Using the GRASS Method to Solve Problems

ROSEDALE ACADEMY

What is the GRASS method?

- The GRASS method is an organizational tool that allows students to solve problems in an organized and logical way.

Why Use the GRASS Method?

- The GRASS method is useful for both students and teachers.
- For students, using the GRASS method gives students a set of guidelines that helps:
  - organize their solutions
  - uncover the relevant information in a problem
  - find the ultimate goal of the problem
  - guide students to the proper tools (equations) to use in solving the problem
- The GRASS method also allows students to clearly demonstrate their understanding of the concepts being assessed.

Why Use the GRASS Method?

- For teachers, the GRASS method has several benefits:
  - makes sure that all students are presenting their solutions in a uniform format.
  - allows teachers to see the thought process that students are using to solve problems.
  - allows teachers to identify areas where students may be struggling or may need additional support.

Using the GRASS Method

Given - identify the information GIVEN in the problem.

Required – identify the information REQUIRED (what are you trying to determine).

Analyze – ANALYZE (figure out) which equation, rule or principle applies to this type of problem.

Solve – if using an equation, substitute the values given in the problem and SOLVE the equation.

Statement – rewrite your answer as a STATEMENT using a brief sentence that clearly answers the problem.

How to Use the GRASS Method

A motorcycle drives along a straight road with a velocity of 30.0 m/s [forward]. The driver uses the brakes to come to a complete stop, slowing down at a rate of -5.0 m/s^2 [forward]. How long does it take for the motorcycle to come to a complete stop?

A motorcycle drives along a straight road with a velocity of **30.0 m/s [forward].** The driver uses the brakes to come to a **complete stop**, **slowing down** at a rate of **-5.0 m/s² [forward].** How long does it take for the motorcycle to come to a complete stop?

Given

Required

Analyze

Solve

Statement

Given:

$\vec{v}_i = 30.0$ m/s [forward] ; $\vec{a} = -5.0$ m/s^2 [forward]; $\vec{v}_f = 0$ m/s

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Required:

$\Delta t = ?$

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Required:

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Analyze:

$\vec{v}_f = \vec{v}_i + \vec{a}\Delta t$

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Analyze:

$$\vec{v}_f = \vec{v}_i + \vec{a}\Delta t$$

Solve:

$$\vec{v}_f = \vec{v}_i + \vec{a}\Delta t$$

$$\Delta t = \frac{\vec{v}_f - \vec{v}_i}{\vec{a}}$$

$$\Delta t = \frac{0 \text{ m/s} - 30.0 \text{ m/s}}{-5.0 \text{ m/s}^2}$$

$$\Delta t = 6.0 \text{ s}$$

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Given
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Analyze
Solve
Statement

Given:

$\vec{v}_i = 30.0$ m/s [forward] ; $\vec{a} = -5.0$ m/s^2 [forward]; $\vec{v}_f = 0$ m/s

Required:

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Analyze:

$\vec{v}_f = \vec{v}_i + \vec{a}\Delta t$

Solve:

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$$\Delta t = \frac{0 \text{ m/s} - 30.0 \text{ m/s}}{-5.0 \text{ m/s}^2}$$

$\Delta t = 6.0$ s

Statement:

Therefore it takes 6.0 seconds for the motorcycle to stop.