



962 x 642

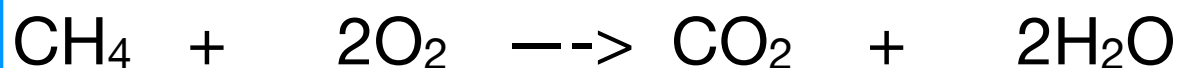


Chapter 4

Redox Reactions



Which of the following statements is correct for the combustion of methane?



I. Methane is oxidized

II. Methane is reduced

III. Oxygen is reduced

IV. Water is oxidized



A. I and III

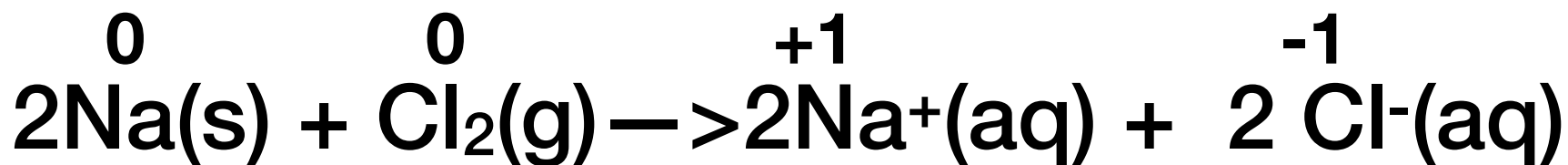
B. II and IV

C. I, II and III

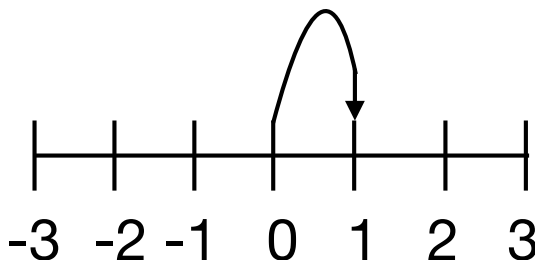
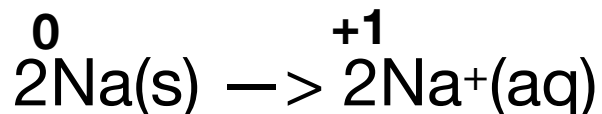
D. IV only

E. None of these

For the following reaction, what is reduced?



A. Na(s)

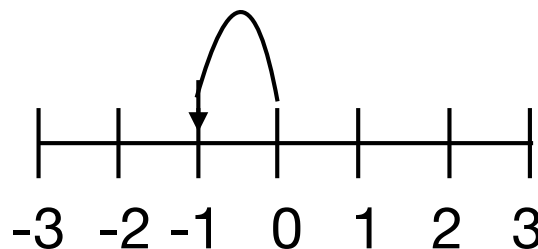
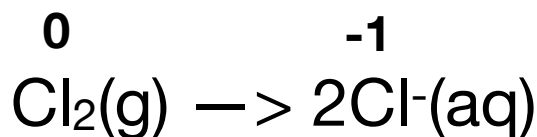


Oxidation
1 e⁻
2 atoms = 2 lost e⁻

B. Na⁺(aq)

C. Cl₂(g)

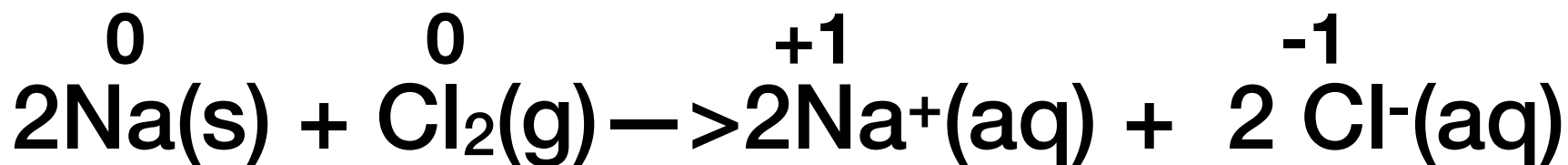
D. Cl⁻(aq)



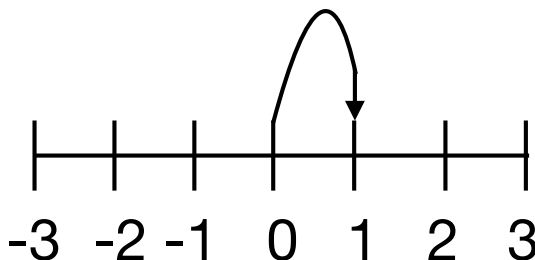
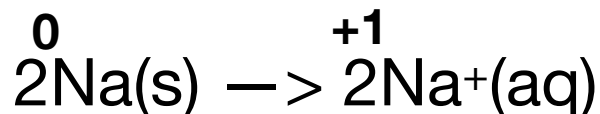
Reduction
1 e⁻
2 atoms = 2 gained e⁻

E. None of these

For the following reaction, what is reduced?



A. Na(s)



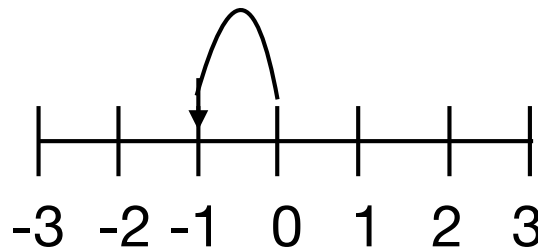
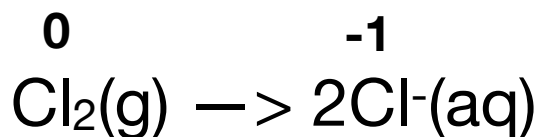
Oxidation
1 e-
2 atoms = 2 lost e-

B. Na+(aq)

C. Cl₂(g)

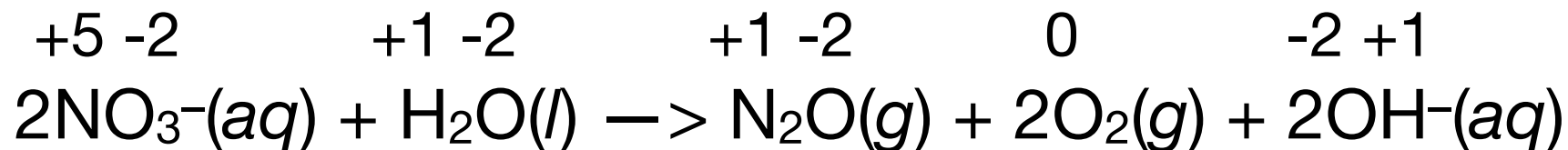
D. Cl-(aq)

E. None of these

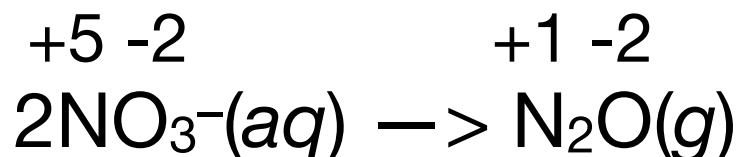


Reduction
1 e-
2 atoms = 2 gained e-

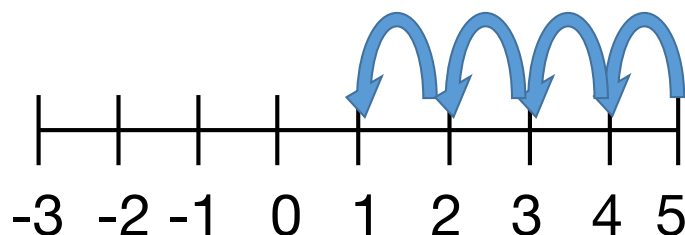
How many electrons are transferred in this reaction?



A. 2

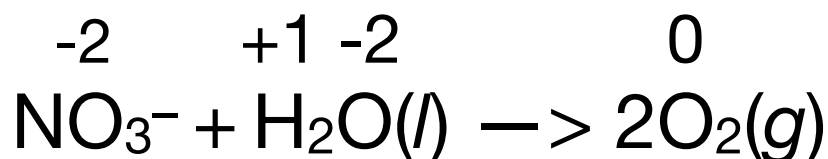


B. 8

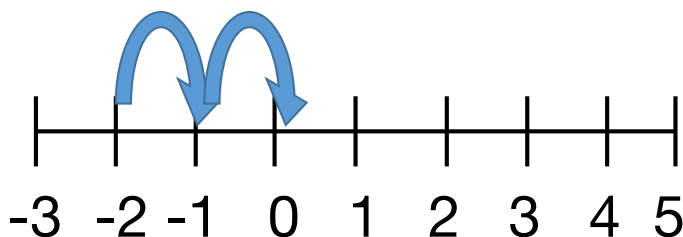


C. 3

D. 6



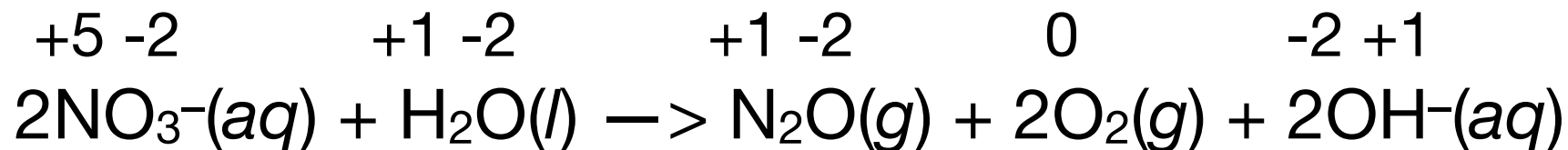
E. 4



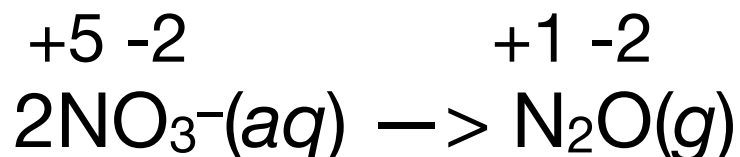
Reduction
4 electrons
2 atoms
 $2 \times 4 = 8 e^-$

Oxidation
2 electrons
4 atoms
 $4 \times 2 = 8 e^-$

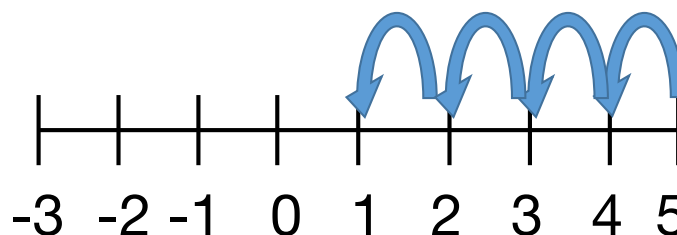
How many electrons are transferred in this reaction?



A. 2



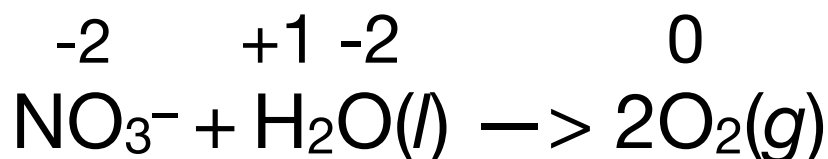
B. 8



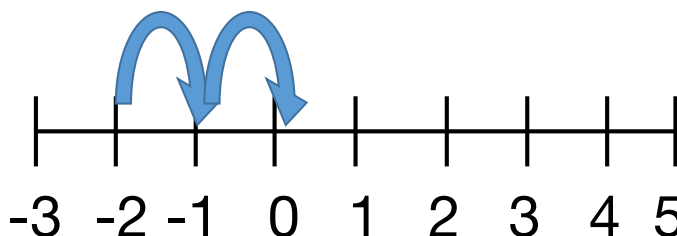
Reduction
4 electrons
2 atoms
 $2 \times 4 = 8 e^-$

C. 3

D. 6

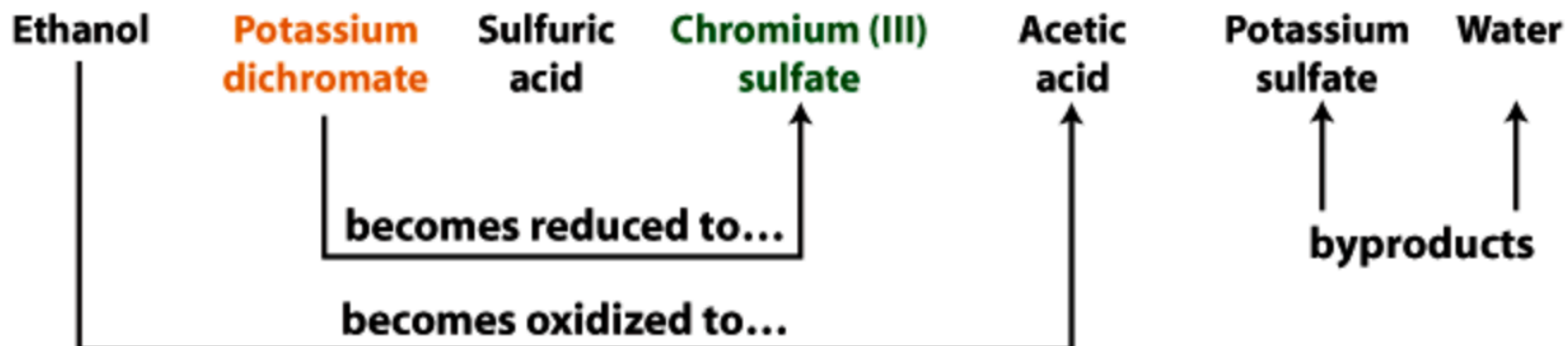


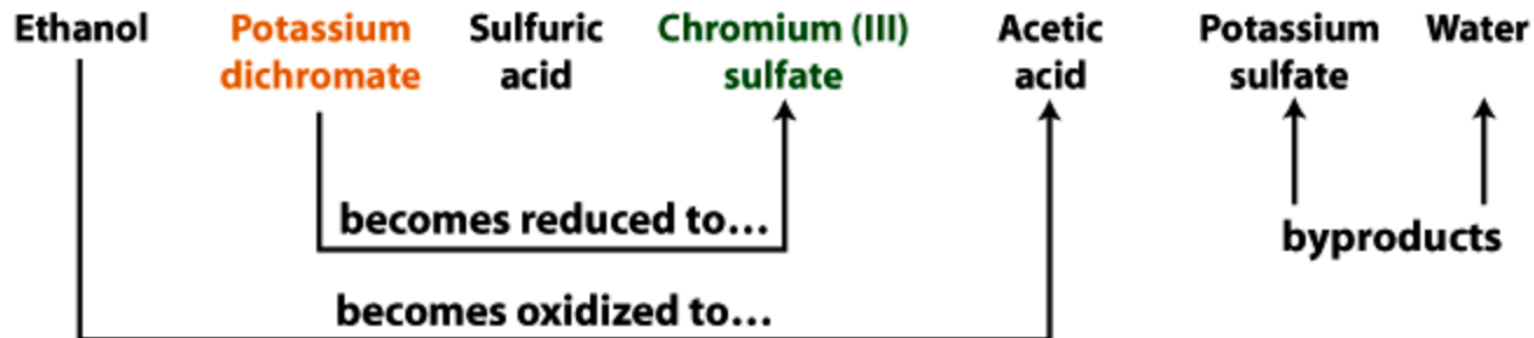
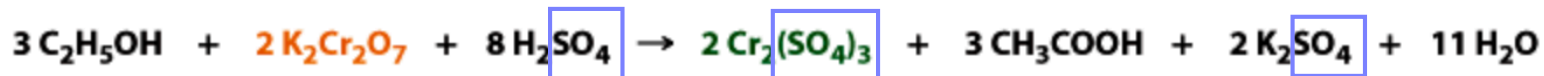
E. 4



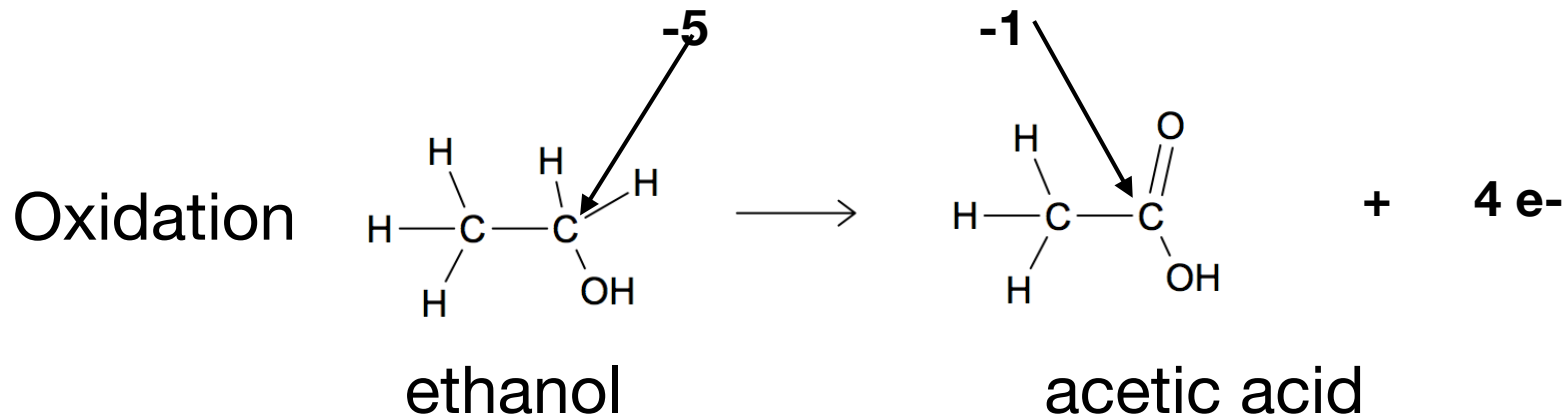
Oxidation
2 electrons
4 atoms
 $4 \times 2 = 8 e^-$

Breathalyzer Test

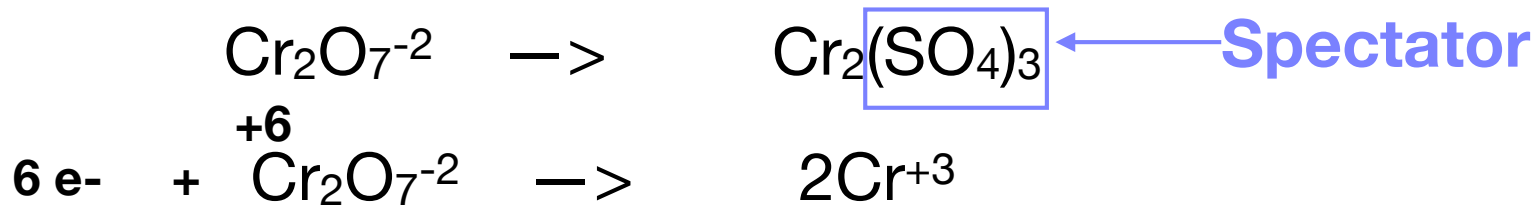




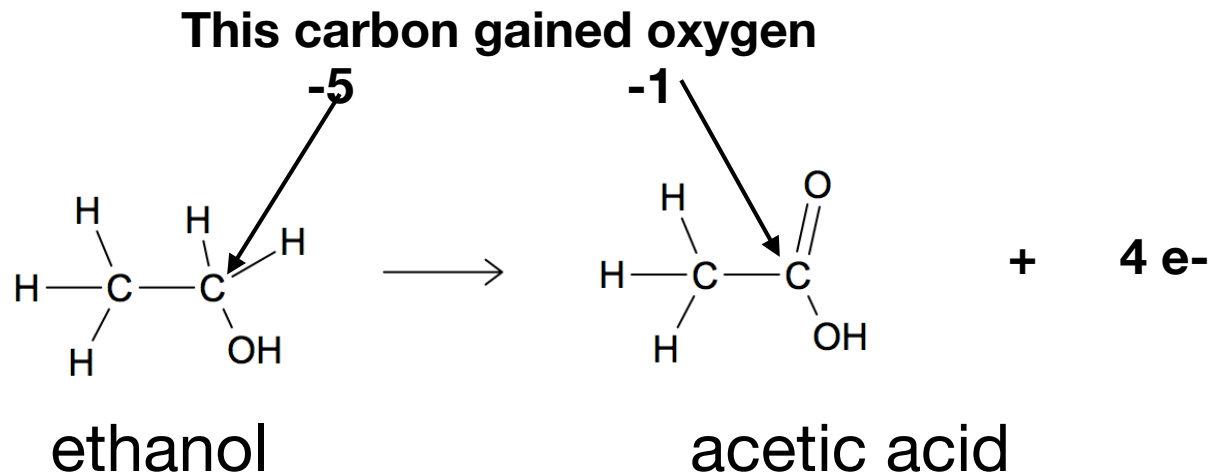
This carbon gained oxygen



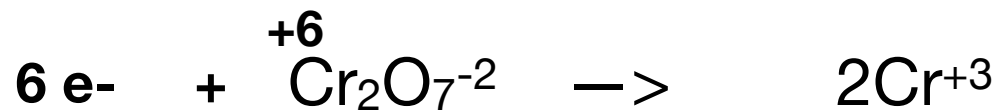
Reduction



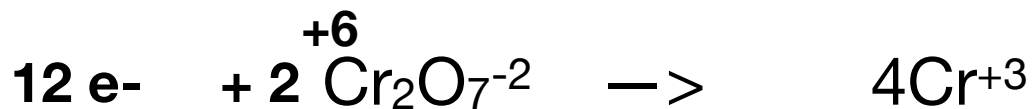
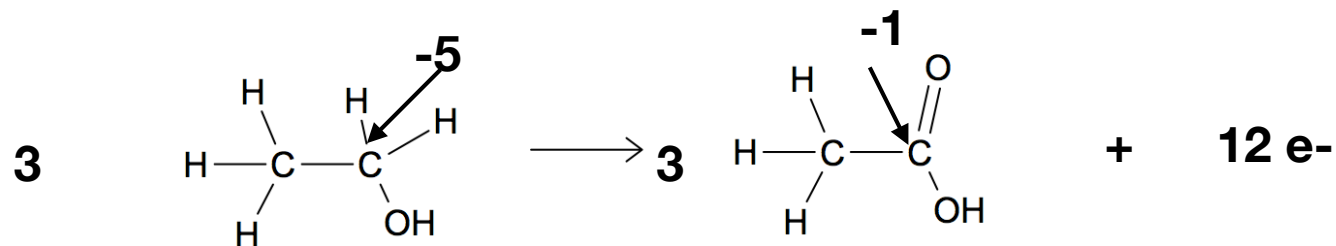
Oxidation

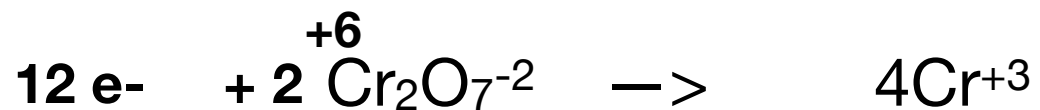
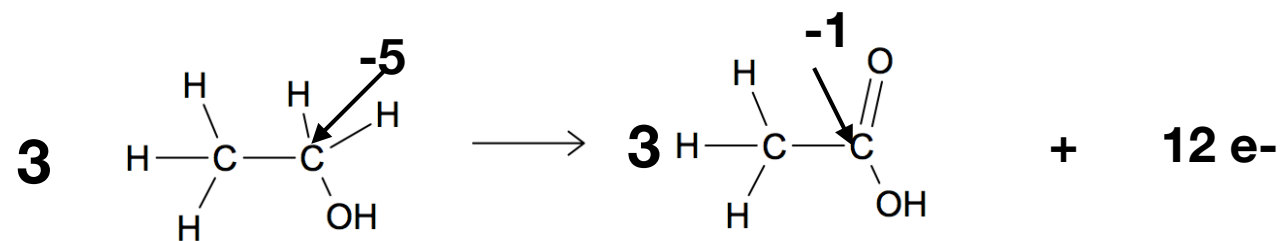


Reduction

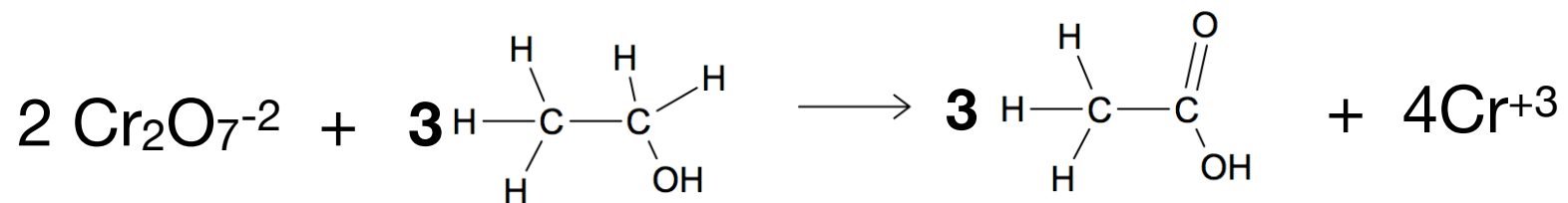


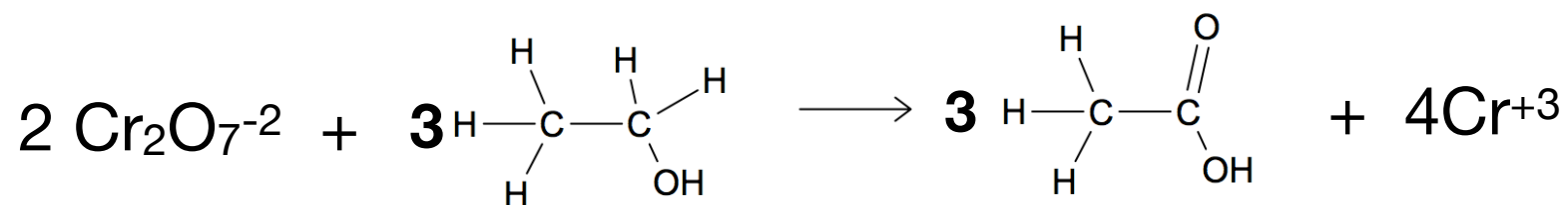
Electrons lost = Electrons gained
4 lost, 6 gained, least common multiple = 12
Multiply oxidation by 3 (4 x 3 = 12)
Multiply reduction by 2 (6 x 2 = 12)



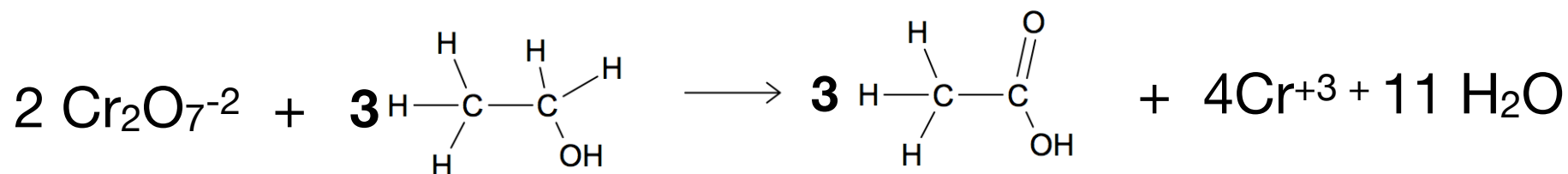


Add half reactions

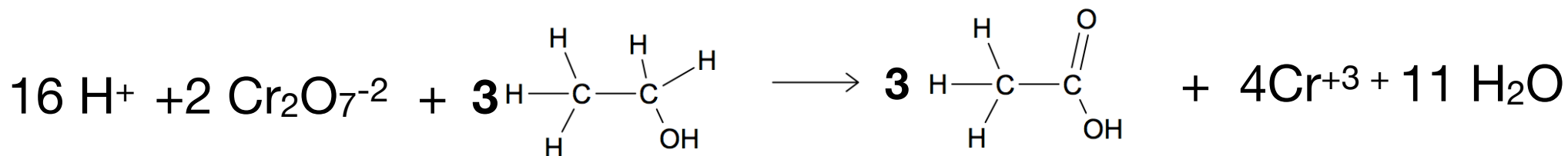




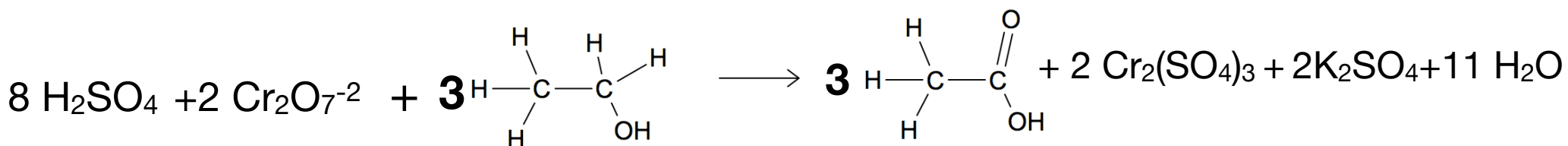
Add water to balance oxygen

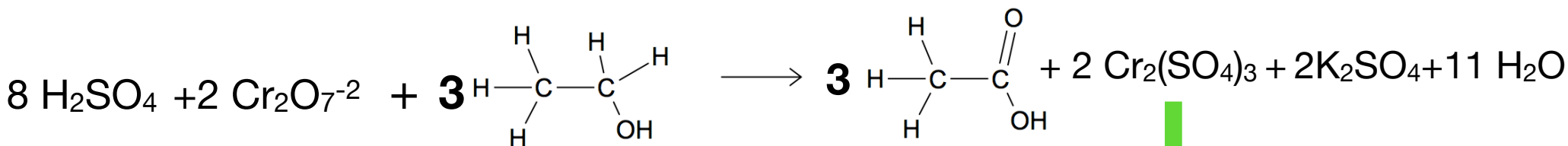
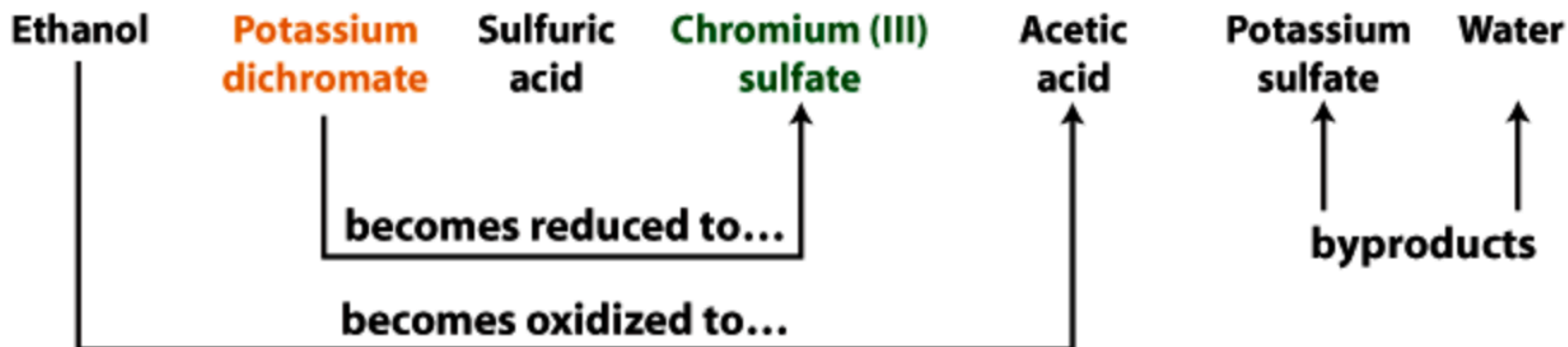


Add H+ to balance H



Put sulfates back in $2\text{H}^+ = \text{H}_2\text{SO}_4$





This is a green compound.
The amount of green is proportional
To the amount of alcohol in the blood.
2 moles of chromium(III) sulfate = 3 moles
ethanol.

Sodium nitrate reaction with copper solid to form nitrogen monoxide and copper (II) ions. What is the oxidation of nitrogen in the nitrate ion?

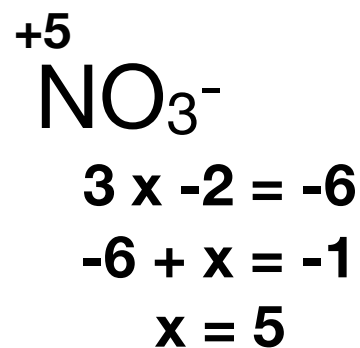
A. 1

B. 2

C. 3

D. 4

E. 5



Sodium nitrate reaction with copper solid to form nitrogen monoxide and copper (II) ions. What is the oxidation of nitrogen in the nitrate ion?

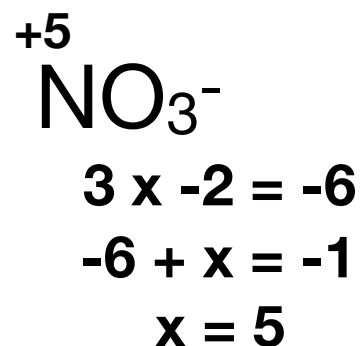
A. 1

B. 2

C. 3

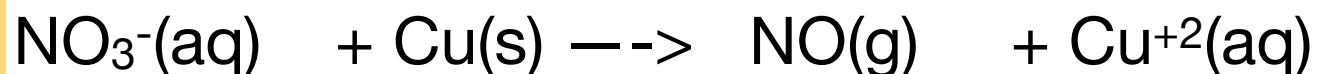
D. 4

E. 5

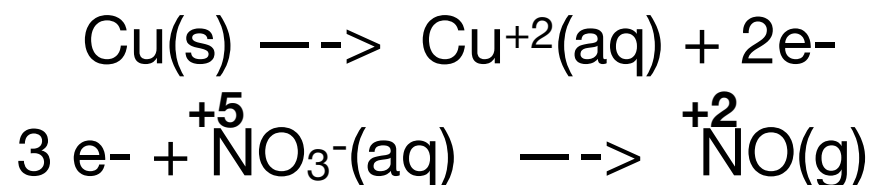


Sodium nitrate reaction with copper solid to form nitrogen monoxide and copper (II) ions. How many moles of water are produced?

A. 1

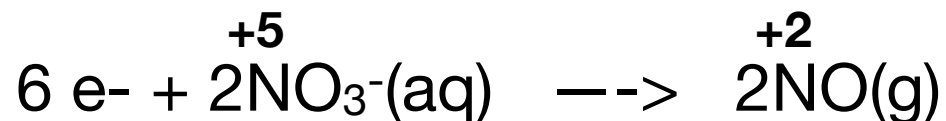


B. 2



C. 3

D. 4



E. 5

