

# ***Graphing, Conversions, and Unit Analysis***

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## Why Graph?

- In general, graphs combine data into clearly visible relationships.
- These relationships also help us predict the results of other situations, not yet tested.
- For example:

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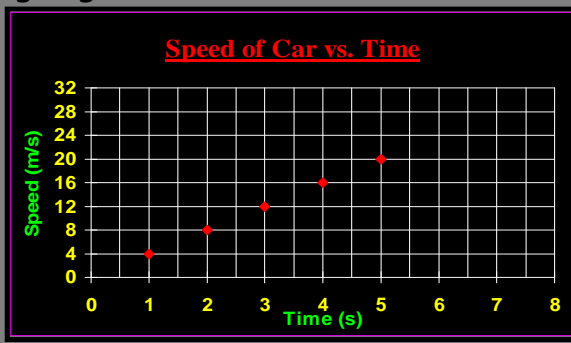
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What speed would the car be going at 6 seconds? At 7 seconds?



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## Parts of a Graph

➤ When grading graphs, I will look for:

- Axes
- Labels
- Title
- Data Points
- Best Fit Line or Curve
- Orientation

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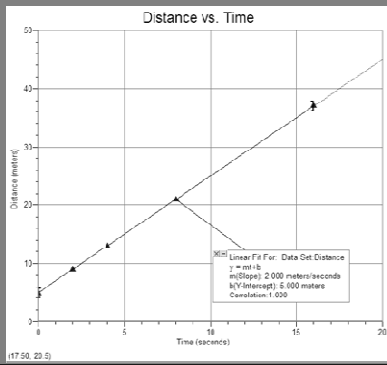
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## Using Graphical Analysis



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## Axes & Variables

➤ X-Axis

- Independent Variable:

➤ Y Axis

- Dependent Variable:

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## Variable Relationships - Generalizations

- Direct Relationships
  - As one variable increases, the other increases
  - As one variable decreases, the other variable decreases
- Inverse Relationships
  - As one variable increases, the other decreases
  - As one variable decreases, the other variable increases

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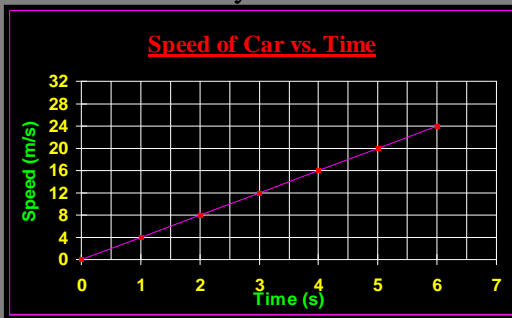
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## Variable Relationships

Linear:  $y = mx + b$



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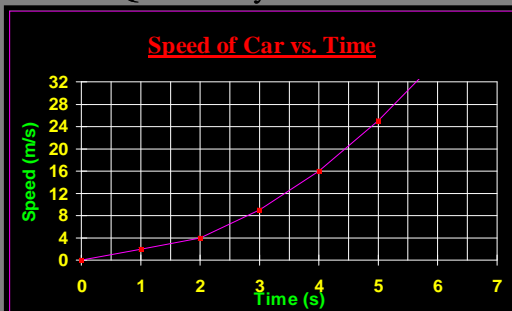
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## Variable Relationships

Quadratic:  $y = mx^2 + b$



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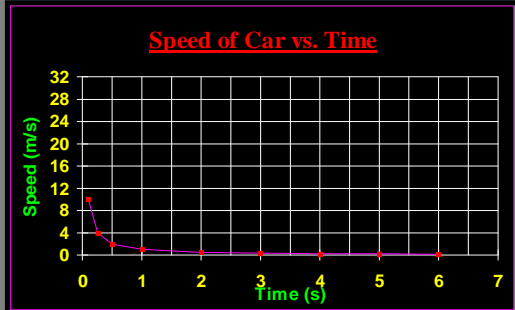
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## Variable Relationships

Inverse:  $y = m/x + b$



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## Conversions

➤ Convert 45.0 km to cm.

➤ Convert 32 km/hr to m/s.

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## Units-Checking Your Work

➤ Keep track of the units as you solve problems. If the units don't come out right or don't make sense, your answer could be wrong.

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### Units-Checking Your Work

➤ Find the equation to find the time it takes a car traveling 50 mph to go 30 miles.

➤ Try

$$\text{time} = \text{speed} \times \text{distance}$$

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### Units-Checking Your Work

➤ Try

$$\text{time} = \text{distance} \div \text{speed}$$

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### Return to Honors Physics Notes

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