



# Overtaking Sight Distance Formulas

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#### **List of 13 Overtaking Sight Distance Formulas**

#### Overtaking Sight Distance 🗗

1) Acceleration given Actual Overtaking Time and Overtaking Space 🗗



$$\mathbf{a}_{ ext{overtaking}} = rac{4 \cdot \mathbf{s}}{\mathrm{T}^2}$$

ex 
$$2.800532 \mathrm{m/s^2} = \frac{4 \cdot 27 \mathrm{m}}{(6.21 \mathrm{s})^2}$$

Open Calculator 2

#### 2) Actual Overtaking Distance

$$d_2 = 2 \cdot \mathrm{s} + \mathrm{V_{speed}} \cdot \sqrt{rac{4 \cdot \mathrm{s}}{\mathrm{a_{overtaking}}}}$$

Open Calculator

$$ext{ex} 79.81681 ext{m} = 2 \cdot 27 ext{m} + 6.88 ext{m/s} \cdot \sqrt{rac{4 \cdot 27 ext{m}}{7.67 ext{m/s}^2}}$$

3) Actual Overtaking Time given Distance Traveled by On-Coming Vehicle

$$ag{T} = rac{d_3}{V_{speed}}$$

Open Calculator

$$= 2.325581 s = \frac{16 m}{6.88 m/s}$$



#### 4) Actual Overtaking Time given Overtaking Space and Acceleration



Open Calculator

Open Calculator 2

Open Calculator 2

Open Calculator

Open Calculator

 $3.752444 ext{s} = \sqrt{rac{4 \cdot 27 ext{m}}{7.67 ext{m/s}^2}}$ 

5) Distance Traveled by On-Coming Vehicle fx  $d_3 = V_{\mathrm{speed}} \cdot T$ 

 $42.7248m = 6.88m/s \cdot 6.21s$ 

#### 6) Distance Traveled by Overtaking Vehicle

 $\mathbf{f} \mathbf{x} d_1 = V_{\mathrm{speed}} \cdot t_{\mathrm{reaction}}$ 

 $68.8m = 6.88m/s \cdot 10s$ 

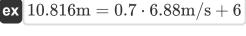
## 7) Overtaking Sight Distance given Distance Traveled 🗗

 $OSD = d_1 + d_2 + d_3$ 

62m = 25m + 21m + 16m

### 8) Overtaking Space

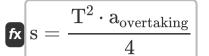
fx  $m s = 0.7 \cdot V_{speed} + 6$ 







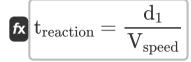
#### 9) Overtaking Space given Actual Overtaking Time and Acceleration



Open Calculator 🚰

 $ag{73.94666} = rac{\left(6.21 \mathrm{s}
ight)^2 \cdot 7.67 \mathrm{m/s^2}}{4}$ 

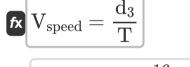
#### 10) Reaction Time Given Overtaking Distance and Vehicle Speed



Open Calculator 🗗

 $= \frac{25 \text{m}}{6.88 \text{m/s}}$ 

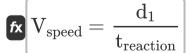
#### 11) Vehicle Speed given Distance Traveled by On-Coming Vehicle



Open Calculator 🗗

= 2.57649 $\mathrm{m/s} = rac{16 \mathrm{m}}{6.21 \mathrm{s}}$ 

#### 12) Vehicle Speed Given Overtaking Distance and Reaction Time



Open Calculator 🗗

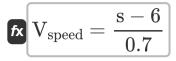
 $\boxed{2.5 \text{m/s} = \frac{25 \text{m}}{10 \text{s}}}$ 







#### 13) Vehicle Speed given Overtaking Space



Open Calculator 🗗

$$m ex = 30m/s = rac{27m - 6}{0.7}$$



#### Variables Used

- a<sub>overtaking</sub> Overtaking Acceleration (Meter per Square Second)
- **d**<sub>1</sub> Distance Traveled by Overtaking Vehicle (*Meter*)
- **d**<sub>2</sub> Distance of Actual Overtaking (*Meter*)
- d<sub>3</sub> Distance Traveled by On-Coming Vehicle (*Meter*)
- OSD Overtaking Sight Distance (Meter)
- **S** Overtaking Space (Meter)
- T Actual Overtaking Time (Second)
- t<sub>reaction</sub> Reaction Time (Second)
- V<sub>speed</sub> Vehicle Speed (Meter per Second)



#### Constants, Functions, Measurements used

- Function: sqrt, sqrt(Number)
   Square root function
- Measurement: Length in Meter (m)

  Length Unit Conversion
- Measurement: Time in Second (s)

  Time Unit Conversion
- Measurement: Speed in Meter per Second (m/s)
   Speed Unit Conversion
- Measurement: Acceleration in Meter per Square Second (m/s²)

  Acceleration Unit Conversion





#### **Check other formula lists**

Overtaking Sight Distance
 Formulas

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