What is a Roof System?

Worksheet

A roof system is the combination of structure (trusses, rafters, or slabs) and covering (tiles, membrane, metal) that spans the top of a building to shed water and insulate the interior from weather.

Questions

1. What is the main advantage of a steep pitched roof in snowy climates?

A) It looks decorative
B) It sheds snow quickly, avoiding overload
C) It costs less than a flat roof always
D) It needs no structure

2. What makes a flat roof watertight despite its low slope?

A) Gravity alone
B) A continuous waterproof membrane
C) Heavy tiles
D) Open joints

3. Which roof structure is best suited to spanning a wide column-free warehouse?

A) Simple rafters
B) Roof trusses
C) A single ridge beam only
D) No structure needed

4. What is a common benefit of flat roofs in dense urban buildings?

A) Faster water drainage than pitched roofs
B) Usable terrace or garden space
C) No maintenance required
D) Cannot support any load

5. A house in a heavy-snowfall region needs a roof that sheds snow load quickly. What pitch and system fits best?

6. An apartment building in a dry Mediterranean city wants extra outdoor space on top. Which roof type works?

7. A 20 m-wide industrial warehouse needs a roof spanning without interior columns. What system covers it?

8. Define: What is a roof system made of?

9. Define: Pitched vs flat roof - key difference?

10. Define: Why do snowy climates favor steep roofs?

Answer Key

1. B) It sheds snow quickly, avoiding overload - Steep slopes let snow slide off before accumulated weight can overload the roof structure.

2. B) A continuous waterproof membrane - Flat roofs rely on a sealed waterproof membrane plus a slight drainage slope, not gravity shedding alone.

3. B) Roof trusses - Trusses triangulate members to span wide distances efficiently without interior columns.

4. B) Usable terrace or garden space - Flat roofs can double as usable outdoor space, which pitched roofs generally cannot provide.

5. Heavy snow load favors a steep pitch, often 35-45 A steep gable or hip roof with a strong truss lets snow slide off before it accumulates and overloads the structure A flat roof here would need constant reinforcement to resist standing snow weight

6. Climate is dry with low rainfall, reducing drainage risk A flat roof with a 2% drainage slope and waterproof membrane can double as a rooftop terrace or garden This maximizes usable area that a pitched roof would waste

7. Span = 20 m, too wide for simple rafters A series of steel roof trusses spanning the full 20 m, spaced along the building length, carries the roof deck without interior supports Corrugated metal sheeting or membrane is then laid over purlins fixed to the trusses

8. A structural frame (trusses, rafters, or slab) plus a weatherproof covering (tiles, membrane, or metal) that sheds water.

9. Pitched roofs slope steeply to shed water by gravity; flat roofs are nearly level and rely on a waterproof membrane plus slight drainage slope.

10. A steep pitch lets snow slide off before it piles up and overloads the structure.