	S_2
individual charges	+4	-2

Now we need to *check* whether those subscripts result in a net charge of zero.

Based on our guess for the subscripts,
the "group" of one lead ion would have a charge of 1(+4) = +4;
and the group of two sulfide ions would have a charge of 2(-2) = -4.

group charges	**+4**	**-4**
	Pb_1	S_2
individual charges	+4	-2

So: net charge = +4 + (-4)
So: net charge = 0.

That was the outcome we were hoping for.

So we conclude that $_1$ and $_2$ are the *correct* subscripts.

The convention is that subscripts of $_1$ are omitted from chemical formulas, so our final answer is that the chemical formula for lead(IV) sulfide is PbS_2.

----

21. What is the chemical formula for silver fluoride?

Answer:
The chemical formula for silver fluoride is AgF.

Analysis:
? = chemical formula for silver fluoride

First, check whether you're dealing with an ionic or a covalent compound.
Silver (Ag) is a metal, and fluorine (F) is a nonmetal, so
silver fluoride is an ionic compound.

When writing the formula for an *ionic* compound, it is your job to figure out the subscripts.

We have *memorized* that the charge on any individual silver ion is always +1.
From the position of fluorine in the periodic table,
we know that the charge on each individual fluoride anion is -1.

group charges		
	Ag	F
individual charges	+1	-1

Now, *we have to choose subscripts that will result in a compound with a net charge of zero*.

This one's pretty obvious!
Let's "guess" that the correct subscripts
are $_1$ for the silver ion and $_1$ for the fluoride ion.

group charges		
	Ag_1	F_1
individual charges	+1	-1

Obviously, those subscripts *will* result in a net charge of zero,
confirming that $_1$ and $_1$ are the correct subscripts.

group charges	+1	-1
	Ag_1	F_1
individual charges	+1	-1

The convention is that subscripts of $_1$ are omitted from chemical formulas,
so our final answer is that the chemical formula for silver fluoride is AgF.

You can see that, in order to solve problems similar to the previous problem,
you should have memorized that
in common practice, silver ions always take a +1 charge (Ag^{+}), and
in common practice, zinc and cadmium ions always take a +2 charge (Zn^{2+} and Cd^{2+}).

Let's review what we've learned in this lesson.

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22. Fill in the blanks.
The two columns on the far left of the periodic table, and the six columns on the far right, are referred to as the ______________ elements.
The ten columns in the middle of the table are referred to as the _____________ elements.

The two columns on the far left of the periodic table, and the six columns on the far right, are referred to as the *main group elements* (also called the *representative elements*).

The ten columns in the middle of the table are referred to as the *transition* elements (or, transition metals).

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23. When is it necessary to include a roman numeral in the name of a cation?

If an element's ion has *only one* common charge,
then the cation's name is: the element's name + "ion"
(like calcium ion or silver ion).

If an element can commonly have *more than one charge*,
you need to say which one, using Roman numerals in parentheses
(like chromium(II) ion vs. chromium(III) ion).

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24. List the elements whose cations can commonly take two different charges.

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chromium, Cr
cobalt, Co
copper, Cu
iron, Fe
lead, Pb
tin, Sn

These are the elements that can take two charges that we have focused on in this lesson.

It's possible that your professor may require you to be familiar with some additional elements that can take two charges that are not on this list.

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25. What are the transition metals whose cations commonly take only one charge?
List the specific charge that is possible for each of these elements.

Here is a list of the transition metals that common take only one charge,
together with the specific charge that is possible for each element.

In common practice,
silver ions always take the form of Ag^{+},
cadmium ions always take the form of Cd^{2+}, and
zinc ions always take the form of Zn^{2+}.

----

26. In this chapter, what do the roman numerals I, II, III, and IV stand for?

In this chapter, roman numerals stand for positive charges.

I = +1 charge
II = +2 charge
III = +3 charge
IV = +4 charge

----

27. True or false?
The chemical formula for cadmium fluoride is CdF.

False.

Cadmium fluoride is an ionic compound.
When writing the formula for an ionic compound,
it is *your job* to determine the correct subscripts.

Fluoride anion has a -1 charge (F^-).

You should have memorized that cadmium ions commonly take only one possible charge;
namely, +2 (Cd^{2+}).

So, to balance the Cd^{2+} cation,
the formula needs *two* F^- anions.

So the correct chemical formula for cadmium fluoride is CdF_2.

You have reached the end of the lesson.

You’re ready now to proceed to the next lesson:
Naming Ionic Compounds with Transition Metals