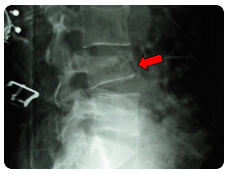
Bone Bank Lab

Name _____

Date _____

Period _____

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Do Now Many people get shorter as they get older. Some lose an inch or more. This X-ray shows the spine of an older adult. 2 minutes, before you open the lab

A. Where do you think the lost height goes?

B. Does an adult's bone keep changing?

☐ Yes, all through life ☐ No, it is finished ☐ Not sure yet

☐ I can use real data to describe how bone density changes with age.

☐ I can explain osteoporosis using osteoblasts and osteoclasts.

☐ I can explain why exercise and peak bone mass protect bones later.

Part 1. Bone over a lifetime (Tab 1)

SEP 4 Analyzing and Interpreting Data · CCC Patterns

Click every age group for women, then for men. Read the number on the scan.

1. At what age group is bone density highest for women? _____ For men? _____

2. Copy the averages.

Bone density (g/cm²)	Age 20-29	Age 50-59	Age 80+
Women			
Men			

3. Who has more bone at every adult age? ☐ Women ☐ Men

READ FIRST. In the lab, find the green Learn It box and read it. Then answer 4 to 6.

4. Women go from 0.889 to 0.633. What percent did they lose? Show your math (SEP 5).

5. Switch to Lowest 10 in 100 for women. At what age group do they first fall under the osteoporosis line (0.56)?

_____

6. Use the Learn It. Why do women lose bone faster after about age 50?

Part 2. Inside spongy bone (Tab 2)

SEP 2 Developing and Using Models · CCC Structure and Function

Pick Women. Pick an age. Press Load test. Do all four ages.

7. Copy your records for women.

Women, age	20-29	40-49	60-69	80+
Density left (%)				
Strength left (%)				

8. At 80+, how much density was lost? _____ How much strength was lost? _____

READ FIRST. In the lab, find the green Learn It box and read it. Then answer 9 to 11.

9. Model check (SEP 2). What does each part of the model stand for?

The bars (struts)	
A strut that disappears	
The weight on top	

10. Name one thing this model leaves out.

11. Many older people get shorter. Where does the lost height go?

Part 3. Bank it early (Tab 3)

SEP 6 Constructing Explanations · CCC Stability and Change

Pick each peak and press Record. Then slide the months in space.

12. Copy your records.

Bone banked by age 30	Crosses the osteoporosis line at about age
10% less	
As measured	
10% more	

13. An astronaut spends 6 months in space. At 1.5% a month, how much hip bone is lost? _____

READ FIRST. In the lab, read the green Learn It box and the lifting study. Then answer 14 and 15.

14. In the lifting study, which group gained spine bone? _____ By how much? _____

15. Explain it (SEP 6). Why does a teen who runs, jumps and lifts have stronger bones at 70?

Evidence (a number)	
The science idea	
How it explains it	