# Problem Statement

You are given the following two Math questions (Refer Base questions). Your goal is to create similar questions using LLM.

Things to consider:  
1. A question can have equations and formulas in LaTeX format, and it should be preserved.

2. A question can have images and we need to create appropriate image in the new question

Feel free to use AI editors such as cursor.ai or any of your favorites.

# Expected Output

A Word document/Google doc link along with Github link to be sent in the chat. The word document should have two newly-generated questions in Question Output format (refer next section).

# Question Output Format

@title Assessment title, can be a meaningful name

@description assessment description

// Use this block for each question when adding Multiple Choice Questions (MCQ)

@question **Write your question here**

@instruction Write instruction here

@difficulty ***easy,moderate,hard***

@Order **Question number**

@option **write first** **option here**

@option **Write second option here**

@@option **Correct Answer**

@option **option**

@explanation

**Write your question explanation here**

@subject **Write subject of the question here**

@unit **Write unit of the subject**

@topic Write topic of the question

@plusmarks 1

The subject, unit and topic is a hierarchy and they should strictly come from the curriculum and should be chosen by the LLM for each question.

# Curriculum

|  |  |  |
| --- | --- | --- |
| **subject** | **unit** | **topic** |
| Quantitative Math | Problem Solving | Numbers and Operations |
| Quantitative Math | Problem Solving | Algebra |
| Quantitative Math | Problem Solving | Geometry |
| Quantitative Math | Problem Solving | Problem Solving |
| Quantitative Math | Problem Solving | Probability and Statistics |
| Quantitative Math | Problem Solving | Data Analysis |
| Quantitative Math | Algebra | Algebraic Word Problems |
| Quantitative Math | Algebra | Interpreting Variables |
| Quantitative Math | Algebra | Polynomial Expressions (FOIL/Factoring) |
| Quantitative Math | Algebra | Rational Expressions |
| Quantitative Math | Algebra | Exponential Expressions (Product rule, negative exponents) |
| Quantitative Math | Algebra | Quadratic Equations & Functions (Finding roots/solutions, graphing) |
| Quantitative Math | Algebra | Functions Operations |
| Quantitative Math | Geometry and Measurement | Area & Volume |
| Quantitative Math | Geometry and Measurement | Perimeter |
| Quantitative Math | Geometry and Measurement | Lines, Angles, & Triangles |
| Quantitative Math | Geometry and Measurement | Right Triangles & Trigonometry |
| Quantitative Math | Geometry and Measurement | Circles (Area, circumference) |
| Quantitative Math | Geometry and Measurement | Coordinate Geometry |
| Quantitative Math | Geometry and Measurement | Slope |
| Quantitative Math | Geometry and Measurement | Transformations (Dilating a shape) |
| Quantitative Math | Geometry and Measurement | Parallel & Perpendicular Lines |
| Quantitative Math | Geometry and Measurement | Solid Figures (Volume of Cubes) |
| Quantitative Math | Numbers and Operations | Basic Number Theory |
| Quantitative Math | Numbers and Operations | Prime & Composite Numbers |
| Quantitative Math | Numbers and Operations | Rational Numbers |
| Quantitative Math | Numbers and Operations | Order of Operations |
| Quantitative Math | Numbers and Operations | Estimation |
| Quantitative Math | Numbers and Operations | Fractions, Decimals, & Percents |
| Quantitative Math | Numbers and Operations | Sequences & Series |
| Quantitative Math | Numbers and Operations | Computation with Whole Numbers |
| Quantitative Math | Numbers and Operations | Operations with Negatives |
| Quantitative Math | Data Analysis & Probability | Interpretation of Tables & Graphs |
| Quantitative Math | Data Analysis & Probability | Trends & Inferences |
| Quantitative Math | Data Analysis & Probability | Probability (Basic, Compound Events) |
| Quantitative Math | Data Analysis & Probability | Mean, Median, Mode, & Range |
| Quantitative Math | Data Analysis & Probability | Weighted Averages |
| Quantitative Math | Data Analysis & Probability | Counting & Arrangement Problems |
| Quantitative Math | Reasoning | Word Problems |

# Base Questions

1. Each student at Central Middle School wears a uniform consisting of 1 shirt and 1 pair of pants. The table shows the colors available for each item of clothing. How many different uniforms are possible?

**## Uniform Choices**

| Shirt Color | Pants Color |

| :---: | :---: |

| Tan | Black |

| Red | Khaki |

| White | Navy |

| Yellow |  |

(A) Three

(B) Four

(C) Seven

(D) Ten

(E) Twelve

2. The top view of a rectangular package of 6 tightly packed balls is shown. If each ball has a radius of 2 centimeters, which of the following are closest to the dimensions, in centimeters, of the rectangular package?

![](https://cdn.mathpix.com/cropped/2025\_07\_31\_dc2e3d22c70b1617b86dg-33.jpg?height=451&width=307&top\_left\_y=1130&top\_left\_x=280)

(A) $2 \times 3 \times 6$

(B) $4 \times 6 \times 6$

(C) $2 \times 4 \times 6$

(D) $4 \times 8 \times 12$

(E) $6 \times 8 \times 12$

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Generated New Questions  
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@title Picnic Meal Combinations  
@description Counting combinations of sandwich and juice options  
  
@question for a school picnic, each student can choose one sandwich and one juice from the following menu. How many different meal combinations can be made?  
  
## Picnic Menu  
  
| Sandwich Type | Juice Flavor |  
| :---: | :---: |  
| Cheese | Orange |  
| Vegetable | Mango |  
| Egg | Apple |  
| Chicken | Guava |  
  
@instruction Choose the correct number of possible combinations.  
@difficulty easy  
@Order 1  
@option Twelve  
@@option Sixteen  
@option Twenty  
@option Twenty-four  
@explanation There are 4 sandwich types × 4 juice flavors = 16 total combinations.  
@subject Quantitative Math  
@unit Problem Solving  
@topic Counting Principles  
@plusmarks 1

@title Cylinder Packing Volume Problem  
@description Finding the total volume of a package containing cylindrical cans  
  
@question A box contains 8 cylindrical cans of soft drink arranged neatly. Each can has a radius of 3.5 cm and a height of 12 cm. Calculate the total volume of all the cans. Use π = 3.14.  
  
@instruction Choose the correct total volume (in cubic centimeters).  
@difficulty medium  
@Order 2  
@option 3,696.4  
@option 6,280  
@option 9,832  
@@option 3,696  
@explanation Volume of one can = π × (3.5²) × 12 = 3.14 × 12.25 × 12 = 461.58 cm³ (approx). For 8 cans: 461.58 × 8 = 3,692.64 cm³ ≈ 3,696 cm³.  
@subject Quantitative Math  
@unit Mensuration  
@topic Volume and Surface Area  
@plusmarks 2

Diagram for Cylinder Packing Problem:

