

1. Which is an example of oxidation?

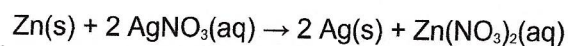
- A. $K^+(aq) + e^- \rightarrow K(s)$
- B. $Au^{3+}(aq) + 3e^- \rightarrow Au(s)$
- C. $Fe^{2+}(aq) + 2e^- \rightarrow Fe(s)$
- D. $Li(s) \rightarrow Li^+(aq) + e^-$

2. Which is an example of reduction?

- A. $Ca(s) \rightarrow Ca^{2+}(aq) + 2e^-$
- B. $Fe^{3+}(aq) + e^- \rightarrow Fe^{2+}(aq)$
- C. $H_2(g) \rightarrow 2 H^+(aq) + 2e^-$
- D. $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$

3. Gold ions, $Au^{3+}(aq)$, can easily be made to precipitate out of a solution as gold metal. Simply bring another metal into the solution, and this metal becomes the reducing agent in the chemical change. Write the half-reaction to represent the change in gold as it precipitates out of the solution.

4. When zinc metal is placed into a solution of silver nitrate, silver metal and zinc nitrate are produced according to this reaction:



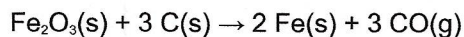
- a. What chemical atom or ion in the reaction is oxidized? Give a reason for your choice. Show the reaction
- b. What chemical atom or ion in the reaction is reduced? Give a reason for your choice. Show the reaction
- c. What chemical atom or ion in the reaction is a spectator? Give a reason for your choice. Show the reaction.

5. Balance each reaction

- a. $\underline{\hspace{1cm}} Al(s) + \underline{\hspace{1cm}} I_2(s) \rightarrow \underline{\hspace{1cm}} AlI_3(s)$
- b. $\underline{\hspace{1cm}} Fe(s) + \underline{\hspace{1cm}} O_2(g) \rightarrow \underline{\hspace{1cm}} Fe_2O_3(s)$
- c. $\underline{\hspace{1cm}} Zn(s) + \underline{\hspace{1cm}} AuCl_3(aq) \rightarrow \underline{\hspace{1cm}} Au(s) + \underline{\hspace{1cm}} ZnCl_2(aq)$

Science 20: Section 2.1 Assignment

1. Based on the equation $4 \text{Ag(s)} + 2 \text{H}_2\text{S(g)} + \text{O}_2\text{(g)} \rightarrow 2 \text{Ag}_2\text{S(s)} + 2 \text{H}_2\text{O(l)}$, what is the mole ratio of $\text{H}_2\text{S(g)}$ to $\text{Ag}_2\text{S(s)}$?
 - A. 2:1
 - B. 2:2
 - C. 2:4
 - D. 4:2
2. Hydrogen sulfide can be used in aqueous solutions to separate out metal ions. On the other hand, hydrogen sulfide in the air causes considerable damage to silver objects. When a silver goblet tarnished in the presence of hydrogen sulfide (and oxygen), 1.20 mol of silver sulfide formed. What amount of silver was consumed?
 - A. 4.80 mol
 - B. 2.40 mol
 - C. 1.20 mol
 - D. 0.600 mol
3. While investigating mole ratios, a group of students collected data for the chemical reaction $2 \text{NaOH(aq)} + \text{CaCl}_2\text{(aq)} \rightarrow 2 \text{NaCl(aq)} + \text{Ca(OH)}_2\text{(s)}$. The students wondered what would happen if an excess of NaOH was used. Their teacher approved a procedure in which solutions containing 3.00 g of NaOH and 2.10 g of CaCl_2 were combined. Based on the quantities of these reactants, what amount of $\text{Ca(OH)}_2\text{(s)}$ is produced?
 - A. 0.0189 mol
 - B. 0.0375 mol
 - C. 0.0500 mol
 - D. 0.1000 mol
4. In producing pure iron metal from its ore, iron(III) oxide and carbon (coke) must react according to the following balanced chemical equation:



Suppose 5.89×10^3 mol of iron ore are consumed. How many moles of pure iron metal are produced?

- A. 1.47×10^3 mol
- B. 2.95×10^3 mol
- C. 5.89×10^3 mol
- D. 1.18×10^4 mol

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1.7 Question – hand-in

A vehicle is travelling 115 km/h on a highway when a driver sees a moose in the middle of the lane.

- 1) Determine the distance travelled by the vehicle while the driver is reacting. Assume the driver's reaction time is 1.50 s.
- 2) Determine the braking distance, assuming a deceleration of -5.85 m/s^2 . Hints:
- 3) Determine the total stopping distance.
- 4) Determine a new stopping distance for this vehicle if the driver was impaired and had a reaction time of 4.25 s. (Hint: Calculate the reaction distance, the braking time and distance and then the total distance.)