OOP - Dry Part

Basics

1) Read about the following terms and explain them to your instructor:
    a) Polymorpism
    b) OOP
    c) Functional Programming
2) Read about the following topics and explain them to your instructor:
    a) Composition VS Inheritance.
        i) What are they?
        ii) What are the pros/cons of each?
    b) Mutability VS Immutability.
        i) What are they?
        ii) What are the pros/cons of each?
    c) Static Typing VS Dynamic Typing in programming languages
        i) What are they?
        ii) What are the pros/cons of each?
        iii) Give examples of 2 programming languages of every type.
3) What's duck typing? Show a basic code example in python demonstrating this concept
4) What's the difference between the various accessibility levels of fields/methods (private/protected/public)? How does it work in python?
5) What's the difference between instance/class/static methods in python? What's the use case of each type?

Design Concepts

1) Read about SOLID design principles. Explain them to your instructor.
2) What's the advantage of having multiple constructors?
    a) In python that feature is not supported unfortunately. How can you overcome that?
3) What are design patterns? Read about the following and have a conversation with your instructor about the following:
    a) Singleton
    b) Observer
    c) Factory
    d) Abstract Factory
    e) Builder
    f) Strategy

g) Composite
h) Iterator

Python Specifics

1) What's the difference between Python 2 and Python 3? What are the problems with converting code between the versions?
2) Read about major version updates in python 3.x changelogs starting from python 3.4 and summarize the main features added in each version. Discuss with your instructor which changes were most important/helpful.
3) Read the part about Naming Conventions in PEP8 (https://pep8.org/).