

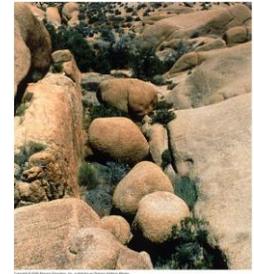
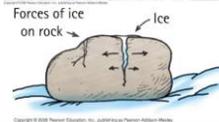
Sedimentary and Metamorphic Rocks

GS 106

Forming sedimentary rocks: weathering

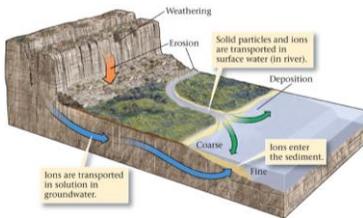
Physical (mechanical) weathering

Chemical weathering

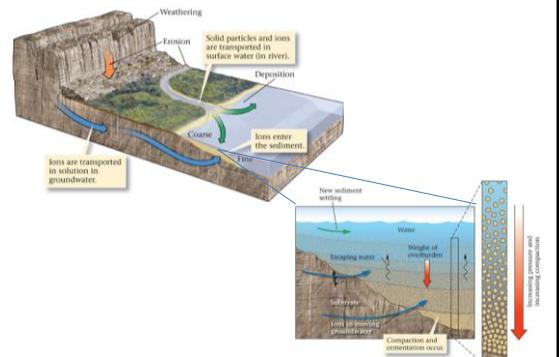


Forming sedimentary rocks: erosion

Erosion agents: wind, water, ice

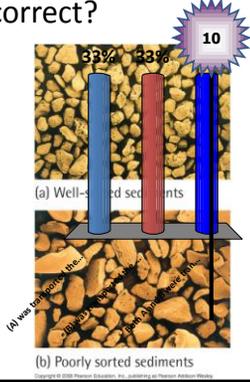


Forming sedimentary rocks: deposition

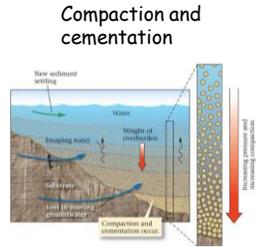


Examine the images. Which of the following is correct?

1. (A) was transported the greatest distance from its source
2. (B) was transported the greatest distance from its source
3. Both A and B were transported equal distance from their sources



Forming sedimentary rocks: lithification



Classifying sedimentary rocks

- 1) Clastic: classified on grain size
- 2) Chemical: classified based on composition

TABLE 20.3 CLASSIFICATION OF CLASTIC SEDIMENTARY ROCKS

Sediment	Particle Size	Rock	
Gravel	Boulder	Conglomerate	
	Cobble		256 mm
	Pebble		64 mm
		2 mm	
Sand		Sandstone	
		0.062 mm	
Mud	Silt	Siltstone	
	Clay	Mudstone Shale	
		0.0039 mm	

COARSE ↑

↓ FINE

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Important clastic sedimentary rocks



Sandstone

Shale

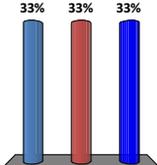
Conglomerate

What type of sedimentary rock will form in this environment?

1. Sandstone
2. Shale
3. Conglomerate



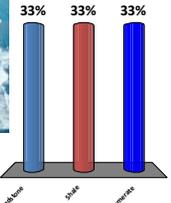
10 Seconds Remaining



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
21	22	23	24	25	26	27	28	29	30											

What type of sedimentary rock will form in this environment?

- ✓ 1. Sandstone
2. Shale
3. Conglomerate

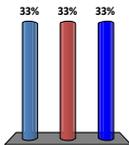



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
21	22	23	24	25	26	27	28	29	30											

What type of sedimentary rock will form in this environment?

1. Sandstone
- ✓ 2. Shale
3. Conglomerate





1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
21	22	23	24	25	26	27	28	29	30											

Chemical sedimentary rocks

Limestone (made of calcium carbonate)



Limestone precipitated from water

Limestone made of cemented shells



Metamorphism



Limestone
(protolith)

➔



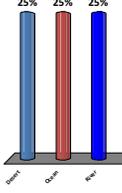
Marble
(metamorphic rock)

Metamorphism
(pressure,
temperature)

Examine the image of limestone. Limestone represents what type of environment?

1. Desert
- ★ 2. Ocean
3. River
4. Lake





25% 25% 25% 25%

10

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										

Metamorphism: 1) contact

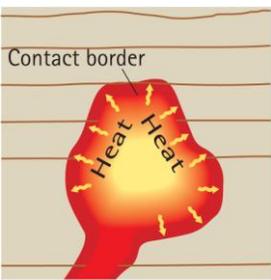


Diagram (a) shows a red, irregular shape representing a pluton with yellow arrows labeled 'Heat' pointing outwards. The boundary is labeled 'Contact border'.

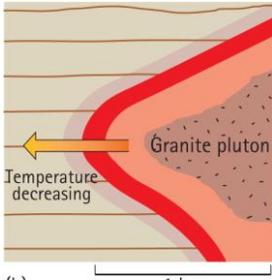


Diagram (b) shows a red 'Granite pluton' with an arrow pointing left labeled 'Temperature decreasing'. A scale bar below indicates '1 km'.

Metamorphism: regional

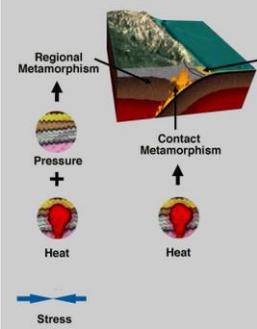
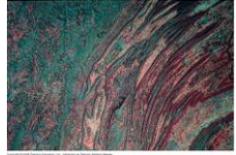


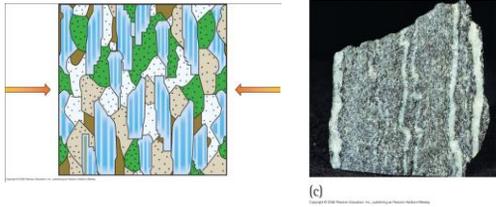
Diagram illustrating regional metamorphism. It shows a cross-section of the Earth's crust with a mountain range. Labels include 'Regional Metamorphism', 'Pressure + Heat', and 'Stress' (indicated by a double-headed arrow). A smaller diagram shows 'Contact Metamorphism' with 'Heat'.

Mountain building event

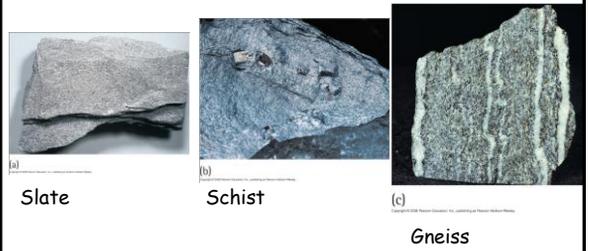


Classifying metamorphic rocks

Foliated and nonfoliated



Important foliated metamorphic rocks



Slate

Schist

Gneiss

Important nonfoliated metamorphic rocks



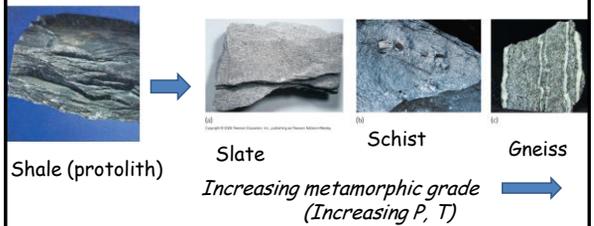
(a)

Marble

(b)

Quartzite

Metamorphic grade



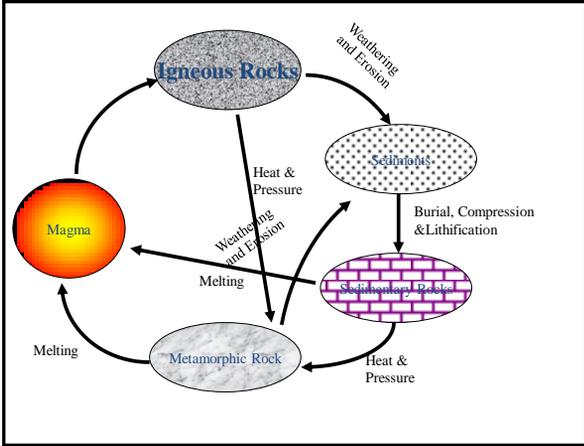
Shale (protolith)

Slate

Schist

Gneiss

*Increasing metamorphic grade
(Increasing P, T)*



Glass is made by melting silica rich sand. The molten glass is then cooled and shaped into forms. Glass making is an analogy for making which of the following rock types?

10 Seconds Remaining

1. Igneous rocks
2. Sedimentary rocks
3. Metamorphic rocks

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										

Baking a cake could be seen as an analogy for which of the following?

1. Igneous rocks
2. Sedimentary rocks
3. Metamorphic rocks

10

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										

Water containing dissolved sugar evaporates to leave a deposit of sugar in the bottom of a glass. This could be seen as an analog for the formation of a type of

1. Igneous rock
2. Sedimentary rock
3. Metamorphic rock

10

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										