

DATING ROCKS

*WAYS TO TELL THE AGE OF
A ROCK*



1 WAY TO DATE ROCKS:

- **RELATIVE DATING:**
- PLACES EVENTS IN GEOLOGIC HISTORY IN THE PROPER ORDER RELATIVE TO ONE ANOTHER.
- THE BASIS FOR THE GEOLOGIC TIME SCALE
- DOES NOT PROVIDE A TRUE “AGE”

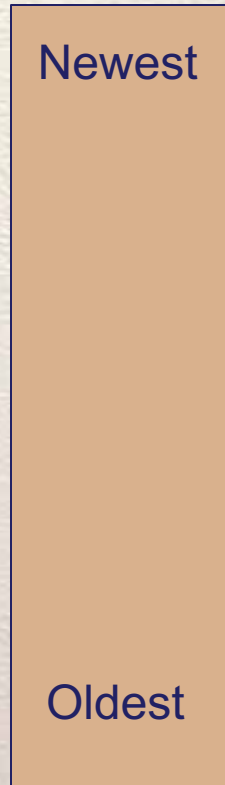
Relative Dating Principles

1. Law of Superposition
2. Cross-cutting Law
3. Law of Inclusions - Rocks embedded in other rocks are older than those rocks they are embedded in.

Principles for Relative Dating:

1. Law of Superposition :

- In any undisturbed sequence of strata
- the oldest layer is at the bottom
- the youngest layer is at the top.



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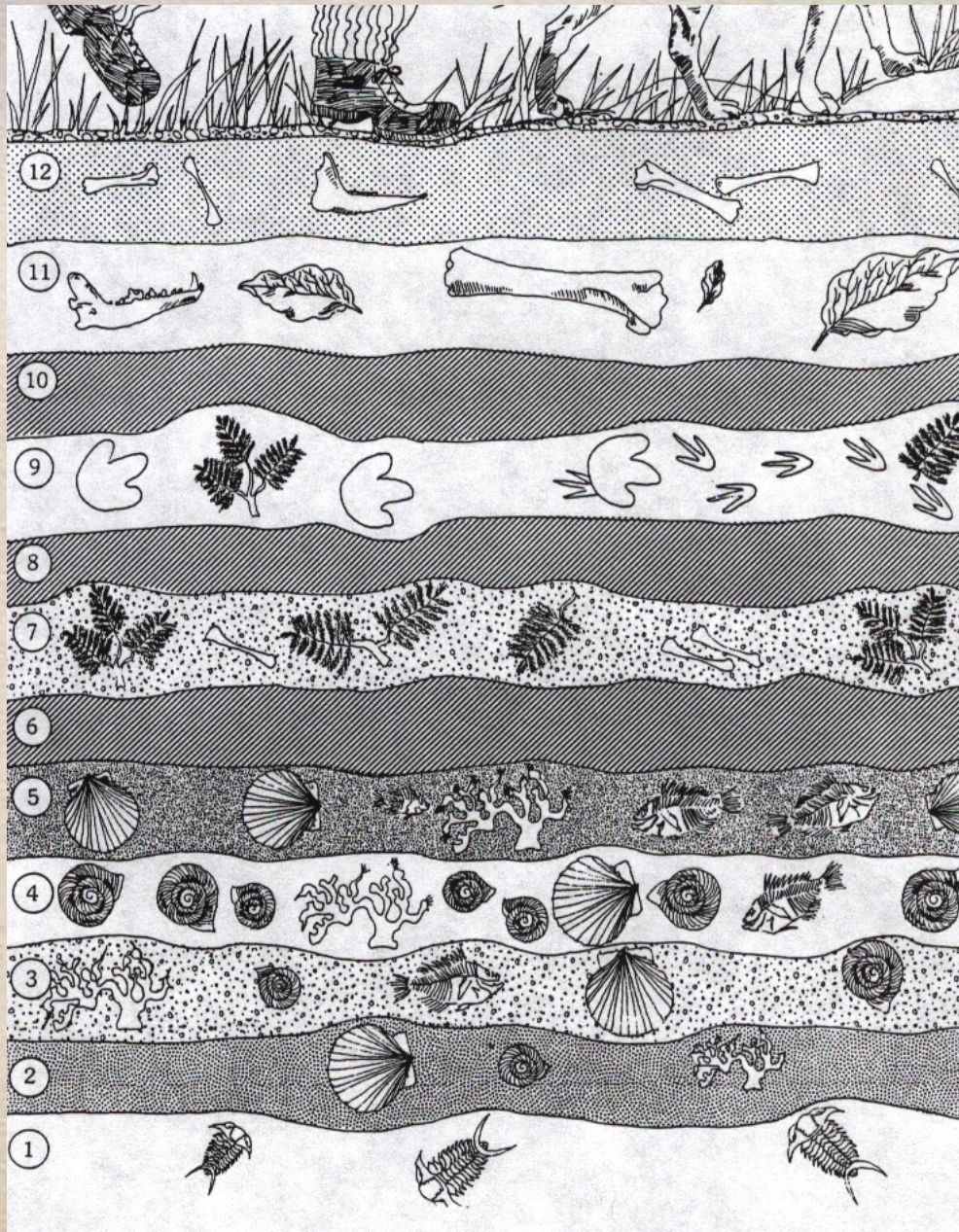


The extrusion is in black



Lava that hardens on the surface is called an Extrusion





Newest

Oldest

Set A

TC

CGA

Card 1, Set A

AU

UBN

BN

NO

OXD

DM

DM

BN

NO

CGA

AU

OXD

TC

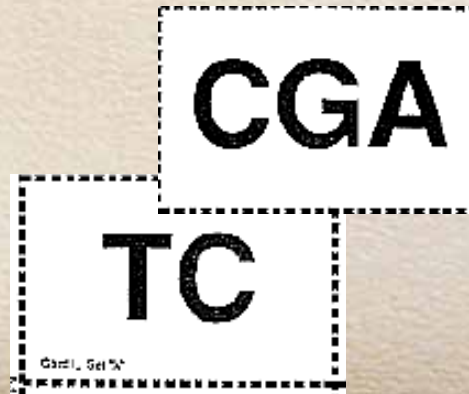
Card 1, Set A

UBN

- Method:

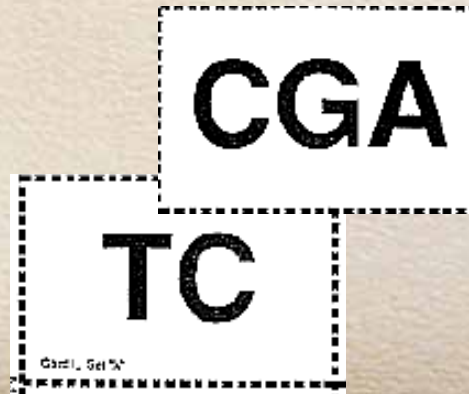
1. The card with the letters “T” and “C” is on the bottom, or the oldest layer.

2. Look for a card that has either a “T” or “C” written on it for the second layer. Since this card has a common letter with the first card, it must go on top of the first card. This second layer is younger than the TC layer.



3. Sequence the remaining cards using the same process.

Note – Sometimes organisms disappear or become extinct. Extinction is forever - once an organism disappears from the sequence it cannot reappear later



DM

NO

BN



AU

CGA

OXD

TC

UBN

M
D
X
O
N
B
U
A
G
C
T

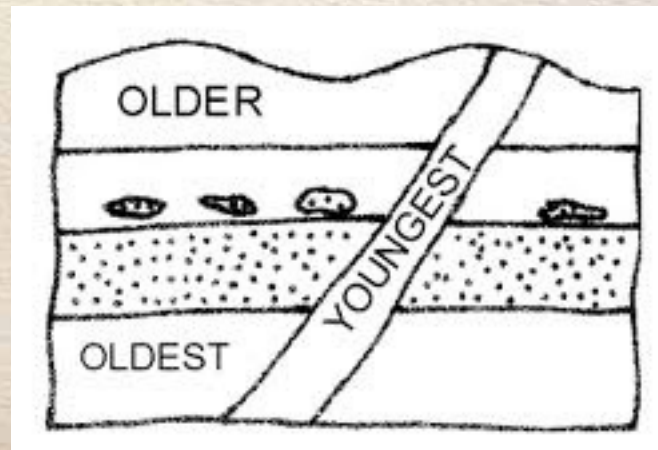
Answer

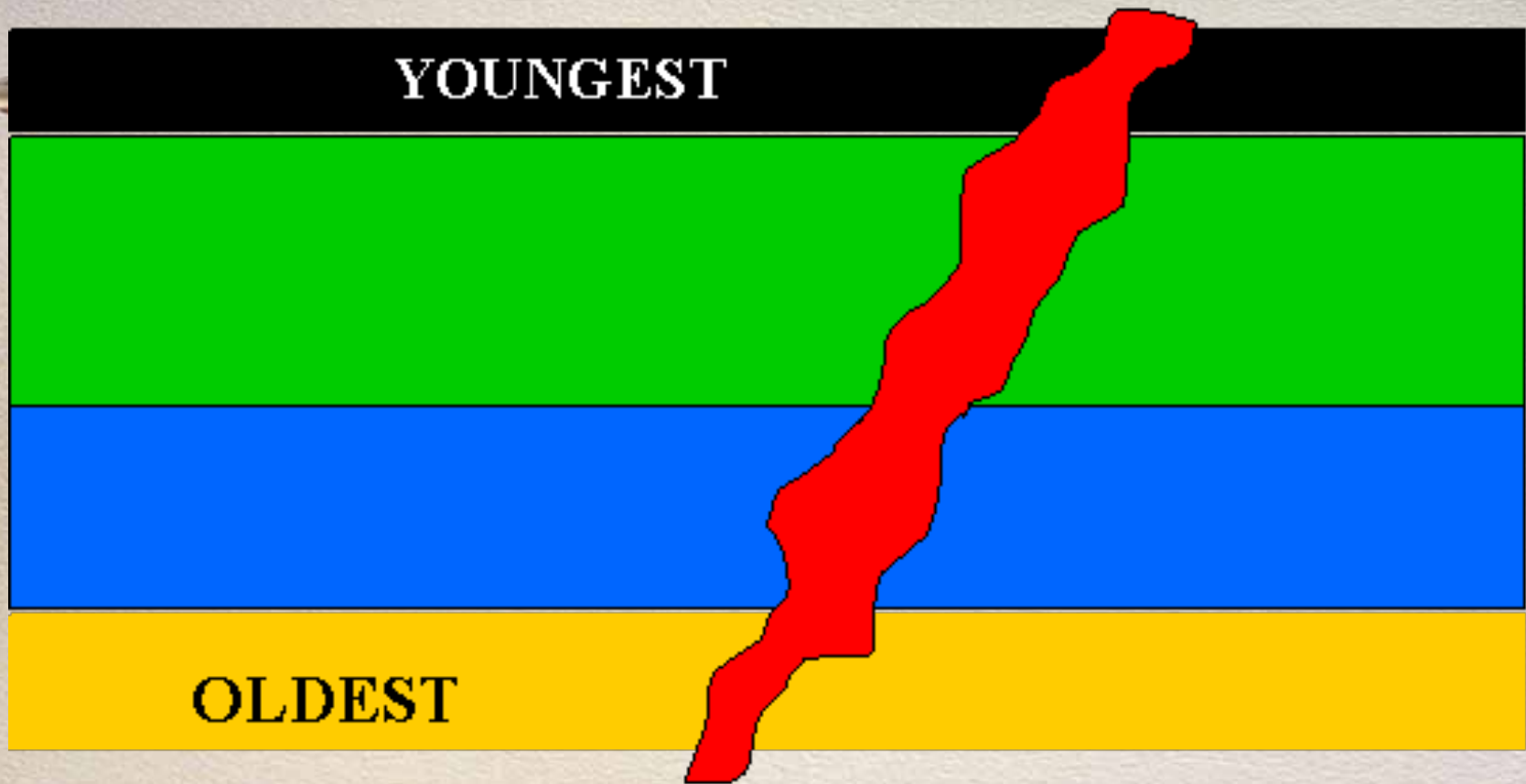
This is the sequence of life
on the planet

Relative Dating Principles

2. The Cross-cutting Law

- Any feature that cuts across a body of sediment or rock is younger than the body of sediment or rock that it cuts across.

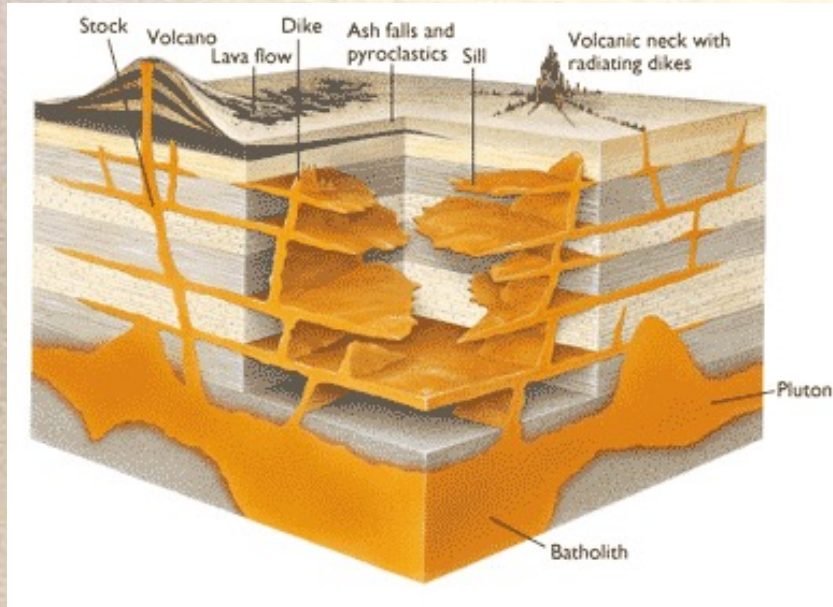




Magma that cools and pushes into bodies of rock and hardens is called an Intrusion

The **intrusion** (in red) is now younger than the surrounding rocks.

Cross-cutting Igneous Rock



Cross Cutting Relationships - Geologic features that cut through and across rocks are younger than those rocks.

Relative Dating Principles

3. Law of Inclusion

- **Inclusions** found in other rocks (or formations) must be older than the rock that contain them.



granite

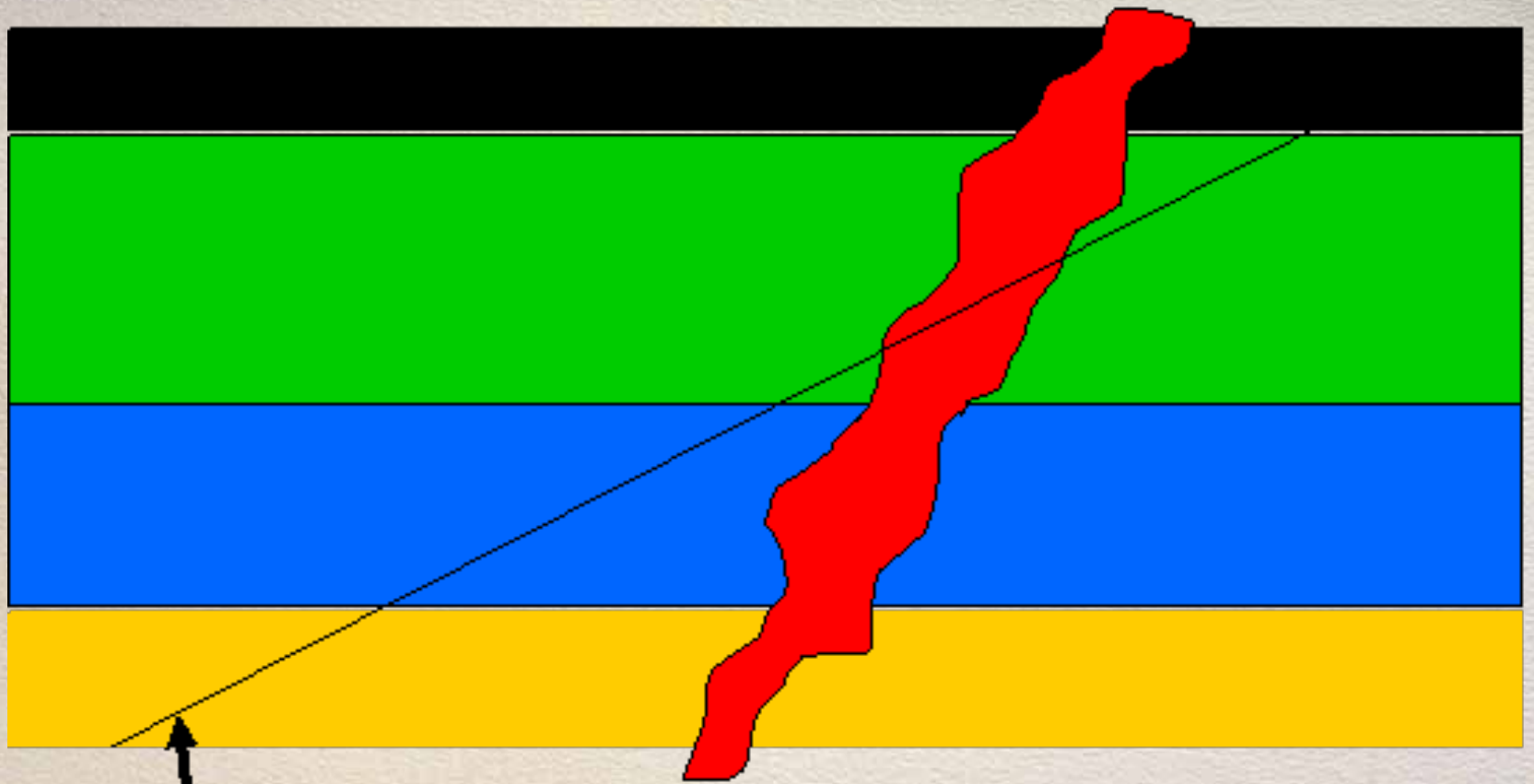
kersantite

<https://www.youtube.com/watch?v=bD5RyIDR3CU>

Clues from Faults:

Fault: is a break in the Earth's crust.

- Forces inside the Earth cause movement of the rock on opposite sides of a fault.
- Fault is **always younger** than the rock it cuts through.



Fault