What Is Universal Design and Accessibility?

Worksheet

Universal design is the practice of designing environments to be usable by all people, to the greatest extent possible, without adaptation; accessibility standards (like a maximum 1:12 ramp slope) set the specific dimensions that make this possible.

Questions

1. What is the maximum recommended slope for a wheelchair ramp?

A) 1:4
B) 1:8
C) 1:12
D) 1:20

2. A ramp must rise 45 cm to reach a doorway. What is the minimum ramp length at a 1:12 slope?

A) 270 cm
B) 450 cm
C) 540 cm
D) 45 cm

3. Which of these is NOT one of the 7 Principles of Universal Design?

A) Equitable use
B) Low physical effort
C) Maximum ornamentation
D) Tolerance for error

4. What is the purpose of a curb cut?

A) To drain rainwater faster
B) To let wheelchairs and strollers cross between street and sidewalk
C) To slow down traffic
D) To mark a pedestrian crossing

5. A wheelchair ramp needs to rise 60 cm to reach a raised entrance. What is the minimum ramp length required under the 1:12 slope rule?

6. A hallway is being designed for wheelchair accessibility. Accessibility standards require a minimum clear door width of 81 cm. If a door frame is 90 cm wide, is it compliant?

7. A wheelchair needs a clear turning circle of 150 cm diameter in a bathroom. If the available space is 140 cm 140 cm, does it meet the standard?

8. Define: What is universal design?

9. Define: What is the maximum slope for an accessible ramp?

10. Define: What is a curb cut?

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Answer Key

1. C) 1:12 - A 1:12 slope means 12 units of horizontal ramp length for every 1 unit of vertical rise - the standard maximum for accessible ramps.

2. C) 540 cm - L = R 12 = 45 12 = 540 cm.

3. C) Maximum ornamentation - Maximum ornamentation isn't a universal design principle; the seven focus on usability, flexibility, and low effort, not decoration.

4. B) To let wheelchairs and strollers cross between street and sidewalk - Curb cuts ramp the sidewalk down to street level so wheelchair and stroller users don't have to step up or down.

5. Maximum slope = 1:12, meaning 12 cm of ramp length per 1 cm of rise. Minimum length = rise 12 = 60 12 = 720 cm = 7.2 m

6. Clear opening width = frame width hardware/hinge allowance (~5 cm) Clear width = 90 5 = 85 cm 85 cm > 81 cm minimum compliant

7. Required turning diameter = 150 cm Available space = 140 cm 140 cm (smaller than 150 cm) 140 cm < 150 cm does not meet the minimum turning radius requirement

8. Designing products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation.

9. 1:12 - 1 unit of rise for every 12 units of ramp length (about 8.3%, or roughly 4.8).

10. A ramped cut in a sidewalk curb that lets wheelchairs, strollers, and carts transition between street and sidewalk levels.

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