MATHEMATICAL PROCESSES

Mathematical processes refer to the skills and strategies needed in order to solve mathematical problems.

- **Problem solving skills** refer to the basic mathematical techniques that must be used to solve a problem.
- If a problem were to determine the perimeter of a square, a needed skill would be the knowledge of what perimeter means and the ability to add the numbers.
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Real world connections can refer to banking situations, sporting events, advertising, driving, comparing population, calculating recipes, predicting weather and many more situations.

How to use mathematical processes

Problem solving skills refer to the basic mathematical techniques that must be used to solve a problem. Problem solving skill refer to techniques such as PEMDAS, using formulas, knowing how to use the mathematical operations with all real numbers, such as fractions and negative numbers, and the basics for solving any mathematical problem.

For example, what is the result of $3^2 - 6 \div 3 + 3$?

Ex. $3^2 - 6 \div 3 + 3 = 9 - 2 + 3 = 10$

*In order to solve this correctly, a person must know to use **PEMDAS**. If **PEMDAS** is not followed, the answer will be*

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- o **Break it down** → 2 pencils for 9 students + 2 pencils for 9 students
- o **Act it out** → physically give 2 pencils to 18 students and then count the pencils.

These are only three strategies that can be used to solve this problem. There are many others. If one strategy does not help to find the solution to a problem, using another strategy may help to solve it.

An answer should be **checked as proof** that it is correct. For example, the inequality, $2x - 4y \leq 16$ is solved and the answer is $y \leq 1/2x - 4$ is found. Is this correct? Why?

Ex. $2x - 4y \leq 16 \rightarrow -4y \leq -2x + 16 \rightarrow y \geq 2/4x - 16/4 \rightarrow y \geq 1/2x - 4$

> *The answer is incorrect because the inequality sign was not switched when the -4 was divided by both sides. The correct answer should be $y \geq 1/2x - 4$.*

- If an answer cannot be checked as with an equation, it should be reasoned that it is correct based on the given information.

Mathematical processes are used in **every day life** in many situations. Usir ng and

Try

1. W ?

2. A k

3. W that 2 tops can be worn with 3 pairs of pants?

4. What **strategy** can be used to find which ordered pair make the equation, $y = 6x - 5$, true?

5. Two sides of a right triangle are 6 and 8. A student thinks the hypotenuse is 10. Is 10 the correct answer? Why?

6. Over the course of a week, Mrs. Jones makes deposits of $150 and $89. She also writes a check for $40. If her beginning balance was $375, what is her ending balance?