SOUTHINGTON HIGH SCHOOL

**Richard Aroian, Principal**
Assistant Principals: Leah Clark, Simone Crouch, Thomas Hinman, Kathleen Reynolds

Dear Students,

Attached to this letter you will find a comprehensive set of problems that reflect critical math skills that should be mastered prior to entering your Geometry class at Southington High School. You are encouraged to utilize a wide range of methods for finding the correct answer, including techniques both with and without the aid of a calculator*. Working with a friend, sibling, or parent might be a helpful way to complete this assignment!
Also watching videos on Khan Academy is encouraged. You can access Khan Academy by going to https://www.khanacademy.org/

On the first or second day of the course your teachers will check your packets for completion and review how to solve some of the problems that are most important to beginning your first unit of the year. To receive full credit for completing the assignment you must attempt each problem and show all work used to complete it. Soon thereafter, you will be given a brief assessment on these skills to measure your progress and readiness for the course. Please note: the answers to the odd questions are in this packet. They are provided as a means to assess your work as you go.

Our goal is for you to have a successful and enjoyable transition into your Geometry class at Southington High School and this packet is meant to help facilitate this process. Our absolute hope is that you try your best and remember that your teachers are prepared to help you with any challenges you face when you return in late August.

Sincerely,

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*Reminder: A calculator is an important tool used within this course. Students are strongly encouraged to obtain one for their personal use. Copies of this packet may be found on the Southington High SchoolWebsite. Go to www.southingtonschools.org and click on the link to Parent Resources

**Geometry Summer Math Packet 2026** **Name: _____**

## Part 1: Vocabulary Review

Match each term with the correct definition.

1. ___ Point
2. ___ Line
3. ___ Ray
4. ___ Angle
5. ___ Plane
6. ___ Segment
7. ___ Parallel lines
8. ___ Perpendicular lines

**Definitions:**

A. A part of a line with two endpoints

B. An undefined term representing a location

C. A flat surface that extends infinitely

D. A figure formed by two rays with a common endpoint

E. A straight path that extends infinitely in both directions

F. A part of a line with one endpoint and extends infinitely in one direction

G. Two lines in the same plane that never intersect

H. Two lines that intersect to form right angles

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## Part 2: Classifying Angles

Label each angle as: **acute**, **right**, **obtuse**, or **straight**.

1. 30° → _____
2. 90° → _____
3. 135° → _____
4. 180° → _____
5. 75° → _____
6. 150° → _____
7. 45° → _____
8. 120° → _____

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## Part 3: Perimeter and Area

**1.** Find the perimeter and area of a rectangle with:
a) Length = 8 cm, Width = 5 cm
b) Length = 10 in, Width = 6 in

**2.** Find the area of a triangle with:
a) Base = 10 m, Height = 6 m
b) Base = 7 cm, Height = 9 cm

**3.** Find the perimeter of a triangle with side lengths:
a) 5 cm, 7 cm, and 9 cm
b) 6 in, 8 in, and 10 in

**4.** A square has a side length of 12 cm.
a) What is the perimeter?
b) What is the area?

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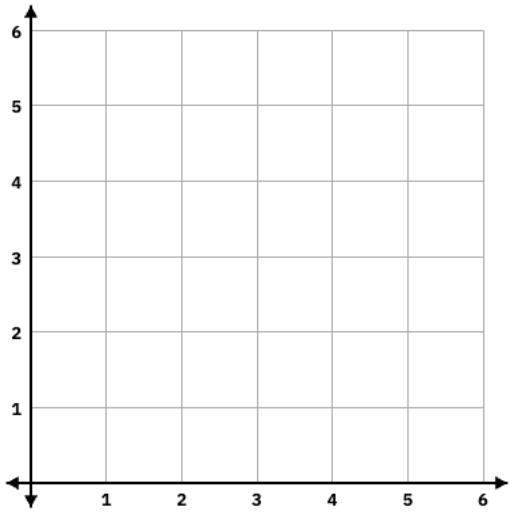
## Part 4: Coordinate Geometry

Use the coordinate grids to plot the following and identify the shape.

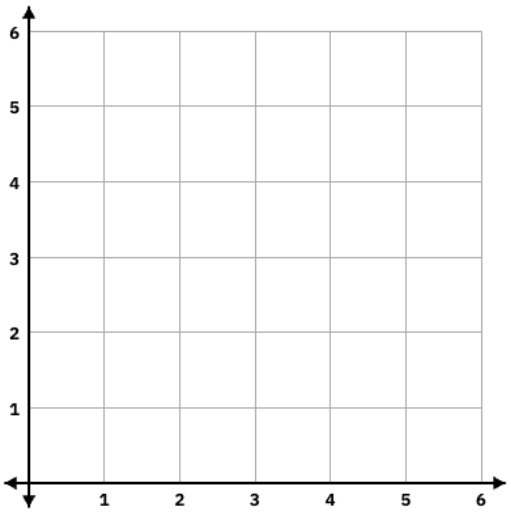
**1.** Plot points A(1, 2), B(4, 2), C(4, 5), D(1, 5).

Shape: _____



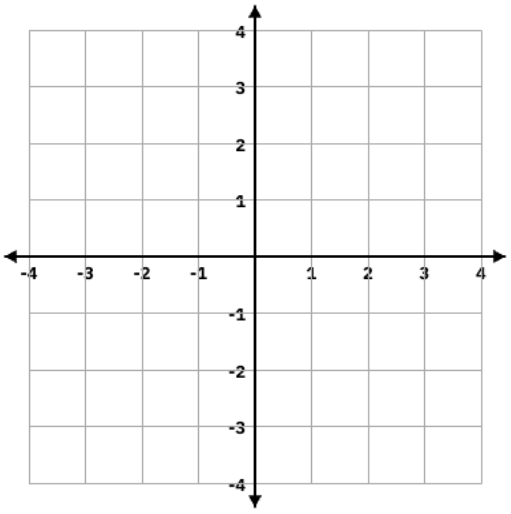
**2.** Plot points E(0, 0), F(3, 4), G(6, 0).

What type of triangle is formed? _____




**3.** Plot points H(−2, −2), I(−2, 3), J(3, 3), K(3, −2).

Find the perimeter of the shape. (Each unit = 1 cm)

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## Part 5: Solving Equations

Solve each equation and show your steps.

1. 3x + 4 = 13
2. 2(x − 1) = 10
3. 5x − 7 = 18
4. $\frac{x}{2} + 3 = 9$
5. A triangle has base (x + 3) cm, height = 4 cm, and area = 14 cm². Find *x*.

6. The perimeter of a rectangle is 2(x + 5) + 2(x − 1) = 28. Find *x*.

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## Part 6: Solving Proportions

Solve each proportion. Show your work.

1. $\frac{3}{4} = \frac{x}{12}$
2. $\frac{x}{5} = \frac{6}{10}$
3. $\frac{7}{x+1} = \frac{14}{8}$
4. $\frac{2x-1.5}{6} = \frac{9}{12}$

5. A triangle has sides in the ratio 3:4:5. If the shortest side is 9 cm, what are the lengths of the other two sides?

6. Two similar rectangles have widths 6 cm and 9 cm. The length of the smaller one is 8 cm. What is the length of the larger one?

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## Part 7: Factoring Quadratics

Factor each quadratic expression completely. Show your steps.

1. $x^2 + 7x + 10$
2. $x^2 - 9x + 20$
3. $x^2 - 4x - 21$
4. $x^2 - 16$

5. $2x^2 + 10x + 12$

6. $x^2 - 1$

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## Part 8: Square Challenge

A square has a perimeter of 36 cm.

1. What is the length of one side? _____
2. What is the area of the square? _____
3. If each side is doubled, what happens to the perimeter and area?

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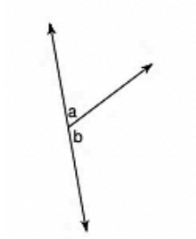
## Part 9: Angle Pair Relationships

Label the angle pair relationship as: **complementary**, **supplementary**, **vertical**, or **adjacent**.

1.

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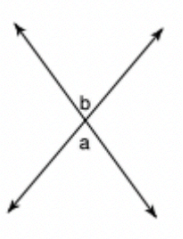


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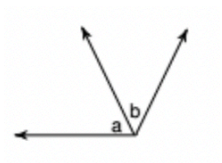


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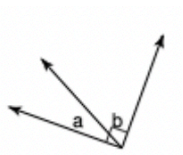


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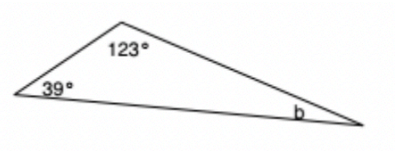
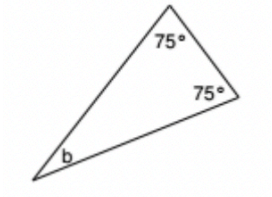
## Part 10: Triangle Sum Theorem

Find the measure of the missing angle b.

1.




2.

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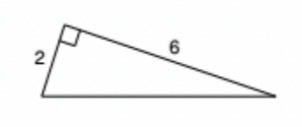
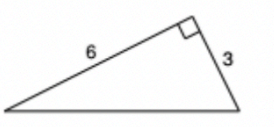
## Part 11: Pythagorean Theorem

Use the Pythagorean Theorem to find the missing side length. Round to the nearest tenth.

1.



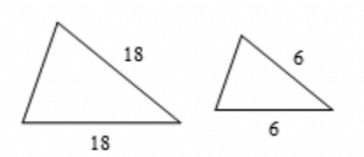

2.



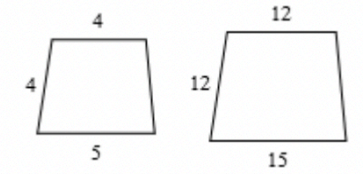

## Part 12: Similar Figures

The polygons in each pair are similar. Find the scale factor from left to right.

1.




2.

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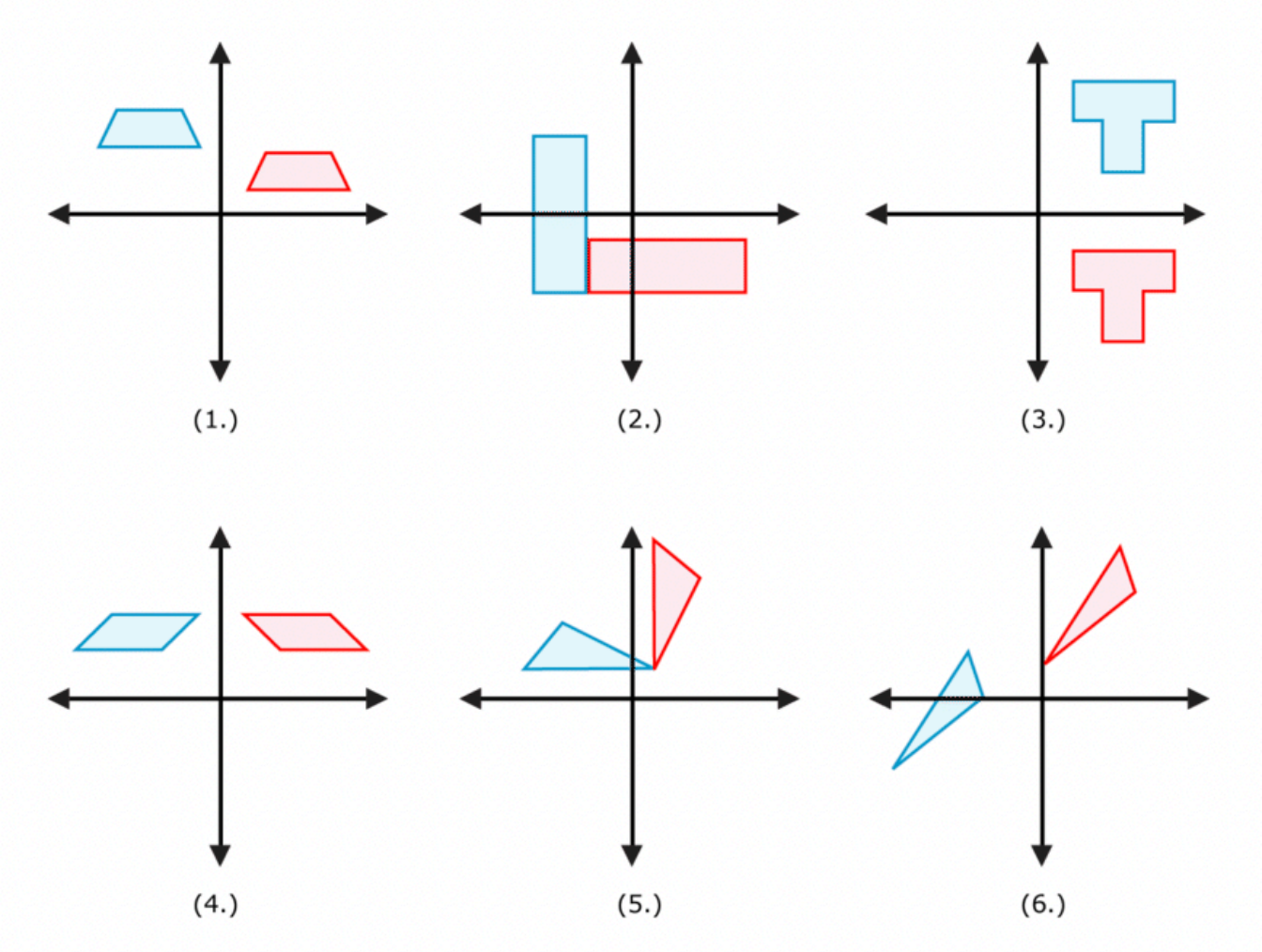
## Part 13: Transformations

Identify the transformation shown as **translation**, **rotation**, or **reflection**.



# Geometry Summer Packet 2025 – ODD Numbers Key

**Part 1**

1. B
3. F
5. C
7. G

**Part 2**

1. Acute
3. Obtuse
5. Acute
7. Acute

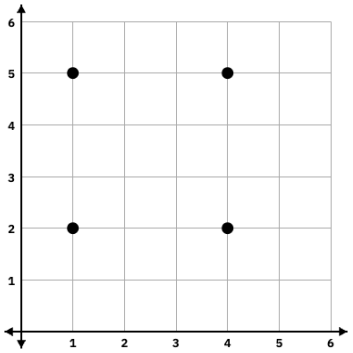
**Part 3**

1. a) Area = $40\ cm^2$ Perimeter = $26\ cm$
   b) Area = $60\ in^2$ Perimeter = $32\ in$

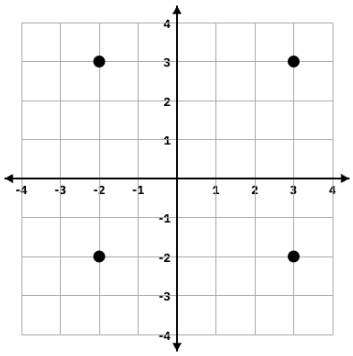
3. a) 21 cm b) 24 in

**Part 4**

1. Square




3. $P = 20\ cm$




**Part 5**

1. $x = 3$
3. $x = 5$
5. $x = 4$

**Part 6**

1. $x = 9$
3. $x = 3$
5. $12\ cm$ and $15\ cm$

**Part 7**

1. $(x + 2)(x + 5)$
3. $(x - 7)(x + 3)$
5. $2(x + 2)(x + 3)$

**Part 8**

1. 9 cm
3. The perimeter is doubled and the area increases by a factor of 4.

**Part 9**

1. Supplementary
3. Adjacent

**Part 10**

1. $b = 18°$

**Part 11**

1. $x \approx 6.3$

**Part 12**

1. $k = \frac{1}{3}$

**Part 13**

1. Translation
3. Translation
5. Rotation