

Name: _____

Lab Exercise 7 Radiocarbon Dating, Occupation Patterns and Site Formation Processes

Objectives

The objective of this lab is to reinforce the concepts and approaches to analyzing chronometric data from archaeological sites, as part of the broader investigation of occupation patterns and site formation and their geoarchaeological record.

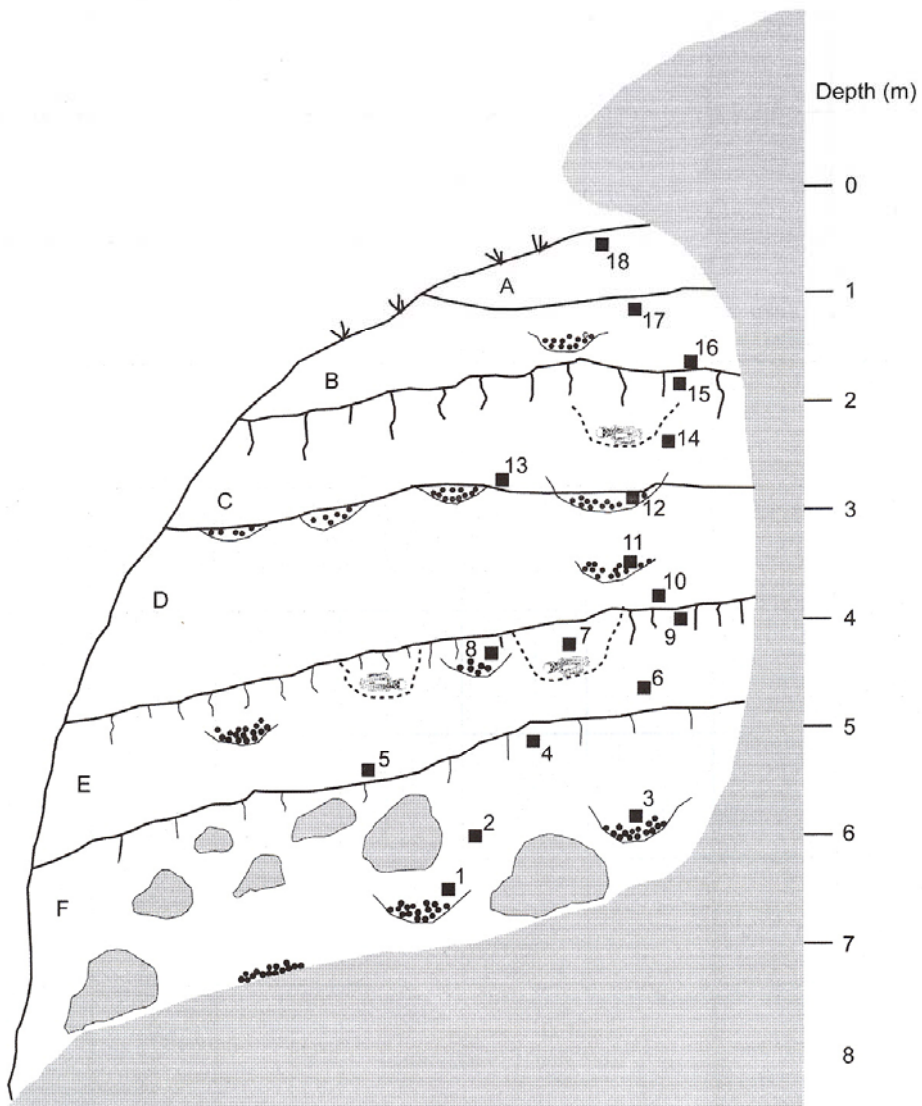
Grading

Your grade is based on:

Data analysis	25 points
Questions	50 points

Instructions

1. Plot the radiocarbon dates from features on the sedimentation graph, using small triangles as symbols. Connect the points with a dashed line from oldest to youngest.
2. Next, plot the dates that are not from features, using small circles and connect them with a solid line.
3. On Table 3 calculate sedimentation rates. Round the sedimentation rates to 0.01 cm/yr.
4. Next, calculate the volumetric densities in Table 4. Do not use decimals in your figures.
5. Last, calculate the chronometric densities in Table 5. Round these numbers to 0.01 also.



Geologic Section, Grotte du Perigord

Table 1. Radiocarbon Dates

Sample	Depth (m)	¹⁴ C Age	Feature
1	6.40	34,500	hearth
2	5.90	34,050	
3	5.80	32,000	hearth
4	5.10	32,300	
5	5.30	30,250	
6	4.70	27,450	
7	4.30	25,500	burial
8	4.40	24,100	hearth
9	4.00	26,500	
10	3.90	23,300	
11	3.60	20,001	hearth
12	3.00	12,450	hearth
13	2.85	14,500	
14	2.50	11,000	
15	2.10	10,600	
16	1.90	4,000	
17	1.40	3,100	
18	0.80	2,000	

Table 2. Stratigraphic Data

Stratum	Thick (m)	Artifacts	Bones	% Deteriorated
A	0.60	300	2,000	9.5
B	0.90	2,600	1,450	7.6
C	1.20	8,200	9,650	21.6
D	1.40	6,100	4,300	13.6
E	1.00	9,350	16,500	16.4
F	1.60	9,550	17,000	12.0

Table 3. Sedimentation Rates

Stratum	Thickness (m)	Interval (yr)	Sedimentation Rate (cm/yr)
A	0.60		
B	0.90		
C	1.20		
D	1.40		
E	1.00		
F	1.60		

Table 4. Volumetric Densities *

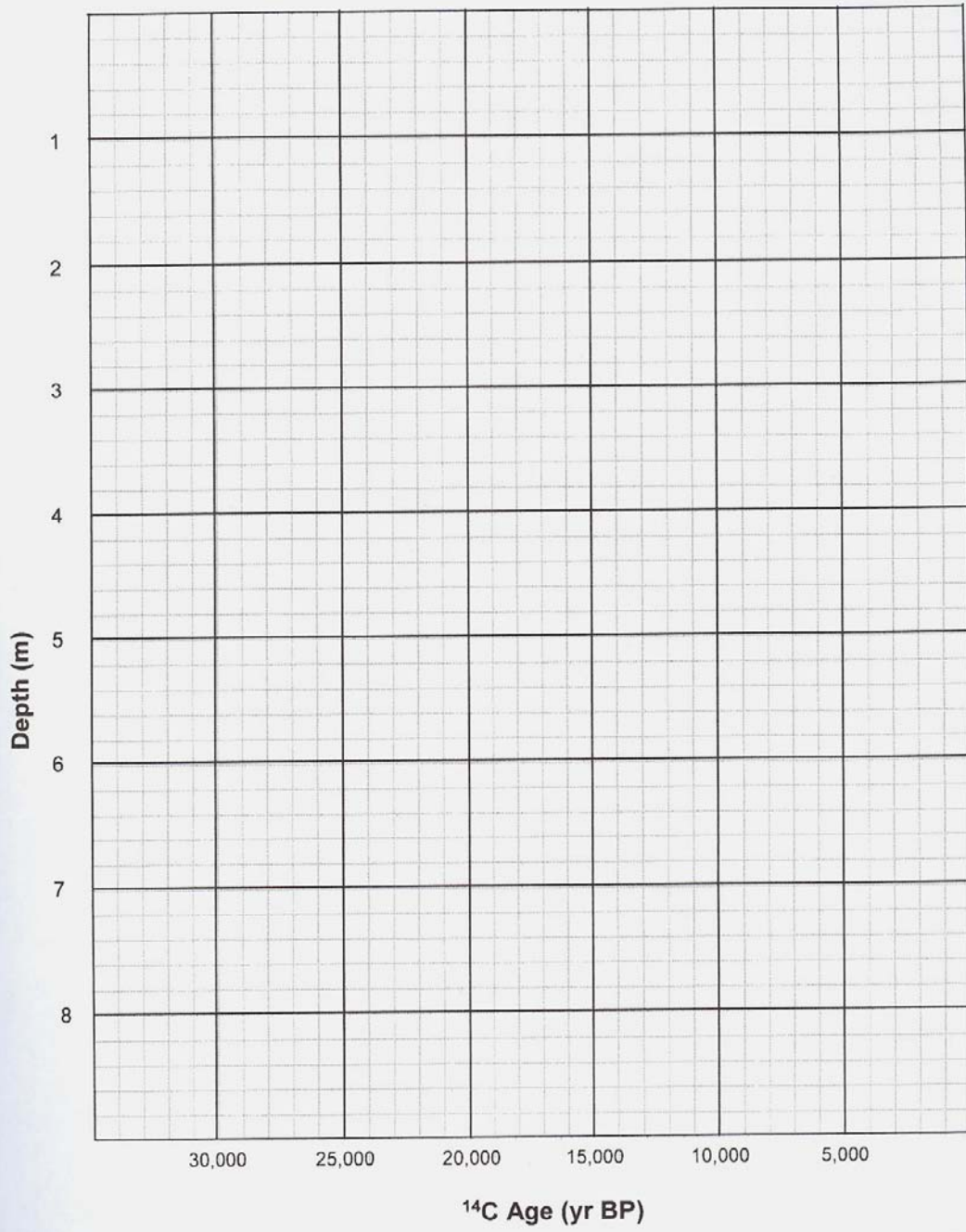
Stratum	Block volume (LxWxD=m ³)	D _v artifacts Density (n/m ³)	D _v bones Density (n/m ³)
A			
B			
C			
D			
E			
F			

*(All blocks: 2 x 5 m in area)

Table 5. Chronometric Densities*

Stratum	t (yr)**	D _c artifacts (n/m ³ /year)	D _c bones (n/m ³ /year)
A			
B			
C			
D			
E			
F			

*(D_c= D_v/t); ** same as Interval from Table 3



4. Based on this hypothetical example, how would you, as an archaeologist with a tight budget for your project, select samples from a well stratified site to best reconstruct both its geologic and archaeological record? (10 points)

5. In ecological terms, why should we be interested in chronometric analysis in archaeology in a context of major changes in climate, environment and resource availabilities? (10 points)