

Concrete

Use the Internet or other resources available to you to answer the following questions.

1. What is cement? What synonyms may be used for cement? Compare the noun form and verb form of the term *cement*.
2. How does concrete differ from cement? When (and why) is concrete used in construction instead of cement?
3. Who were the first people to use concrete? How old is the oldest concrete structure?
4. What properties of concrete make it useful for construction?
5. What is the most significant weakness of concrete? When does this weakness most often become apparent? How do engineers compensate for this weakness?
6. Describe the process of manufacturing cement *and* concrete. How much cement and/or concrete is manufactured in the US each year? In the world each year?
7. Provide a brief description of the chemical composition of cement/concrete.
8. Why is it important to have the correct ratio of water to cement powder when mixing cement? What happens when cement/concrete “cures”? How long does curing take?
9. Provide three examples of cement-like materials that organisms produce. How do they compare to man-made cement?
10. What ecological issues do the manufacture, transportation, use and disposal of cement and concrete present?
11. Estimate (based on research) the economic impact of the manufacture, transportation and use of cement and concrete in the United States.

* For extra credit, describe a catastrophic event that occurred when improperly mixed cement was used to construct high-rise apartments in earthquake prone Turkey.