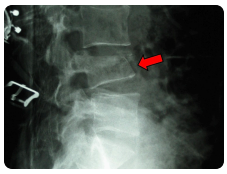
Bone Bank Lab: Low-write

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

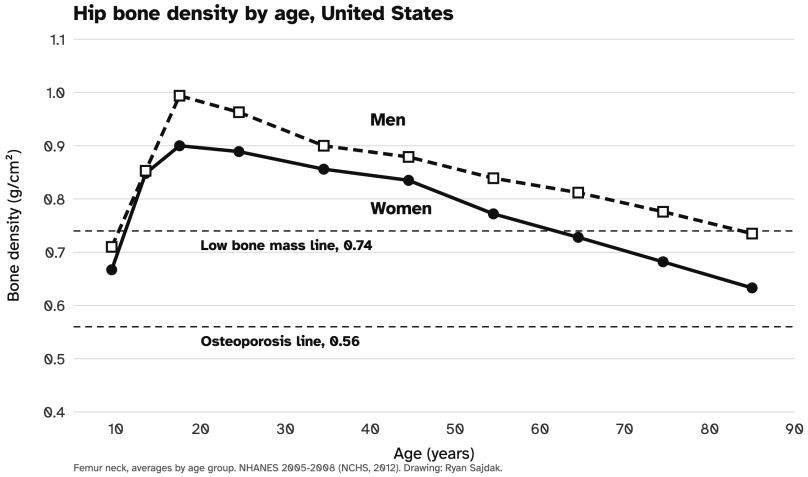
Click every age group for women, then for men. Read the number on the scan.

1. When is bone density highest for women? ☐ 8-11 ☐ 16-19 ☐ 50-59 ☐ 80+ For men? ☐ 8-11 ☐ 16-19 ☐ 50-59 ☐ 80+

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. Example, not yours: 1.00 to 0.80 is a loss of 0.20. 0.20 ÷ 1.00 = 0.20 = 20%. Women go from 0.889 to 0.633. Loss _____ ÷ 0.889 = _____ %

5. Switch to Lowest 10 in 100 for women. When do they first fall under 0.56?

☐ 50-59 ☐ 60-69 ☐ 70-79 ☐ 80+

6. Why do women lose bone faster after about 50?

☐ Less estrogen after menopause ☐ They eat less ☐ Their bones are older

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+, which dropped more? ☐ Density ☐ Strength

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 stand for? Use the word bank. Three are not used.

Word bank: trabeculae (spongy bone) · bone removed by osteoclasts · body weight · cells that rebuild bone · blood · skin

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

10. What does this model leave out? ☐ the cells that rebuild bone ☐ the struts ☐ the weight

11. Where does lost height go? ☐ Back bones get crushed and shorter ☐ The legs shrink ☐ The skin gets thinner

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. Example, not yours: 2 months × 1.5% = 3%. An astronaut spends 6 months in space. 6 × 1.5% = _____ %

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? ☐ Heavy lifting ☐ Light exercise

15. Explain it (SEP 6). Finish each sentence. Bone answers to _____, so a teen who runs and lifts builds more bone. A higher peak means she crosses the osteoporosis line about _____ years later.