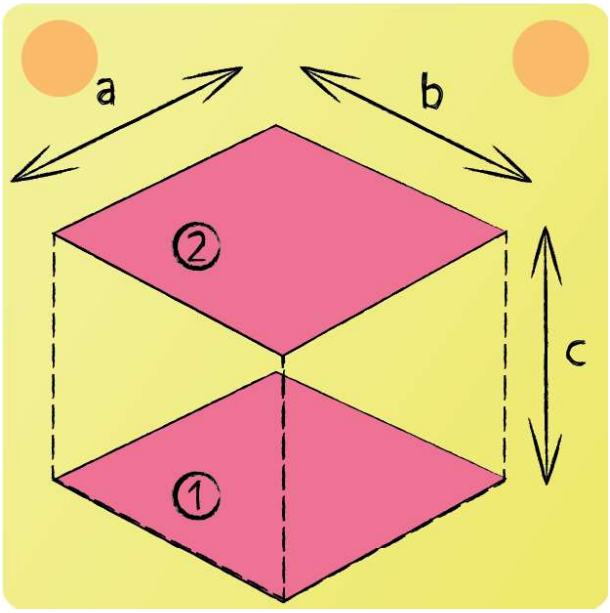
# Exam Preparation - Radiation 4




The distance of two parallel blackbody rectangles is changed from $c = 2$ m to $c = 8$ m. Determine the percentual change in the rate of radiation heat transfer between the surfaces.

Before:

$$\frac{Y}{D} = 3 \ \wedge \ \frac{X}{D} = 4 \ \Rightarrow \Phi_{1\to 2} = 0.58$$

After:

$$\frac{Y}{D} = 0.75 \ \wedge \ \frac{X}{D} = 1 \ \Rightarrow \Phi_{1\to 2} = 0.165$$

And thus:

$$\Delta\dot{Q}_{1\to 2} = \frac{\dot{Q}_{1\to 2}\left(c=8\right) - \dot{Q}_{1\to 2}\left(c=2\right)}{\dot{Q}_{1\to 2}\left(c=2\right)} = \frac{\Phi_{1\to 2}\left(c=8\right) - \Phi_{1\to 2}\left(c=2\right)}{\Phi_{1\to 2}\left(c=2\right)} = -0.716$$

We have a reduction of 72% radiation heat transfer between the plates.