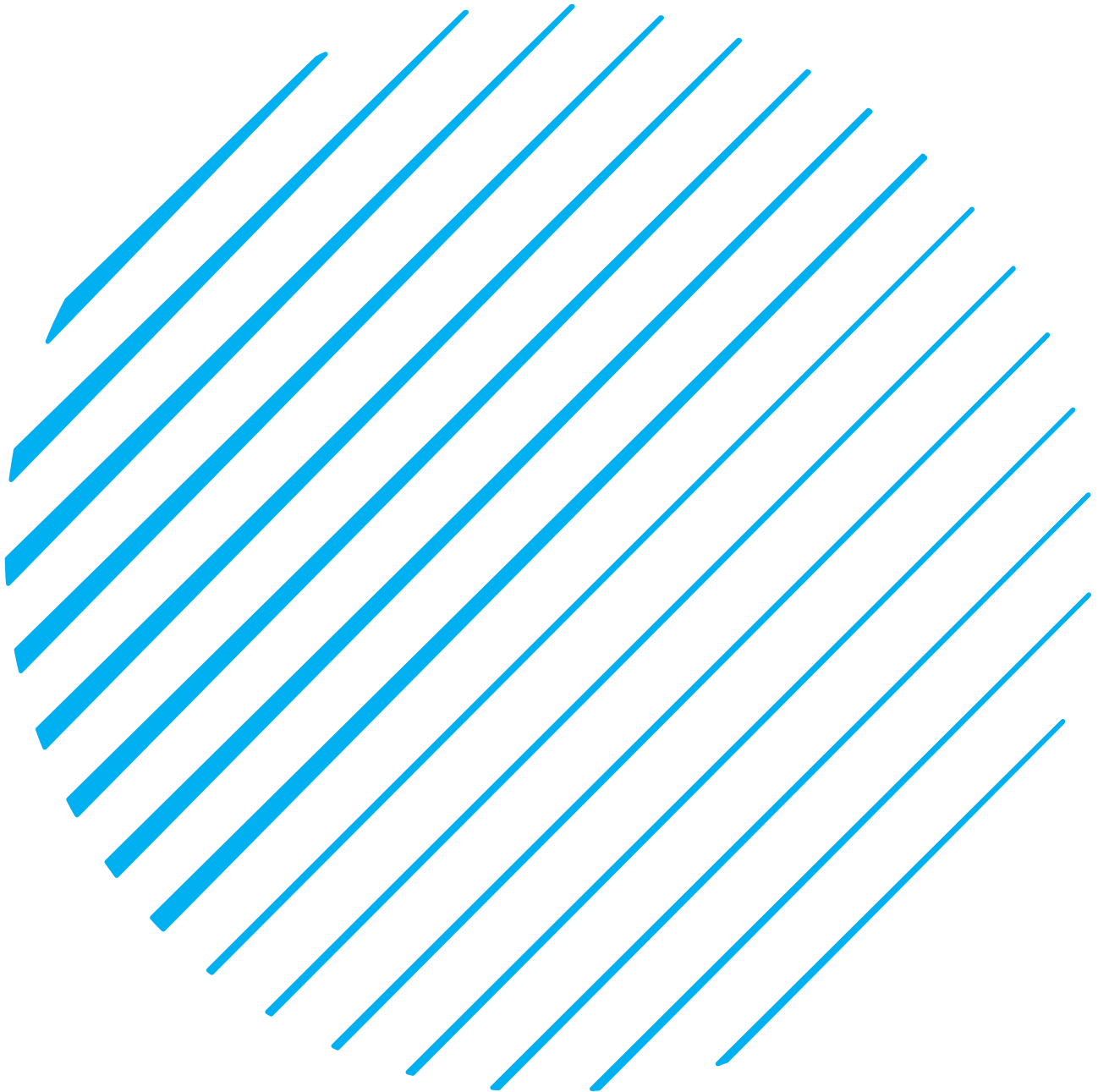


VITAL MATHEMATICS



ALGEBRA
USING FORMULAS TO SOLVE
PROBLEMS

STEVIE CARPENTER

INTRODUCTION

There are five types of problems that can be identified:

- ❖ Direct Translation – problems in which English is directly translated into an equation by using key terms in the verbal description.
- ❖ Mixture – problems where two or more quantities are combined in some fashion.
- ❖ Geometry – problems where the unknown quantities are related through geometric formulas.
- ❖ Uniform Motion – problems where an object travels at a constant speed.
- ❖ Work – problems where two or more entities join forces to complete a job.

USING FORMULAS TO SOLVE PROBLEMS

STEP 1) Identify what the problem is asking. Before writing anything, read the problem and identify what value or variable is being solved.

STEP 2) Name the given information and the unknowns.

STEP 3) Use mathematical reasoning to select the best formula to solve the problem with the information in STEP 1 and STEP 2.

STEP 4) Solve the equation with the chosen formula in STEP 3 with the known/given information in STEP 2.

STEP 5) Check reasonableness of answer and provide conclusion.

POINT-SLOPE EQUATION OF A LINE EXAMPLE

Example 1: The sum of three consecutive odd integers result in 45. Find the integers.

Example 2) Before taxes, Stevie earned \$725 one week after working 52 hours. His employer pays time-and-a-half for all hours worked in excess of 40 hours. What is Stevie's hourly wage?

Example 3: Domino's Pizza charges \$13.25 plus \$1.95 per topping for their large 14-inch pizza. Extreme Pizza charges \$14.45 plus \$1.70 per topping for the same size pizza. For how many toppings will the two orders cost the same?

Example 4: The purity of gold is measured in karats, with pure gold being 24-karats. Other purities of gold are expressed as proportional parts of pure gold. For example, 18-karat gold is $18/24$ or 75%, pure gold; and so on. How much pure gold should be mixed with 12-karat gold to obtain 72 grams of 18-karat gold?



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