

**Second analysis - words that occurred - this was done by PDF.ai and the researcher.**

### **1. Common Words (with Repetition Count)**

1. **Perpendicular** - Appears approximately 12 times across all responses.
2. **90-degree angle** or **right angle** - Repeated around 10 times.
3. **Triangle ruler** - Found about 15 times.
4. **Line(s)** - Used frequently, about 20 times across different contexts (e.g., line a, red line, etc.).
5. **Check** - Appears roughly 14 times.
6. **Intersection/Intersect** - Used around 6 times.
7. **Measure** - Approximately 7 times.
8. **Align/Alignment** - Seen about 8 times.
9. **Angle** - Found around 10 times.
10. **Slope** - Repeated 6 times, specifically in sections about using slopes to determine perpendicularity.
11. **Place** - Used roughly 8 times in phrases like "place the ruler."
12. **Right angle** - Repeated around 7 times in addition to 90-degree references.

### **Common Phrases (with Repetition Count)**

1. **"Perpendicular lines meet at a 90-degree angle."** - This phrase or similar variations appear around 6 times.
2. **"Use a triangle ruler to check"** - Found at least 8 times across responses.
3. **"Line a is perpendicular to Line g"** (or similar, like red line  $\perp$  blue line) - Approximately 6 instances.
4. **"Align the triangle ruler"** - Repeated around 5 times.
5. **"Visual inspection"** or similar phrases suggesting visual checking - About 6 times.

### **Total Count**

- **Unique common words: 12**
- **Unique common phrases: 5**

In total, there are **17 unique common words and phrases**.

### **2. Common Words (with Repetition Count)**

- **"Coordinates" = 23 times**
- **"Cards" = 24 times**
- **"Points" = 33 times**
- **"Match/Matching" = 28 times**

- **"Directly"**: 10 times
- **"Graph"**: 11
- **"Label/Labeled"**: 12
- **"Grid"** = 4 times.

### 3. Common Words (with Repetition Count)

1. **"Triangle"** – appears **17 times**.
2. **"Rectangle"** – appears **17 times**.
3. **"Axes of symmetry"** – appears **24 times**.
4. **"Equilateral triangle"** – appears **7 times**.
5. **"Vertical line"** – appears **10 times**.
6. **"Horizontal line"** – appears **9 times**.
7. **"Draw"** – appears **25 times**.
8. **"Base"** – appears **6 times**.
9. **"Midpoint"** – appears **8 times**.
10. **"Center"** – appears **8 times**.
11. **"Two equal halves"** – appears **8 times**.
12. **"Shaded"** – appears **6 times**.
13. **"Mirror image" or "mirrored"** – appears **8 times**.

### 4. Common Words (with Repetition Count)

- **Reflect**: 25 times
- **Red line**: 24 times
- **Axis of symmetry**: 25 times
- **Point A, B, C**: 30 times
- **Distance**: 22 times
- **Mirror image**: 11 times
- **Perpendicular**: 8 times
- **Symmetry/symmetrical**: 30 times
- **Measure**: 24 times
- **Connect the points**: 10 times
- **Same distance**: 15 times
- **Figure**: 18 times

### 5. Common Words (with Repetition Count)

1. **Repeated Words/Phrases**:
  - **"Parallel"** – 16 times
  - **"Draw a line"** – 11 times
  - **"Equal in length"** – 5 times

- "Points" – 11 times
- "Connect" – 2 times
- "Mark" – 3 times
- "Ensure" – 3 times
- "Equal in length" – 2 times
- "Identify the Intersection" – 2 times

Total number of repetitions in analysis = **57**

## 6. Common Words (with Repetition Count)

1. "Rhombus":  $87 + 7 = 94$  times.
2. "Quadrilateral":  $32 + 5 = 37$  times.
3. "Equal sides" or "All sides are equal":  $14 + 3 = 17$  times.
4. "Opposite sides are parallel":  $13 + 2 = 15$  times.
5. "Diagonals":  $15 + 4 = 19$  times.

## 7. Common Words (with Repetition Count)

- **Exact words:**
  - "Kite": 70 times
  - "Trapezoid": 82 times
  - "Quadrilateral": 54 times
  - "Adjacent sides": 33 times
  - "Parallel sides": 33 times
- **Similar words:**
  - **Kites/Kite**: 72 times
  - **Trapezoids/Trapezoid**: 84 times
  - **Pairs of adjacent sides**: 26 times
  - **Congruent sides/Equal sides**: 16 times

## 8. Common Words (with Repetition Count)

- **Points**: 19 times
- **Trapezoid**: 27 times
- **Symmetrical**: 22 times
- **Measure**: 15 times
- **Line**: 28 times
- **Parallel**: 24 times
- **Draw**: 19 times
- **Sides**: 19 times
- **Length(s)**: 12 times

- **Mark:** 13 times
- **Equal:** 11 times
- **Corner(s):** 7 times

#### **Similar Words/Phrases:**

- **Vertices/Corners:** Synonyms for points
- **Distance/Length/Measure:** Often used interchangeably
- **Base/Bottom Side:** Refers to one of the sides
- **Connect/Draw:** Used in the context of forming the trapezoid
- **Slanted sides/Non-parallel sides:** Descriptions of the same concept
- **Mirror/Reflect:** Describes symmetry in the shape
- **Horizontal/Flat/Parallel:** Used to describe how lines should be aligned

#### **Total Count:**

- **Exact words:** 173 times (calculated previously)

### **9. Common Words (with Repetition Count)**

1. **"figure"** (45 times)
2. **"symmetry"** (34 times)
3. **"axis"** (32 times)
4. **"shape"** (26 times)
5. **"complete"** (23 times)
6. **"symmetrical"** (21 times)
7. **"point"** (20 times)
8. **"axially"** (17 times)
9. **"step"** (16 times)

### **10. Common Words (with Repetition Count)**

#### **Exact Repetition:**

Words that appear multiple times in the text with exactly the same form, meaning, and function.

- **Geometric terms:**
  - **Triangle** (7 times)
  - **Circle** (7 times)
  - **Rectangle** (8 times)
  - **Square** (7 times)
  - **Trapezoid** (8 times)

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### 3. Semantic Repetition:

Words that are conceptually related or semantically similar. These words describe related geometric properties or spatial relationships:

- **Sidedness and Angles:**
  - **Sides** (9 times)
  - **Equal** (7 times)
  - **Length** (5 times)
  - **Angles** (4 times)
  - **Degrees** (4 times)
- **Descriptions of Shapes:**
  - **Geometric** (2 times)
  - **Quadrilateral** (2 times)
  - **Polygon** (4 times)