		Pre-Lab Discussion<i>Read the entire investigation. Then following questions.</i>1. Inferring This activity incorpand 13. How are these two characteristics.
© Pearson Education, Inc., publishing as Pearson Prentice Hall. All rights reserved.	© Pearson Education, Inc., publishing as Pearson Prentice Hall. All rights reserved.	2. Inferring Why is it important technique available?
n Prentice Hall. All rights reserved.	© Pearson Education, Inc., publis	3. Using Analogies Look at the the DataBank. How are eras, pused in textbooks?

Name		Class	D	ate
Chapter 13	Earth's History			Investigation 13
Detern	nining Geol	ogic Ages		
Introduc	tion			
are among thistory. Not the changin Fossils and know about rearrangement extinctions. In this inv	the most important only can they help g nature of life over relative and absolut geologic changes of ents of the continent westigation, you will	an be found in the fostools scientists use to in dating rock layers, the vast scale of Earth te dating have also to in Earth—from the grats to cataclysms that color try your hand at using to uncover some of Earth to the color of Earth to the	interpret Earth's they also revea h's history. old us what we adual caused mass	s I
Problem				
How can yo	ou interpret the fossi	il record to determine	Earth's history	?
Pre-Lab	Discussion	91 S		
Read the enti following que		n work with a partner to	o answer the	
	This activity incor low are these two ch	porates information fr napters related?	com Chapters 12	2
			Ð	
2. Inferring technique	Why is it importar e available?	nt to have more than o	one dating	
		e Geologic Time Scale periods, and epochs li		

N.T.		
Name	Class	D (
	Class	Date

4.	Posing Questions of this activity.	Write a question that summarizes the purpose		
			1	110
			1	

Materials (per pair of students) geologic block diagram (Figure 1) logarithmic scale showing decay of U-235 Resource 10 in the DataBank Resource 11 in the DataBank

Procedure

Part A: Understanding Relative Dating

1. Carefully study Figure 1, the geologic block diagram below. Use the rules you have learned for determining relative age to find the sequence of geologic events. List their letters from oldest to youngest in the space provided beside the figure.

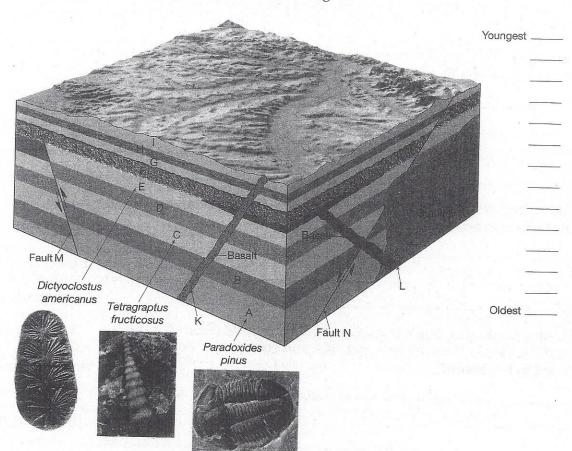


Figure 1

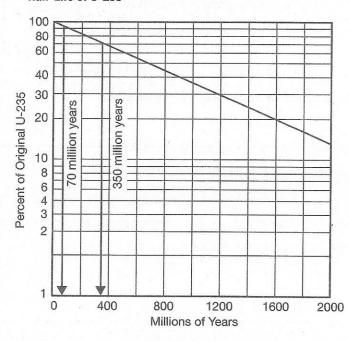
2. Study Data Table 1 below. It contains information about the parent-daughter ratios of the isotope uranium-235 (U-235) for several of the rock layers in the block diagram.

DATA TABLE 1

	Parent-Daughter Percent	tages of Isotope U-235	
Rock Layer	Percentage of U-235	Absolute Age	Period
G	94	State of the State of	
F	90		
D	65		
В	60		

3. Study the graph Half-Life of U-235 below. The half-life graph is plotted on a logarithmic scale, which straightens the curved line for radioactive decay. This scale can make it easier to plot data, as well as easier to use when the parent-daughter ratio represents less than a single half-life. Use the graph to determine the absolute ages of the rock layers in the chart.

Half-Life of U-235



4. It takes 713 million years for half of a sample of U-235 to decay to lead-207. Use the Geologic Time Scale (Resource 10 in the DataBank) to complete Date Table 1 with the period during which each rock layer formed.

Name	Class		Date
Part C: Understanding	Index Fossils	*	
5. Complete Data Table (Resource 10) and the DataBank to determ layers in the block d		s (Resource 11) in plute ages for the r	the rock
DATA TABLE 2			
Pools Lover	Approximate Age		
Rock Layer	Index Fossil	Period	Approximate Age
E			
. A			
		A 1	
. Applying Concepts dating did you apply rock layer F? Applying Concepts	y to determine the rel	ative ages of fault	M and
than the igneous intr	rusion J.	ow that fault in is	order
. Inferring Why are the basalt?	here no index fossils	in the granite and	the
. Applying Concepts three igneous intrusion	How did you determons?	nine the sequence	of the
<u> </u>			

6. Problem Solving How is it possible for two distinct rock layers to derive from the same period?

0
$\underline{\underline{}}$
e
9
So
=
H
0
3
,
-
earson Education, Inc.
걸
5
Si
=
6
GS
-0
O
S
arsor
arson F
arson Pre
arson Prent
arson Prentic
arson Prentice I
arson Prentice Ho
arson Prentice Hall.
arson Prentice Hall. Al
arson Prentice Hall. All r
arson Prentice Hall. All rigi
arson Prentice Hall. All rights
arson Prentice Hall. All rights r
arson Prentice Hall. All rights res
arson Prentice Hall. All rights reser
publishing as Pearson Prentice Hall. All rights reserved.

				Era	Period	Epoch	Millions of Years Ago	Development of Plants and Animals
Ε	Eon	Era	Millions of Years Ago		Quaternary	Holocene Pleistocene	0.01 1.8	Humans develop
han	erozoic	Cenozoic Mesozoic Paleozoic	65 248	Cenozoic	Tertiary	Pliocene Miocene Oligocene Eocene	5.3 23.8 33.7	"Age of Mammals"
		Late	900		Creta	Paleocene ceous	54.8 65.0	Extinction of dinosaurs and many other species
	ozoic	Middle		Mesozoic			144	First flowering plants
	Proterozoic	- 1- Vi val - 2- (var)	1600		Jura	assic	206	First birds
		Early			Tria	ssic	248	Dinosaurs dominant
			2500		eran tokanin nganit nganingi	nian	290	Extinction of trilobite and many other marine animals
The state of the s	C C	Late	3000		onife	nnsylvanian	323	First reptiles Large coal swamps
STATE OF STA	Archean	Middle			Mis Cart	ssissippian	354	Amphibians abundan
		Early	3400	Paleozoic	Devo		417	Fishes dominant
The second secon	san		3800		Silui		443	First land plants First fishes
STATE STATE STATE STATE	Hadean	Origin as Fact			Ordov	ician	490	Trilobites dominant
er.		Origin of Earth	4500		Camb	orian		First organisms with shells
					Precarr	ıbrian	540	First multicelled organisms

© Pearson Education, Inc., publishing as Pearson Prentice Hall. All rights reserved.

CENOZOIC ERA (Age of	Quaternary Period	Pecten gibbus	Neptunea tabulata
Recent Life)	Tertiary Period	Calyptraphorus velatus	Venericardia planicosta
	Cretaceous Period	Scaphites hippocrepis	Inoceramus labiatus
MESOZOIC ERA (Age of Medieval Life)	Jurassic Period	Perisphinctes tiziani	Nerinea trinodosa
	Triassic Period	Trophites subbullatus	Monotis subcircularis
	Permian Period	Leptodus americanus	Parafusulina bosei
	Pennsylvanian Period	Dictyoclostus americanus	Lophophyllidium proliferum
	Mississippian Period	Cactocrinus multibrachiatus	Prolecanites gurleyi
PALEOZOIC ERA (Age of Ancient Life)	Devonian Period	Mucrospirifer mucronatus	Palmatolepus unicornis
	Silurian Period	Cystiphyllum nlagarense	Hexamoceras hertzeri
	Ordovician Period	Bathyurus extans	Tetragraptus fructicosus
	Cambrian Period	Paradoxides pinus	Billingsella corrugata
PRECAMBRIAN			