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Scraper Production Formulas

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List of 25 Scraper Production Formulas

Scraper Production

1) Bank or Quantity of Scrap Produced

Open Calculator

fx $$B = \left(\frac{W_{load}}{\rho_m}\right)$$

ex $$9.4m^3 = \left(\frac{10.34kg}{1.1kg/m^3}\right)$$

2) Cycle Time given Trips per Hour for Excavating Scrap

Open Calculator

fx $$C_t = \left(\frac{W_T}{f}\right)$$

ex $$5.7h = \left(\frac{22.8}{4rev/h}\right)$$

3) Density of Material given Quantity of Scrap Produced

Open Calculator

fx $$\rho_m = \left(\frac{W_{load}}{B}\right)$$

ex $$1.055102kg/m^3 = \left(\frac{10.34kg}{9.8m^3}\right)$$

4) Haul Distance in Feet given Variable Time

Open Calculator

$$H_{ft} = (T_v \cdot 88 \cdot S_{mph}) - R_{ft}$$

$$66.396\text{ft} = (0.2\text{min} \cdot 88 \cdot 0.045\text{mi/h}) - 3.3\text{ft}$$

5) Haul Distance in Meter given Variable Time

Open Calculator

$$h_m = (T_v \cdot 16.7 \cdot S_{kmph}) - R_{meter}$$

$$6.804333\text{m} = (0.2\text{min} \cdot 16.7 \cdot 0.149\text{km/h}) - 1.49\text{m}$$

6) Load Given Production of Scrap by Machines

Open Calculator

$$L = \left(\frac{P_s}{f}\right)$$

$$18.75\text{m}^3 = \left(\frac{75.00\text{m}^3/\text{hr}}{4\text{rev/h}}\right)$$

7) Number of Scrapers Needed for Job

Open Calculator

$$N = \left(\frac{P_s}{P_u}\right)$$

$$6.818182 = \left(\frac{75.00\text{m}^3/\text{hr}}{11\text{m}^3/\text{hr}}\right)$$

8) Number of Scrapers Pusher can Load

Open Calculator

$$N_p = \left(\frac{T_s}{T_p}\right)$$

$$2.392027 = \left(\frac{7.2\text{min}}{3.01\text{min}}\right)$$

9) Production of Scrap by Machines

Open Calculator

$$P_s = (L \cdot f)$$

$$72.8\text{m}^3/\text{hr} = (18.2\text{m}^3 \cdot 4\text{rev/h})$$

10) Production per Unit Given Number of Scrapers Needed for Job

Open Calculator

$$P_u = \left(\frac{P}{N}\right)$$

$$2.477612\text{m}^3/\text{hr} = \left(\frac{4.98\text{m}^3/\text{hr}}{2.01}\right)$$

11) Production Required given Number of Scrapers Needed for Job

Open Calculator

$$P_s = N_s \cdot P_u$$

$$77\text{m}^3/\text{hr} = 7.0 \cdot 11\text{m}^3/\text{hr}$$

12) Production Required to Determine Number of Scrapers

Open Calculator

$$P_s = \left(\frac{B_{sp}}{t_{hr}}\right)$$

$$73.01587\text{m}^3/\text{hr} = \left(\frac{184\text{m}^3}{2.52\text{h}}\right)$$

13) Pusher Cycle Time given Number of Scrapers Pusher can Load

Open Calculator

$$T_p = \left(\frac{T_s}{N_p}\right)$$

$$0.6\text{min} = \left(\frac{7.2\text{min}}{12}\right)$$

14) Quantity given Production Required

Open Calculator

$$B_{sp} = (P_s \cdot t_{hr})$$

$$189\text{m}^3 = (75.00\text{m}^3/\text{hr} \cdot 2.52\text{h})$$

15) Return Distance in Feet given Variable Time

Open Calculator

$$R_{ft} = (T_v \cdot 88 \cdot S_{mph}) - H_{ft}$$

$$2.776\text{ft} = (0.2\text{min} \cdot 88 \cdot 0.045\text{mi/h}) - 66.92\text{ft}$$

16) Return Distance in Meter given Variable Time

Open Calculator

$$R_{meter} = (T_v \cdot 16.7 \cdot S_{kmph}) - h_m$$

$$1.894333\text{m} = (0.2\text{min} \cdot 16.7 \cdot 0.149\text{km/h}) - 6.40\text{m}$$

17) Scraper Cycle Time given Number of Scrapers Pusher can Load

Open Calculator

$$T_s = (N_p \cdot T_p)$$

$$36.12\text{min} = (12 \cdot 3.01\text{min})$$

18) Speed at Haul and Return in Kilometer per Hour given Variable Time

Open Calculator

$$S_{kmph} = \frac{h_m + R_{meter}}{16.7 \cdot T_v}$$

$$0.141737\text{km/h} = \frac{6.40\text{m} + 1.49\text{m}}{16.7 \cdot 0.2\text{min}}$$

19) Speed at Haul and Return in Miles per Hour given Variable Time

Open Calculator

$$S_{mph} = \frac{H_{ft} + R_{ft}}{88 \cdot T_v}$$

$$0.045338\text{mi/h} = \frac{66.92\text{ft} + 3.3\text{ft}}{88 \cdot 0.2\text{min}}$$

20) Trips per Hour for Excavating Scrap

Open Calculator

$$f = \left(\frac{W_T}{C_t}\right)$$

$$3.8\text{rev/h} = \left(\frac{22.8}{6\text{h}}\right)$$

21) Trips per Hour given Production of Scrap by Machines

Open Calculator

$$f = \left(\frac{P_s}{L}\right)$$

$$4.120879\text{rev/h} = \left(\frac{75.00\text{m}^3\text{/hr}}{18.2\text{m}^3}\right)$$

22) Variable Time when Haul and Return Distance is in Feet

Open Calculator

$$T_v = \frac{H_{ft} + R_{ft}}{88 \cdot S_{mph}}$$

$$0.201504\text{min} = \frac{66.92\text{ft} + 3.3\text{ft}}{88 \cdot 0.045\text{mi/h}}$$

23) Weight of Load Given Quantity of Scrap Produced

Open Calculator

$$W_{load} = (B \cdot \rho_m)$$

$$10.78\text{kg} = (9.8\text{m}^3 \cdot 1.1\text{kg/m}^3)$$

24) Working Time given Production Required

Open Calculator

$$t_{hr} = \left(\frac{B_{sp}}{P_s}\right)$$

$$2.453333\text{h} = \left(\frac{184\text{m}^3}{75.00\text{m}^3/\text{hr}}\right)$$

25) Working Time given Trips per Hour for Excavating Scrap

Open Calculator

$$W_T = (f \cdot C_t)$$

$$24 = (4\text{rev/h} \cdot 6\text{h})$$

Variables Used

- **B** Bank in Scraper *(Cubic Meter)*
- **B_{sp}** Bank in Scraper Production *(Cubic Meter)*
- **C_t** Cycle Time *(Hour)*
- **f** Trips per Hour *(Revolution per Hour)*
- **H_{ft}** Haul Distance in Feet *(Foot)*
- **h_m** Haul Distance *(Meter)*
- **L** Load in Scraper Production *(Cubic Meter)*
- **N** Number of Scraper
- **N_p** Number of Scraper a Pusher
- **N_s** Number of Scraper in Scraper Production
- **P** Production Required *(Cubic Meter per Hour)*
- **P_s** Production Required in Scraper Production *(Cubic Meter per Hour)*
- **P_u** Production per Unit *(Cubic Meter per Hour)*
- **R_{ft}** Return Distance in Foot in Scraper Production *(Foot)*
- **R_{meter}** Return Distance in Meter *(Meter)*
- **S_{kmph}** Speed in Kmph in Scraper Production *(Kilometer per Hour)*
- **S_{mph}** Speed in Miles per Hour in Scraper Production *(Mile per Hour)*
- **t_{hr}** Time in Scraper Production in Hour *(Hour)*
- **T_p** Pusher Cycle Time *(Minute)*
- **T_s** Scraper Cycle Time *(Minute)*
- **T_v** Variable Time in Scraper Production *(Minute)*

- W_{load} Weight of Load Scrap *(Kilogram)*
- W_T Working Time in Scraper Production
- ρ_m Density of Material in Scraper Production *(Kilogram per Cubic Meter)*

Constants, Functions, Measurements used

- Measurement: **Length** in Foot (ft), Meter (m)
  Length Unit Conversion
- Measurement: **Weight** in Kilogram (kg)
  Weight Unit Conversion
- Measurement: **Time** in Hour (h), Minute (min)
  Time Unit Conversion
- Measurement: **Volume** in Cubic Meter (m^3)
  Volume Unit Conversion
- Measurement: **Speed** in Mile per Hour (mi/h), Kilometer per Hour (km/h)
  Speed Unit Conversion
- Measurement: **Frequency** in Revolution per Hour (rev/h)
  Frequency Unit Conversion
- Measurement: **Volumetric Flow Rate** in Cubic Meter per Hour (m^3/hr)
  Volumetric Flow Rate Unit Conversion
- Measurement: **Density** in Kilogram per Cubic Meter (kg/m^3)
  Density Unit Conversion

Check other formula lists

- Bearing Capacity for Strip Footing for C-Φ Soils Formulas
- Bearing Capacity of Cohesive Soil Formulas
- Bearing Capacity of Non-cohesive Soil Formulas
- Bearing Capacity of Soils: Meyerhof's Analysis Formulas
- Foundation Stability Analysis Formulas
- Atterberg Limits Formulas
- Bearing Capacity of Soil: Terzaghi's Analysis Formulas
- Compaction of Soil Formulas
- Earth Moving Formulas
- Lateral Pressure for Cohesive and Non Cohesive Soil Formulas
- Minimum Depth of Foundation by Rankine's Analysis Formulas
- Pile Foundations Formulas
- Scraper Production Formulas
- Vibration Control in Blasting Formulas
- Void Ratio of Soil Sample Formulas
- Water Content of Soil and Related Formulas

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