# What Are Daylighting Strategies?

Worksheet

Daylighting strategies are design methods - orientation, glazing, light shelves, skylights, and shading - used to maximize useful daylight indoors while controlling glare, often measured with the daylight factor.

## Questions

1. What does the daylight factor measure?

A) The ratio of indoor to outdoor illuminance
B) The total wattage of electric lights
C) The U-value of a window
D) The angle of the sun at noon

2. Which device redirects daylight deeper into a room while shading the area beneath it?

A) Double-glazed unit
B) Light shelf
C) Vapor barrier
D) Damp-proof course

3. Indoor illuminance is 200 lux and outdoor overcast illuminance is 10,000 lux. What is the daylight factor?

A) 0.2%
B) 2%
C) 20%
D) 200%

4. Why is glare control included in daylighting strategy?

A) It increases heating costs
B) Excess uncontrolled daylight causes visual discomfort and heat gain
C) It reduces the daylight factor to zero
D) It is unrelated to window design

5. A classroom has an indoor illuminance of 250 lux at the back wall under an overcast sky where outdoor horizontal illuminance is 10,000 lux. Find the daylight factor.

6. An office point receives 150 lux indoors while the overcast outdoor illuminance is 12,000 lux.

7. Design target: DF = 3% under an outdoor illuminance of 8,000 lux. What indoor illuminance is required?

8. Define: What is the daylight factor (DF)?

9. Define: Name three daylighting devices.

10. Define: Why use an overcast sky for daylight factor calculations?

# Answer Key

1. A) The ratio of indoor to outdoor illuminance - DF = (Ei/Eo) 100 compares indoor light level to outdoor overcast illuminance.

2. B) Light shelf - A light shelf bounces light onto the ceiling and shades the zone directly below it.

3. B) 2% - DF = (200/10000)100 = 2%.

4. B) Excess uncontrolled daylight causes visual discomfort and heat gain - Bright, unshaded daylight can cause glare and unwanted solar heat gain, so shading/diffusing devices are essential.

5. DF = (Ei/Eo) 100 DF = (250/10000) 100 DF = 2.5%

6. DF = (150/12000) 100 DF = 1.25% This is below the recommended 2% minimum for well-daylit spaces.

7. DF = (Ei/Eo) 100 3 = (Ei/8000) 100 Ei = 0.03 8000 = 240 lux

8. The ratio of indoor to outdoor illuminance (overcast sky) expressed as a percentage: DF = (Ei/Eo) 100.

9. Light shelves, skylights/clerestories, and light tubes (or diffusing glazing).

10. It gives a standard, worst-case diffuse-light condition independent of sun position, so results are comparable.