

Teacher Name: Teacher 1 PEE

Circle One: **PRE** POST

Features Analysis Chart

Describe the assessment item:

Q#3: Look at the picture of the Earth. Notice where South America is located. A. draw a picture below that shows why it is hot (like summer) in January in South America. B. Explain your drawing.

Describe the ideal response:

Drawing should show the Earth and the Sun with the Earth tilted so that the southern hemisphere is pointed toward the sun and the northern hemisphere points away from the sun. The drawing may also indicate how the sun hits the Earth to demonstrate that the southern hemisphere is receiving more hours of daylight (compared to hours of nighttime) in this position. Explanation: It is hot (like summer) in January in South America because Earth is tilted. The tilt of the Earth causes two different things to happen. First, the sun shines more directly on Southern hemisphere in January so the Sun's energy is more concentrated than the northern hemisphere (where the sun's energy is more spread out), and so South America gets warmer than North America in January. Second, the southern hemisphere has more hours of sunlight each day, so in addition to catching more of the sun's energy, the sun shines longer each day, so it gets warmer.

Features of the a complete, accurate response	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	31	32	33	34	34	36		
Earth is tilted.				✓					✓																													
More direct sunlight results in greater heating of the Earth				✓																																		
The sun shines more directly on southern hemisphere in January so the sun's energy is concentrated causing South America to get warm in January												Absent																										
More hours of sunlight results in greater heating of the Earth																																						
In January, the southern hemisphere has more hours of daylight and less hours of nighttime so the sun has longer each day to heat the southern hemisphere.																																						

Features consistent with misconceptions/problems	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	31	32	33	34	34	36		
Seasons occur because of the distance between Earth and the sun	✓															✓																						
The tilt is always pointed so either the north or the south poles always faces away from the sun.												Absent																										
Its warmer when there are no clouds in the summer, and clouds form in the winter.																																						
The equator is always the warmest place on Earth, and the equator goes through South America		✓	✓	✓		✓		✓			✓		✓	✓	✓			✓			✓			✓														
Earth's tilt causes it to be warmer (shallow response that doesn't consider angle of light or length of day)									✓																													

Teacher Name: _____

Teacher 1 Post

Circle One: PRE **POST**

Features Analysis Chart

Describe the assessment item:

Q#3: Look at the picture of the Earth. Notice where South America is located. A. draw a picture below that shows why it is hot (like summer) in January in South America. B. Explain your drawing.

Describe the ideal response:

Drawing should show the Earth and the Sun with the Earth tilted so that the southern hemisphere is pointed toward the sun and the northern hemisphere points away from the sun. The drawing may also indicate how the sun hits the Earth to demonstrate that the southern hemisphere is receiving more hours of daylight (compared to hours of nighttime) in this position. Explanation: It is hot (like summer) in January in South America because Earth is tilted. The tilt of the Earth causes two different things to happen. First, the sun shines more directly on Southern hemisphere in January so the Sun's energy is more concentrated than the northern hemisphere (where the sun's energy is more spread out), and so South America gets warmer than North America in January. Second, the southern hemisphere has more hours of sunlight each day, so in addition to catching more of the sun's energy, the sun shines longer each day, so it gets warmer.

* Copies of each

Features of the a complete, accurate response	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	31	32	33	34	34	36		
Earth is tilted.		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
More direct sunlight results in greater heating of the Earth			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
The sun shines more directly on southern hemisphere in January so the sun's energy is concentrated causing South America to get warm in January			✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
More hours of sunlight results in greater heating of the Earth							✓												✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
In January, the southern hemisphere has more hours of daylight and less hours of nighttime so the sun has longer each day to heat the southern hemisphere.			✓			✓	✓									✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Features consistent with misconceptions/problems	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	31	32	33	34	34	36			
Seasons occur because of the distance between Earth and the sun																																							
The tilt is always pointed so either the north or the south poles always faces away from the sun.																																							
Its warmer when there are no clouds in the summer, and clouds form in the winter.																																							
The equator is always the warmest place on Earth, and the equator goes through South America	✓	✓	✓							✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Earth's tilt causes it to be warmer (shallow response that doesn't consider angle of light or length of day)		✓																																					