Rational Method

Peak runoff from a small catchment.

Civil Engineering

For a small catchment, peak runoff is rainfall intensity times area times a runoff coefficient.

$Q = CiA/360$ · i in mm/h · A in hectares

C 0.9, i 50, A 2 ha — $Q = 0.25\ m^3/s$

Paved catchment.

Roofs and roads — $C = 0.7$ to 0.95

Little soaks in.

Grass over sand — $C = 0.1$ to 0.3

Most infiltrates.

THE COMMON MISTAKE

× **Using it on a large catchment**

✓ **Keep it small and mostly urban**

It assumes uniform rainfall over the whole area for the full time of concentration. Above roughly 100 to 200 hectares that stops being true.

Educational reference. Drainage design follows the sewerage or highway authority's method and its return period rules.