## Geometry

<table>
<thead>
<tr>
<th>Learning Packet Overview</th>
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<tbody>
<tr>
<td>This learning packet will be a review of our classwork from the last semester. In particular, we will focus on: angle pair relationships, transformations, triangle congruence, similarity, right triangles, trigonometry, and circles. We have covered every topic that is in the packet.</td>
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<tr>
<td>The packet will be organized into 30-minute daily lessons.</td>
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<td>If the student has any questions, I encourage them to first text or email to setup a time to talk on the phone.</td>
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<tr>
<td>All information will be provided on google classroom. The google classroom class code is below.</td>
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<td>Solve all problems on a separate sheet of paper</td>
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### Google Classroom Class Code: g2moe6a

<table>
<thead>
<tr>
<th>Necessary Materials</th>
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<tbody>
<tr>
<td>Calculator (I will provide a link to an online calculator if they left their calculator at school)</td>
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<tr>
<td>Pencil or pen</td>
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<tr>
<td>Dedicated geometry notebook to show work</td>
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<tr>
<td>Access to Khan Academy</td>
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<table>
<thead>
<tr>
<th>How students will be successful in Geometry</th>
<th>How caregivers can help students be successful</th>
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<tbody>
<tr>
<td>Students will be successful if they:</td>
<td>Caregivers can help students be successful by:</td>
</tr>
<tr>
<td>• maintain a steady study/work schedule (set aside an hour every morning to get the work done)</td>
<td>• keeping students accountable to a careful daily study schedule</td>
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<tr>
<td>• label all days of work and make sure they are easy to check</td>
<td>• trying to set aside a working space for students within the home</td>
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<tr>
<td>• do not wait till the last second to do the work</td>
<td>• encouraging students to reach out with questions whenever they are stuck (students will get a response to emails or texts within 10 minutes during office hours)</td>
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<tr>
<td>• look up the topic on Khan Academy</td>
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<td>• ask Mr. Keyser questions whenever they get stuck</td>
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Day: March 24  
Topic: Angle-pair Relationships

Lesson: Below are the main angle pairs we covered this year

- **Corresponding angles**
- **Alternate Interior Angles**
- **Alternate Exterior Angles**

**Vocab:**
- Complementary: two angles that add up to 90 degrees
- Supplementary: two angles that add up to 180 degrees
- Adjacent: angles that are next to each other
- Vertical: angles that are across from each other

**Linear Pairs**
Linear Pairs are two adjacent angles that create a line. The two angles are supplementary (add up to 180°).

**Examples:**
- $119° + 61° = 180°$
- $145° + 35° = 180°$

**Consecutive Angles**
- **Consecutive Interior Angles:** Two angles that lie between the lines, both on the same side of the transversal.
- **Consecutive Exterior Angles:** Two angles that lie outside the lines, both on the same side of the transversal.

**Vertical Angle Theorem**
If 2 angles are vertical then they are congruent.

**Practice:** Do the following problems

Identify each pair of angles as corresponding, alternate interior, alternate exterior, or consecutive interior.
Day: March 25

Lesson: Use lesson resources from previous day

1. The two angles are consecutive so they are congruent.
2. Set up equation:
   \[ 100^\circ = 10x + 30 \]
   \[ -30 \]
   \[ 70 = 10x \]
   \[ \frac{70}{10} = \frac{10x}{10} \]
   \[ 7 = x \]

Practice: Use algebra to solve for the missing angles given the angle pair relationships we used before.
Solve for $x$.

19) $21x + 6$

20) $11x - 2$

21) $8x - 4$

22) $x + 139$

23) $-1 + 14x$

24) $23x - 5$

25) $x + 96$

26) $20x + 5$

27) $6x$

28) $x + 89$

Find the measure of the angle indicated in bold.

Day: March 26  
Topic: Transformations

Lesson:
Practice: Use the below space to draw the new transformation.

ccw = counterclockwise

1) Translation: 4 left and 4 down

2) Rotation: 90° clockwise about the origin

3) Translation: 4 right and 2 down

4) Reflection: Across the x-axis

5) Reflection: Across Line y = x

6) Rotation: 90° ccw about the origin
Lesson:

Practice:

Now that week 1 is done your final assignment is to write an email to Mr. Keyser at ckeyser@kippnashville.org. Answer the following questions in the email:

1. How are you doing at home?
2. Did the worksheets this week make sense?
3. Which days did you understand?
4. Which days did you not understand?
5. What can I do to help make next week’s assignment make more sense?
Day: March 30  
Topic: Triangle Congruence  

Lesson:  

Rules for Triangle Congruency

- SSS
- SAS
- ASA
- AAS
- RHS

SSA is not sufficient for congruency. It may make two different triangles.

Practice:

State if the two triangles are congruent. If they are, state how you know.

1)  
2)  
3)  
4)  
5)  
6)  
7)  
8)  
9)  
10)
State what additional information is required in order to know that the triangles are congruent for the reason given.

11) ASA

12) SAS

13) SAS

14) ASA

15) SAS

16) ASA

17) SSS

18) SAS

Practice:

Triangle Congruence Worksheet

For each pair of triangles, state the postulate or theorem that can be used to conclude that the triangles are congruent.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.
With these questions you can be asked to find missing angles or sides. The number one rule is to make proportions between corresponding sides.

**Similar Triangles**
- Same shape, but not necessarily the same size.
- Corresponding angles are equal.
- Corresponding sides are in the same ratio.

\[
\frac{a}{p} = \frac{b}{q} = \frac{c}{r}
\]

To test for similar triangles:
- **AA** – If 2 corresponding angles are equal.
- **SSS** – If 3 corresponding sides are in the same ratio.
- **SAS** – Ratio of 2 pairs of corresponding sides are equal and their included angles are equal.

### Practice:
Each pair of figures is similar. Find the missing side.

1) \[
\frac{12}{20} = \frac{3}{x}
\]

2) \[
\frac{x}{1} = \frac{4}{1} = \frac{8}{15}
\]

3) \[
\frac{x}{4} = \frac{8}{16}
\]

4) \[
\frac{5}{x} = \frac{4}{8}
\]

5) \[
\frac{14}{x} = \frac{2}{1}
\]

6) \[
\frac{9}{x} = \frac{24}{x}
\]

7) \[
\frac{10}{99} = \frac{9}{x}
\]

8) \[
\frac{10}{x} = \frac{19}{100}
\]
### Day: April 2  |  Topic: Right Triangles and Trigonometry

#### Lesson:

- [Image of a right triangle with labels: base, height, and hypotenuse.]

- \[a^2 + b^2 = c^2\]

#### Practice:

For each triangle find the missing length. Round your answer to the nearest tenth. Then find the area and the perimeter.

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<td>?</td>
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<td>2</td>
<td>5</td>
<td>13</td>
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<tr>
<td>3</td>
<td>20</td>
<td>10</td>
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<tr>
<td>4</td>
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<td>14</td>
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Find the side indicated by the variable. Round to the nearest tenth.

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<td>2</td>
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<td>3</td>
<td>(u)</td>
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<tr>
<td>4</td>
<td>(h)</td>
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<tr>
<td>5</td>
<td>(m)</td>
<td></td>
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<tr>
<td>6</td>
<td>(x)</td>
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### Trigonometric Ratios

- \[\sin(x) = \frac{\text{opp}}{\text{hyp}}\]
- \[\cos(x) = \frac{\text{adj}}{\text{hyp}}\]
- \[\tan(x) = \frac{\text{opp}}{\text{adj}}\]
Lesson:

Equation of Circle

\[(x - h)^2 + (y - k)^2 = r^2\]

Practice:

Identify the center and radius of each. Then sketch the graph.

1) \((x - 1)^2 + (y + 3)^2 = 4\)

2) \((x - 2)^2 + (y + 1)^2 = 16\)

3) \((x - 1)^2 + (y + 4)^2 = 9\)

4) \(x^2 + (y - 3)^2 = 14\)

Use the information provided to write the equation of each circle.

9) Center: \((13, -13)\)
   Radius: 4

10) Center: \((-13, -16)\)
    Point on Circle: \((-10, -16)\)

11) Ends of a diameter: \((18, -13)\) and \((4, -3)\)

12) Center: \((10, -14)\)
    Tangent to \(x = 13\)

13) Center lies in the first quadrant
    Tangent to \(x = 8\), \(y = 3\), and \(x = 14\)

14) Center: \((0, 13)\)
    Area: \(25\pi\)