## Next-Time Question

You're a space gear consultant to a manufacturer that wants to encase some instruments in a covering that will have two properties:

- absorb as little energy as possible on the side of the package facing the Sun.
- 2. emit as little energy as possible on the side facing away from the Sun.

You should recommend a covering with

- a) the side facing the Sun black and the other side shiny.
- b) the side facing the Sun shiny and the other side black.
- c) both sides shiny.
- d) both sides black.





## Nontent Explanation

You're a space gear consultant to a manufacturer that wants to encase some instruments in a covering that will have two properties:

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- c) both sides shiny.
  - d) both sides black.

## Answer: c

Surfaces that absorb more light (and usually more infrared radiation as well) are black. So you don't want the side in the Sun to be black. Go for shiny, which will reflect rather than absorb energy. Since poor absorbers are also poor emitters, go for shiny on the side facing away from the Sun also. So shiny surfaces on both sides of the covering will will mean less absorption of solar radiation on one side and less emission on the other.

Light incident upon a surface can be either absorbed or reflected. Usually both occur to some degree. When absorption dominates, the surface is black. When reflection dominates, the surface is shiny. The rate of absorption or reflection depends on surface composition—the emissivity of the object's surface.



