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Empirical Equations of Runoff Volume Formulas

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List of 23 Empirical Equations of Runoff Volume Formulas

Empirical Equations of Runoff Volume

Inglis and Dsouza Formula (1929)

1) Equation for Runoff for Deccan Plateau

Open Calculator

fx $$R = \left(\frac{1}{254}\right) \cdot P \cdot (P - 17.8)$$

ex $$16.88976\text{cm} = \left(\frac{1}{254}\right) \cdot 75\text{cm} \cdot (75\text{cm} - 17.8)$$

2) Equation for Runoff for Ghat Regions of Western India

Open Calculator

fx $$R = 0.85 \cdot P - 30.5$$

ex $$33.25\text{cm} = 0.85 \cdot 75\text{cm} - 30.5$$

Barlow's Formula (1915)

3) Barlow's Formula for Runoff

Open Calculator

fx $$R = K_b \cdot P$$

ex $$11.25\text{cm} = 0.15 \cdot 75\text{cm}$$

4) Barlow's Formula for Runoff in Average Catchment with Average or Varying Rainfall

Open Calculator

fx $R = 0.20 \cdot P$

ex $15\text{cm} = 0.20 \cdot 75\text{cm}$

5) Barlow's Formula for Runoff in Average Catchment with Continuous Downpour

Open Calculator

fx $R = 0.32 \cdot P$

ex $24\text{cm} = 0.32 \cdot 75\text{cm}$

6) Barlow's Formula for Runoff in Average Catchment with Light Rain

Open Calculator

fx $R = 0.16 \cdot P$

ex $12\text{cm} = 0.16 \cdot 75\text{cm}$

7) Barlow's Formula for Runoff in Flat Cultivated and Absorbent Soils with Average or Varying Rainfall

Open Calculator

fx $R = 0.10 \cdot P$

ex $7.5\text{cm} = 0.10 \cdot 75\text{cm}$

8) Barlow's Formula for Runoff in Flat Cultivated and Absorbent Soils with Continuous Downpour

Open Calculator

fx $R = 0.15 \cdot P$

ex $11.25\text{cm} = 0.15 \cdot 75\text{cm}$

9) Barlow's Formula for Runoff in Flat Cultivated and Absorbent Soils with Light Rain

Open Calculator

fx $R = 0.07 \cdot P$

ex $5.25\text{cm} = 0.07 \cdot 75\text{cm}$

10) Barlow's Formula for Runoff in Flat Partly Cultivated Stiff Soils with Average or Varying Rainfall

Open Calculator

fx $R = 0.15 \cdot P$

ex $11.25\text{cm} = 0.15 \cdot 75\text{cm}$

11) Barlow's Formula for Runoff in Flat Partly Cultivated Stiff Soils with Continuous Downpour

Open Calculator

fx $R = 0.18 \cdot P$

ex $13.5\text{cm} = 0.18 \cdot 75\text{cm}$

12) Barlow's Formula for Runoff in Flat Partly Cultivated Stiff Soils with Light Rain

Open Calculator

fx $R = 0.12 \cdot P$

ex $9\text{cm} = 0.12 \cdot 75\text{cm}$

13) Barlow's Formula for Runoff in Hills and Plains with Little Cultivation and Continuous Downpour

Open Calculator

$$R = 0.60 \cdot P$$

$$45\text{cm} = 0.60 \cdot 75\text{cm}$$

14) Barlow's Formula for Runoff in Hills and Plains with Little Cultivation and Light Rainfall

Open Calculator

$$R = 0.28 \cdot P$$

$$21\text{cm} = 0.28 \cdot 75\text{cm}$$

15) Formula for Runoff in Hills and Plains with Little Cultivation and Average or Varying Rainfall

Open Calculator

$$R = 0.35 \cdot P$$

$$26.25\text{cm} = 0.35 \cdot 75\text{cm}$$

16) Formula for Runoff in Very Hilly, Steep and Hardly any Cultivation Catchment with Light Rain

Open Calculator

$$R = 0.36 \cdot P$$

$$27\text{cm} = 0.36 \cdot 75\text{cm}$$

17) Runoff in Very Hilly, Steep and Hardly any Cultivation Catchment with Average or Varying Rainfall

Open Calculator

fx $$R = 0.45 \cdot P$$

ex $$33.75\text{cm} = 0.45 \cdot 75\text{cm}$$

18) Runoff in Very Hilly, Steep and Hardly any Cultivation Catchment with Continuous Downpour

Open Calculator

fx $$R = 0.81 \cdot P$$

ex $$60.75\text{cm} = 0.81 \cdot 75\text{cm}$$

Khoslas's Formula (1960)

19) Mean Monthly Temperature of Catchment given Monthly Losses

Open Calculator

fx $$T_f = \frac{L_m}{0.48}$$

ex $$29.16667^\circ\text{C} = \frac{14\text{cm}}{0.48}$$

20) Monthly Losses given Mean Monthly Temperature of Catchment

Open Calculator

fx $$L_m = 0.48 \cdot T_f$$

ex $$14.4\text{cm} = 0.48 \cdot 30^\circ\text{C}$$

21) Monthly Losses using Monthly Runoff

Open Calculator

fx $L_m = P_m - R_m$

ex $14\text{cm} = 32\text{cm} - 18\text{cm}$

22) Monthly Precipitation given Monthly Runoff

Open Calculator

fx $P_m = R_m + L_m$

ex $32\text{cm} = 18\text{cm} + 14\text{cm}$

23) Monthly Runoff

Open Calculator

fx $R_m = P_m - L_m$

ex $18\text{cm} = 32\text{cm} - 14\text{cm}$

Variables Used

- K_b Barlow's Runoff Coefficient
- L_m Monthly Losses *(Centimeter)*
- P Rainfall *(Centimeter)*
- P_m Monthly Rainfall *(Centimeter)*
- R Runoff *(Centimeter)*
- R_m Monthly Runoff *(Centimeter)*
- T_f Mean Monthly Temperature *(Celsius)*

Constants, Functions, Measurements used

- Measurement: **Length** in Centimeter (cm)
  Length Unit Conversion
- Measurement: **Temperature** in Celsius (°C)
  Temperature Unit Conversion

Check other formula lists

- **Empirical Equations of Runoff Volume Formulas**

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