What Are Barrier-Free Design Standards?

Worksheet

Barrier-free design standards set measurable limits, such as a maximum ramp slope of 1:12 (about 8.33%), calculated as Slope (%) = (Rise / Run) 100, so wheelchair users and others can move safely and independently.

Questions

1. What is the maximum ramp slope allowed by ADA barrier-free standards?

A) 1:8
B) 1:12
C) 1:20
D) 1:6

2. A ramp has Rise = 0.3 m and Run = 3.6 m. What is its slope?

A) 8.33%
B) 10%
C) 12%
D) 3.6%

3. When are handrails required on a ramp?

A) Never
B) When rise exceeds 6 inches (150 mm)
C) Only on outdoor ramps
D) Only if the ramp is curved

4. A ramp with Rise = 0.5 m, Run = 4 m has what slope, and is it compliant with 1:12?

A) 12.5%, non-compliant
B) 8.33%, compliant
C) 5%, compliant
D) 12.5%, compliant

5. A ramp rises 0.45 m over a horizontal run of 5.4 m. Find its slope and check ADA compliance.

6. An entrance has a 0.2 m rise. What is the minimum ramp run required to meet the 1:12 maximum slope?

7. A proposed ramp has Rise = 0.6 m and Run = 6 m. Determine its slope ratio and whether it meets 1:12.

8. Define: What is the maximum ramp slope under barrier-free standards (ADA)?

9. Define: What is the ramp slope formula?

10. Define: What is required if a ramp rises more than 6 inches (150 mm)?

Answer Key

1. B) 1:12 - 1:12 (about 8.33%) is the maximum slope for a standard accessible ramp.

2. A) 8.33% - Slope = (0.3/3.6) 100 = 8.33%, exactly 1:12.

3. B) When rise exceeds 6 inches (150 mm) - Barrier-free codes require handrails on both sides once rise exceeds about 6 inches.

4. A) 12.5%, non-compliant - Slope = (0.5/4)100 = 12.5%, which is steeper than the 8.33% (1:12) maximum - not compliant.

5. Slope = (Rise/Run) 100 Slope = (0.45/5.4) 100 = 8.33% This equals the 1:12 (8.33%) maximum, so it is compliant.

6. Max slope = 1/12 = 8.33% Run = Rise / (Slope/100) Run = 0.2 / 0.0833 = 2.4 m

7. Slope = (0.6/6) 100 = 10% 10% = 1:10, which is steeper than the 1:12 (8.33%) maximum - non-compliant.

8. 1:12, or about 8.33% - 1 inch of rise for every 12 inches of run.

9. Slope (%) = (Rise / Run) 100.

10. Handrails on both sides.