Physical Geography Worksheet #1   Instructor: McGlade   Name __Key__
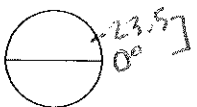
due date in Canvas –

No credit will be earned if correct calculations are not shown and mini model of globe is not included on sheet - and, as shown in instructor video instructions, is not marked with latitudes of observer and sub-solar pt.
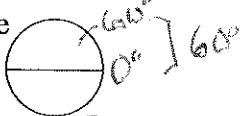
1. Identify the latitude of the sub solar point on the following days, no calculation needed (0.5 pts. each)
a. March 22 $0°$
b. December 22 $23.5° S$
c. June 22 $23.5° N$
d. September 22 $0°$

2. Calculate solar noon solar altitude for the following latitudes for September 22. (2 pts. each, box around answer)
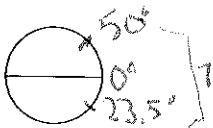
a. Tropic of Cancer $90° - 23.5° = \boxed{66.5°}$

b. 33° S latitude $90° - 33° = \boxed{57°}$

c. 60° N. latitude $90 - 60 = \boxed{30°}$
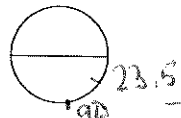
d. Antarctic Circle $90° - 66.5° = \boxed{23.5°}$

3. Calculate solar noon solar altitude for the following latitudes for December 22. (2 pts. each, box around answer)

a. Salem Oregon 45° N $90° - (45° + 23.5°) = 90 - 68.5° = \boxed{21.5°}$

b. 50° North $90° - 73.5° = \boxed{16.5°}$

c. 12° South $90 - (23.5 - 12) = 90 - 11.5 = \boxed{78.5°}$

d. The South Pole $90 - 66.5 = \boxed{23.5°}$
$90 - 23.5 =$ Arc distance of $66.5°$

4. Assume that the higher the solar altitude, the greater the risk of sunburn. A friend of yours states that on June 22, she was in Brazil at a latitude of 20 degrees S. She claims that the risk of sunburn is greater there than in Oregon (45 N latitude) for the same date. Is she correct? Assume solar noon for both locations. (2 pts.)

Oregon $90 - (45 - 23.5) = 90 - 21.5 = \boxed{68.5°}$

Brazil $90° - 43.5 = 46.5$