For the reaction:

$$Pb^{2+}(aq) + Zn(s) \rightleftarrows Zn^{2+}(aq) + Pb(s)$$

1. In the forward direction, Pb^{2+} is reducing Zn.
   In the reverse direction, Zn^{2+} is reducing Pb.
2. In the forward direction, Zn is reducing Pb^{2+}.
   In the reverse direction, Zn^{2+} is reducing Pb.
3. In the forward direction, Zn is reducing Pb^{2+}.
   In the reverse direction, Pb is reducing Zn^{2+}.
4. In the forward direction, Zn is reducing Zn^{2+}.
   In the reverse direction, Pb is reducing Pb^{2+}.

For the reaction:

$Pb^{2+}(aq) + Zn(s) \rightleftarrows Zn^{2+}(aq) + Pb(s)$

13% 1. In the forward direction, Pb^{2+} is reducing Zn.
In the reverse direction, Zn^{2+} is reducing Pb.

23% 2. In the forward direction, Zn is reducing Pb^{2+}.
In the reverse direction, Zn^{2+} is reducing Pb.

63% ✓ 3. In the forward direction, Zn is reducing Pb^{2+}.
In the reverse direction, Pb is reducing Zn^{2+}.

1% 4. In the forward direction, Zn is reducing Zn^{2+}.
In the reverse direction, Pb is reducing Pb^{2+}.

Which is a better reducing agent?

$E°$ for vitamin B_{12} is -0.526 V.
$E°$ for flavodoxin is -0.230 V.

1. Neither one is better. Both have negative standard reduction potentials.
2. flavodoxin
3. vitamin B12

Which is a better reducing agent?

$E°$ for vitamin B_{12} is -0.526 V.
$E°$ for flavodoxin is -0.230 V.

10% 1. Neither one is better. Both have negative standard reduction potentials.

38% 2. flavodoxin

53%  3. vitamin B12

Donor atoms are called ligands. Ligands are:

1. Lewis **acids** –they **accept** electrons
2. Lewis **acids** –they **donate** electrons
3. Lewis **bases** –they **accept** electrons
4. Lewis **bases** –they **donate** electrons

Donor atoms are called ligands. Ligands are:

11% 1. Lewis **acids** –they **accept** electrons

29% 2. Lewis **acids** –they **donate** electrons

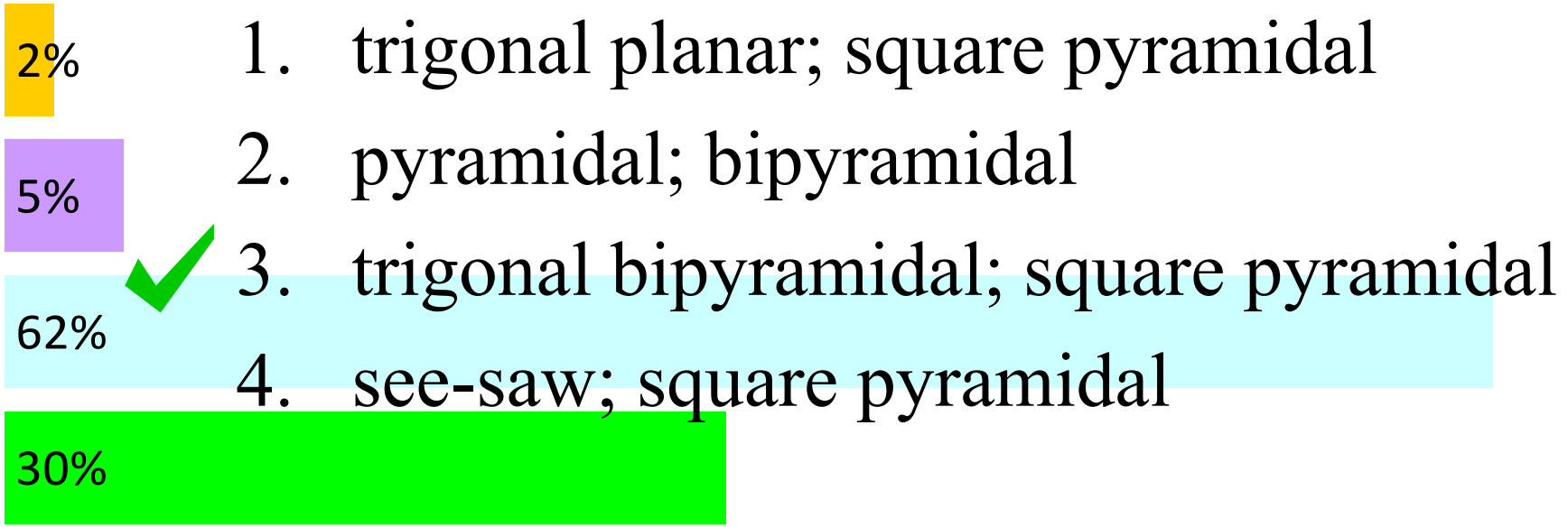
7% 3. Lewis **bases** –they **accept** electrons

52%  4. Lewis **bases** –they **donate** electrons

What are the geometries with CN = 5?

1. trigonal planar; square pyramidal
2. pyramidal; bipyramidal
3. trigonal bipyramidal; square pyramidal
4. see-saw; square pyramidal

What are the geometries with CN = 5?



1. trigonal planar; square pyramidal
2. pyramidal; bipyramidal
3. trigonal bipyramidal; square pyramidal
4. see-saw; square pyramidal

What is the geometry around the metal in EDTA?

1. octahedral
2. square planar
3. square pyramidal
4. tetrahedral
5. see-saw

What is the geometry around the metal in EDTA?

1. octahedral
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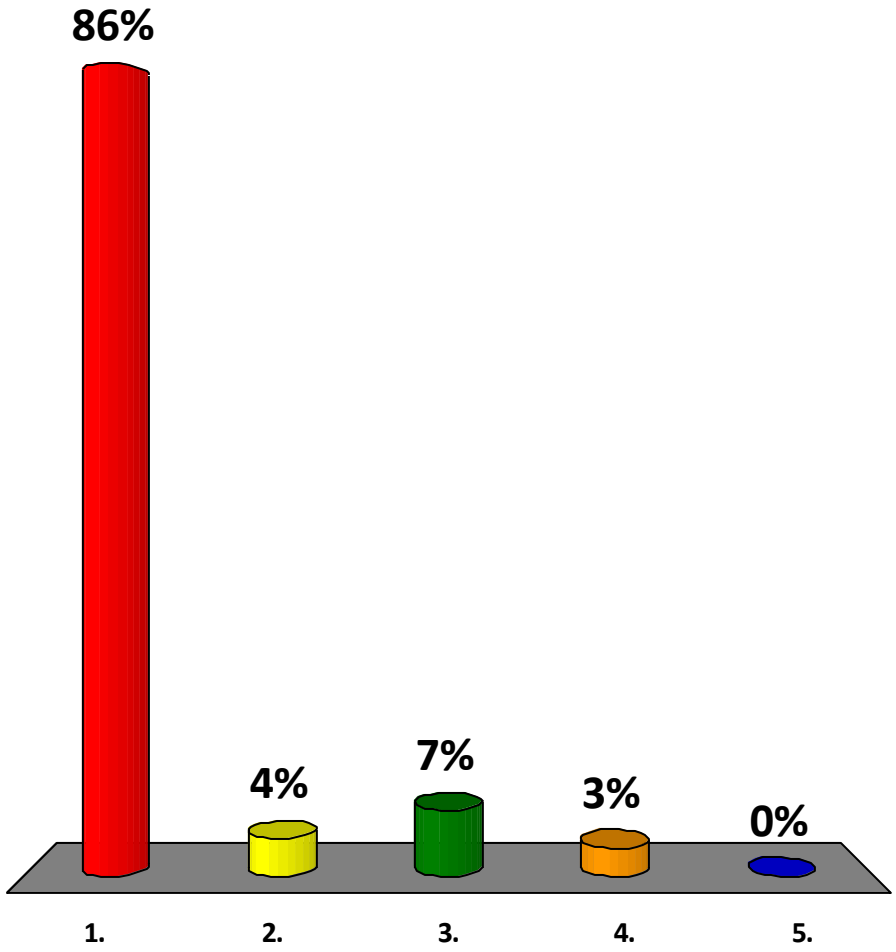

Determine the oxidation number and d-count for $[Co(H_2O)_2(NH_3)Cl_3]^-$
(Hint: Co is in group 9 of the periodic table.)

a. oxidation number = -1, d-count: 10
b. oxidation number = 0, d-count: 9
c. oxidation number = 1, d-count: 8
d. oxidation number = 2, d-count: 7
e. oxidation number = 3, d-count: 6
f. oxidation number = 4, d-count: 5
g. oxidation number = 5, d-count: 4
h. oxidation number = 6, d-count: 3

Determine the oxidation number and d-count for $[Co(H_2O)_2(NH_3)Cl_3]^-$ (Hint: Co is in group 9 of the periodic table.)

16% a. oxidation number = -1, d-count: 10

8% b. oxidation number = 0, d-count: 9

6% c. oxidation number = 1, d-count: 8

59%  d. oxidation number = 2, d-count: 7

5% e. oxidation number = 3, d-count: 6

4% f. oxidation number = 4, d-count: 5

1% g. oxidation number = 5, d-count: 4

1% h. oxidation number = 6, d-count: 3

5.111 Principles of Chemical Science
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