

Solutions for sample_questions.pdf

Here are the solutions to the extracted questions, with step-by-step reasoning:

Q1. Sample Questions

This is a heading and does not require a solution.

Q2. 1. What is $7 + 5$?

Step-by-step reasoning:

1. Identify the operation: This is an addition problem.
2. Add the two numbers together.

Answer:

$$7 + 5 = 12$$

Q3. 2. Explain the difference between speed and velocity.

Step-by-step reasoning:

1. Define speed: Focus on its nature as a scalar quantity.
2. Define velocity: Focus on its nature as a vector quantity.
3. Highlight the key distinguishing factor: direction.

Answer:

The fundamental difference between speed and velocity lies in whether they include a direction component:

* **Speed** is a **scalar quantity** that measures how fast an object is moving. It only has magnitude (a numerical value). For example, a car traveling at 60 km/h.

* **Velocity** is a **vector quantity** that measures how fast an object is moving *and* in what direction. It has both magnitude and direction. For example, a car traveling at 60 km/h North.

In summary:

- * **Speed = Magnitude only** (e.g., 60 km/h)
- * **Velocity = Magnitude + Direction** (e.g., 60 km/h North)

Q4. 3. Solve: If $f(x) = x^2 + 3x + 2$, find $f(2)$.

Step-by-step reasoning:

1. Understand the notation $f(2)$: This means we need to substitute the value $x = 2$ into the given function $f(x)$.
2. Replace every instance of x in the function with 2 .
3. Perform the arithmetic operations in the correct order (exponents first, then

multiplication, then addition).

****Answer:****

Given the function: $f(x) = x^2 + 3x + 2$

To find $f(2)$, substitute $x = 2$ into the function:

1. $f(2) = (2)^2 + 3(2) + 2$
2. $f(2) = 4 + 6 + 2$
3. $f(2) = 12$

Therefore, $f(2) = 12$.