

How Do Weather Conditions Affect Driving?

Worksheet

Weather conditions reduce traction, visibility, and vehicle stability. Wet roads triple stopping distance; snow can increase it 8–10 times. Fog and wind further impair control and awareness.

Questions

1. Wet road stopping distance vs. dry:

- A) Same
- B) 2× longer
- C) 3× longer
- D) 5× longer

2. Snow stopping distance is approximately:

- A) 2× dry
- B) 5× dry
- C) 8–10× dry
- D) 15× dry

3. At 60 km/h on wet road, stopping distance is:

- A) 24 m
- B) 36 m
- C) 48 m
- D) 72 m

4. Hydroplaning occurs when:

- A) Ice is present
- B) Water film separates tire from road at high speed
- C) Temperature drops below 0°C
- D) Tire pressure is low

5. A driver approaches a stop sign on a wet road at 60 km/h. How much farther does the car travel compared to dry conditions?

6. Heavy snow begins during a 100 km/h highway drive.

7. Fog severely reduces visibility to 50 m on an expressway.

8. Define: How much does rain affect stopping distance?

9. Define: How much longer is stopping distance in snow?

10. Define: What causes reduced traction in wet conditions?

Answer Key

1. C) 3× longer — Water reduces friction; stopping distance nearly triples (64 m dry → ~130 m wet).
2. C) 8-10× dry — Snow severely reduces traction; 64 m dry becomes ~500-640 m in heavy snow.
3. C) 48 m — $(60 \text{ km/h})^2 / (2 \times 5 \text{ m/s}^2) \approx 36 \text{ m}$ dry; ~48 m on wet road (1.3×).
4. B) Water film separates tire from road at high speed — Hydroplaning happens when a water layer prevents rubber-to-road grip; high speed accelerates onset.
5. Dry road at 60 km/h: stopping distance $\approx 24 \text{ m}$ Wet road at 60 km/h: stopping distance $\approx 48 \text{ m}$ (doubled) Water reduces friction coefficient from 0.8 to 0.4 Driver must spot the hazard and brake 24 m earlier to stop in time
6. Dry snow: stopping distance increases from 64 m to ~300 m Driver does not immediately reduce speed Vehicle slides when braking; skids across lanes Multiple-vehicle collision; risk of rollover on curves
7. Hazards (disabled vehicle, debris) are invisible until 50 m At 100 km/h, the car travels 28 m/sec; reaction distance < 50 m Driver cannot brake in time; collision Fog lights and hazard lights of stopped vehicles missed in haze
8. Wet roads triple stopping distance; friction drops from 0.8 to 0.4 coefficient.
9. 8-10 times longer than dry conditions; 64 m dry becomes ~640 m in heavy snow.
10. Water films prevent tire rubber from gripping road surface; hydroplaning occurs at high speeds.

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