

Albedo Assessment Questions

1. Which has a **higher** albedo, an asphalt parking lot or a snow-covered field?
 - a) asphalt parking lot
 - b) snow-covered field
 - c) they have the same albedo
 - d) more information is needed to answer this question

2. Which has a **lower** albedo, a sandy desert or a forest?
 - a) sandy desert
 - b) forest
 - c) they have the same albedo
 - d) more information is needed to answer this question

3. Imagine two planets. Planet Alpha is completely covered by an ocean, and has an overall average albedo of 10%. Planet Beta is blanketed by clouds, and has an overall average albedo of 80%. Which planet reflects more sunlight back into space?
 - a) Planet Alpha
 - b) Planet Beta
 - c) the two planets reflect the same amount of light
 - d) more information is needed to answer this question

4. Imagine you are looking at two plots of land while flying over in an airplane at midday. Plot #1 looks very bright. Plot #2 looks very dark. Which plot of land has a **lower** albedo?
 - a) Plot #1
 - b) Plot #2
 - c) they have the same values for albedo
 - d) more information is needed to answer this question

5. Refer to the list of albedo values (below). Order these three surfaces - fresh snow, grasslands, and asphalt - from **highest** albedo to **lowest** albedo.

- a) snow, asphalt, grasslands
- b) asphalt, grasslands, snow
- c) snow, grasslands, asphalt
- d) asphalt, snow, grasslands
- e) grasslands, snow, asphalt
- f) grasslands, asphalt, snow

List of Albedo Values

Estimates of the precise albedo for a given surface vary substantially in the published literature. Most sources list a range of values, such as 80-95% for fresh snow. Different sources sometimes list different values for a given surface type. For reference, here are some examples:

- Fresh snow or ice = 60-90% or 80-95%
- Old, melting snow = 40-70%
- Sea ice = 25-60%
- Clouds = 40-90%
- Forest = 5-20% or 10-20%
- Tropical forests = 13% or Woodland = 14%
- Crops or grasslands = 10-25%
- Grasslands = 18-25% or 20%
- Grass = 25-30%
- Soil = 5-30%
- Water = 5-10% or 8-10% or 10-60%
- Clouds = 40-90%
- Desert sand = 30-50% or Sandy desert = 37%
- Stony desert = 24%
- Tundra = 15-35%
- Asphalt = 5-10% or 4-12%
- Concrete (dry) = 17-27% or 55%
- Brick or stone = 20-40%
- Dark roof = 8-18% or Light roof = 35-50%
- Moon = 6-14% (some bright areas 17-30%)