I can define, identify and illustrate the following terms:

<table>
<thead>
<tr>
<th>Symmetry</th>
<th>Pre-Image</th>
<th>Composition of Transformations</th>
<th>Enlargement</th>
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<tbody>
<tr>
<td>Line of Symmetry</td>
<td>Image</td>
<td>Glide Reflection</td>
<td>Reduction</td>
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<tr>
<td>Rotational Symmetry</td>
<td>Reflection</td>
<td>Dilation</td>
<td>Tessellation</td>
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<tr>
<td>Translation Symmetry</td>
<td>Translation</td>
<td>Center of dilation</td>
<td>Scale Factor</td>
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<tr>
<td>Isometry</td>
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Dates, assignments, and quizzes subject to change without advance notice.

<table>
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<tr>
<th>22 TAKS</th>
<th>23 TAKS</th>
<th>24 TAKS</th>
<th>25 TAKS</th>
<th>26 TAKS</th>
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<tr>
<td>Translations and Reflections</td>
<td>Rotations and Dilations</td>
<td>Rotations and Dilations</td>
<td>Rotations and Dilations</td>
<td>Rotations and Dilations</td>
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<tr>
<td>(only see 2nd, 4th and 6th)</td>
<td>(only see 3rd, 5th and 7th)</td>
<td>(only see 6th, 4th and 2nd)</td>
<td></td>
<td>(only see 7th, 5th, 3rd and 1st)</td>
</tr>
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</table>

<table>
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<td>Symmetry and Dimensional Changes</td>
<td>EOC Review Right Triangles</td>
<td>EOC Review – Surface Area and Volume</td>
<td>Test #15</td>
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<tbody>
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<td>Tessellations and Making Conjectures</td>
<td>EOC</td>
<td>EOC</td>
<td></td>
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</table>

Monday, 4/22

1-7 Basics, 12-1: Reflections and 12-2: Translations

- I can name the pre-image and image points of a transformation.
- I can identify reflections, rotations, and translations.
- I can use arrow notation to describe transformations.
- I can reflect across the x-axis, the y-axis, the line $y = x$, the line $y = -x$ or any given line.
- I can translate figures on the coordinate plane.

**PRACTICE:** pg. 53 #1-7, 12, 19-22, 29-32; pg 827 #15-16, 20-23, 46-48; pg 836 #29-31, 40

Tuesday - Friday, 4/23 – 4/26

12-3: Rotations and 12-7: Dilations

- I can change translation notation from vector notation $(a, b)$ to coordinate notation $(x, y) \rightarrow (x + a, y + b)$ and back again.
- I can rotate 90°, 180°, and 270° around the origin.
- I can determine the angle of rotation.
- I can determine the scale factor of a dilation.
- I can create a dilation given a scale factor and center on a graph.
- I can determine the scale factor of an incomplete dilation and complete the dilation.

**PRACTICE:** pg 842 #12-15, 18-21, 27-30, 37, 42, 44; pg. 875 #9-16, 25-26, 46-47 and selected WS problems
Monday, 4/29

<table>
<thead>
<tr>
<th>Symmetry and Dimensional Changes</th>
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<tbody>
<tr>
<td>I can identify line symmetry, rotational symmetry and translation symmetry.</td>
</tr>
<tr>
<td>I can draw a line of symmetry for a given figure.</td>
</tr>
<tr>
<td>I can find the equation of a line of symmetry.</td>
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</table>

**PRACTICE:** Symmetry Worksheet and Dimensional Changes Worksheet

Tuesday, 4/30

<table>
<thead>
<tr>
<th>Right Triangles</th>
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<tbody>
<tr>
<td>I can solve problems involving right triangles.</td>
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</table>

**PRACTICE:** Right Triangle Worksheet

Block day, 5/1 or 5/2

<table>
<thead>
<tr>
<th>Areas and Volume</th>
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<tbody>
<tr>
<td>I can solve problems involving areas and volume.</td>
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</table>

**PRACTICE:** Areas and Volumes Worksheet

Friday, 5/3

<table>
<thead>
<tr>
<th>➤ Test 14: Transformations and EOC Review</th>
<th>Score:</th>
</tr>
</thead>
</table>
NOTES: Introduction and Translations

A ______________________ is a change in the __________________, __________, or shape of a 
figure. The original shape is called the __________________. The new shape is the ____________.
Each vertex of the ________________ should be labeled with _________________. An ______________ 
transformation is one which does not change the ____________________ or ___________________.

A translation is a “______________” where all _______________in a _______________ move the 
same _______________. (Pictured above)

Ex: Write a translation statement for the following transformation and name the image:
Translate the point A(4, -5) to the left 2 and up 7.

Translation Statement:      (           ,            )
Plug in:       A (    4   ,   -5    )  \rightarrow (                          ,                          )
Image:        A’ (           ,            )

Your Turn:
1. Write the translation statement and name the image:
   Translate R(3, 7) to the right 4 and up 3.
   Translation Statement: ________________________
   Image: _______________

2. Write the translation statement and name the image:
   Translate U(-6, 3) by \((x, y) \rightarrow (x - 7, y +4)\)
   Translation Statement: ________________________
   Image: _______________

Whiteboard Problems:
1. Graph the pre-image and the image: \(A(-2, -4) B(-1, -2) C(-3, 0); (x, y) \rightarrow (x + 2, y + 4)\)
2. Move R( -4, -4) S(-2, -3) T(-1, 3) using the translation \((x, y) \rightarrow (x - 3, y - 1)\)
3. Move K (2, 6) I (4, 2) T(-2, 4) E(8, 4) down 6 and to the left 6. Write the translation statement.
Reflections Notes and Examples

Writing equations of and graphing horizontal and vertical lines.

1. This is the line \( y = 2 \). Which axis does it cross? Where does it cross? 
2. This is the line \( x = 2 \). Which axis does it cross? Where does it cross? 

A **reflection** is a transformation across a line so that the line of reflection is the perpendicular bisector of the segment joining each point and its image.

3. Reflect across \( x = 2 \) 

4. Reflect across \( y \)-axis 

5. Reflect across \( x \)-axis 

\[
\begin{align*}
A'( & , ) \quad B'( & , ) \\
C'( & , ) \quad D'( & , ) \\
\end{align*}
\]

\[
\begin{align*}
C'( & , ) \quad A'( & , ) \\
T'( & , ) \\
\end{align*}
\]

\[
\begin{align*}
M'( & , ) \quad A'( & , ) \\
T'( & , ) \quad H'( & , ) \\
\end{align*}
\]

6. Reflect across \( y = x \) 

7. Reflect across \( y = -3 \) 

8. Reflect across \( y = -x \) 

\[
\begin{align*}
F'( & , ) \quad I'( & , ) \\
S'( & , ) \quad H'( & , ) \\
H'( & , ) \quad A'( & , ) \\
T'( & , ) \\
M'( & , ) \quad O'( & , ) \\
V'( & , ) \quad E'( & , ) \\
\end{align*}
\]
NOTES: Rotations

A rotation is a “______________” that moves a figure certain degrees around a fixed point. Always rotate to the ________________.

$90^\circ = \underline{\hspace{2cm}}$ turn, $180^\circ = \underline{\hspace{2cm}}$ turns, $270^\circ = \underline{\hspace{2cm}}$ turns, $360^\circ = \underline{\hspace{2cm}}$ turns.

Steps to Rotation:
1. Graph the pre-image
2. Turn board to the left.
3. WRITE DOWN coordinates of the image.
4. TURN BOARD DOWN coordinates of the image.
5. Graph the image.

Notes: Dilations

Ex. 1

Ex. 2

Ex. 4 scale factor = 2

Ex. 5 scale factor $= \frac{3}{2}$

Ex. 6

Ex. 7

Ex. 10 The graph shows $\triangle ABC$ with vertices A (-2, 2), B (1, 3), and C (1, -1) and $\overline{SU}$ with endpoints S (-4, 4) and U (2, 6).
At what coordinates would vertex T be placed to create $\triangle STU$, a triangle that is a dilation of $\triangle ABC$?

F (-2, 2)
G (2, -2)
H (3, -3)
J (.5, -.5)
Dilations Practice

1) scale factor = 3

2) scale factor = 2

6) scale factor = \(\frac{3}{2}\)

7) scale factor = \(\frac{2}{3}\)

8-10: Determine the scale factor from A to B.

8) \[ \frac{13 \text{ ft}}{	ext{B}} \]

9) \[ \frac{0.6 \text{ m}}{	ext{A}} \]

10) \[ \frac{21 \text{ ft}}{7 \text{ ft}} \]

11) The graph shows \(\triangle PQR\) with vertices P (2, 4), Q (8, 6), and R (6, 2) and \(\overline{SU}\) with endpoints S (5, 10) and U (15, 5).

At what coordinates would vertex T be placed to create \(\triangle STU\), a triangle that is a dilation of \(\triangle PQR\)?

F (12, 9)

G (16, 12)

H (20, 15)

J (24, 18)
A _______________ is a change in the position, size, or shape of a figure or graph. It is sometimes called a _______________.

A transformation is an _______________ if the size and shape of the figure stay the same.

Every transformation has a _______________ and an _______________.

- The **pre-image** is the original figure in the transformation (the "before"). Its points are labeled as usual, with a capital letters. For example, this is ΔABC.

- The **image** is the shape that results from the transformation (the “after”). Since it comes from transforming the original figure, it is labeled with the same letters but with a ’ (prime) symbol after each letter. For example, after a reflection, ΔABC becomes ΔA′B′C′.

**Symmetry**

These figures have **line symmetry**; that is, they contain at least one **line of symmetry** that divides the figure into two congruent halves:

Do these figures have a line of symmetry? If so, sketch it in. (There may be more than one!)

1. ![Image 1](image1)
2. ![Image 2](image2)
3. ![Image 3](image3)
4. ![Image 4](image4)

These figures have **rotational symmetry**. They can be rotated around a point by a certain number of degrees so that the image ends up to be exactly the same as the pre-image.

Do the figures below have rotational symmetry? By how many degrees?

5. ![Image 5](image5)
6. ![Image 6](image6)
7. ![Image 7](image7)
8. ![Image 8](image8)

Tell whether the figure with the given vertices has line symmetry and/or rotational symmetry. Give the angle if there is rotational symmetry. Draw the figure and any lines of symmetry.

9. A(−2, 2) B(2, 2) C(1, −2), D(−1, −2)
10. R(−3, 3) S(3, 3) T(3, −3) U(−3, −3)
For each figure find (one of) the line(s) of symmetry. Write the equation of the line of symmetry.

1. 

Equation:________________

2. 

Equation:________________

3. 

Equation:________________

4. Rectangle LOVE
   L(-4, 4) O(-2, 8) V(6, 4) E(4, 0)

Equation:________________

5. Isosceles Triangle PIG
   P(-8, -5) I(-5, 0) G(-2, -5)

Equation:________________

6. Trapezoid TIME
   T(8, -7) I(5, -4) M(5, 0) E(8, 3)

Equation:________________

7. 

Equation:________________

8. 

Equation:________________

9. 

Equation:________________
Dimensional Changes Review

Dimensions are _________________________________.

When all dimensions are changed by the same scale factor, you can follow the pattern below.

Example:

A candy maker sells cone-shaped solid chocolate candies. The volume of chocolate in each candy is about 2 cubic centimeters. For a window display, the candy maker creates a large chocolate cone by multiplying the height and radius of his original candies by a factor of 5. What is the volume of the display cone?

When only some dimensions change, it is best to:

Example

A triangle has base $b$ and height $h$. If the base is tripled and the height is multiplied by a factor of 5, how does the area of the new triangle compare to the area of the original triangle?
1 Kellogg is designing a new, smaller travel size cereal box in the shape of a rectangular prism. Each dimension of the larger box is triple the size of the corresponding dimension of the smaller box.

Based on this information, which of the following statements is true?
A The surface area of the larger box is 3 times the surface area of the smaller box.
B The surface area of the larger box is 6 times the surface area of the smaller box.
C The surface area of the larger box is 9 times the surface area of the smaller box.
D The surface area of the larger box is 27 times the surface area of the smaller box.

2 A company packages their product in two sizes of cylinders. Each dimension of the larger cylinder is twice the size of the corresponding dimension of the smaller cylinder.

Based on this information, which of the following statements is true?
A The volume of the larger cylinder is 2 times the volume of the smaller cylinder.
B The volume of the larger cylinder is 4 times the volume of the smaller cylinder.
C The volume of the larger cylinder is 8 times the volume of the smaller cylinder.
D The volume of the larger cylinder is 6 times the volume of the smaller cylinder.

3 The rectangle below has a perimeter of 18 feet with a length of 6 feet.

A new rectangle is formed by decreasing the width of the original rectangle by 1 foot and keeping the length the same. How will the perimeter of the new rectangle compare with the perimeter of the original rectangle?
A The perimeter of the new rectangle will be 3 feet shorter than the perimeter of the original rectangle.
B The perimeter of the new rectangle will be 2 feet shorter than the perimeter of the original rectangle.
C The perimeter of the new rectangle will be 1 foot shorter than the perimeter of the original rectangle.
D The perimeter of the new rectangle will be 1/2 foot shorter than the perimeter of the original rectangle.

4 What is the volume of a similar rectangular box with dimensions that are 3.5 times larger than the dimensions of the rectangular box shown below?

A 5,880 in.³
B 17,836 in.³
C 20,580 in.³
D 1,680 in.³
5 Mr. Norstam has just released a weather balloon with a diameter of about 3 feet. As the weather balloon rises, it will expand and eventually burst because of the changes in the atmospheric pressure.

If the weather balloon rises and expands to 1.5 times its diameter before it bursts, what will be its change in volume?

A. The volume will increase to less than 2 times the original volume.
B. The volume will increase to between 2 and 3 times the original volume.
C. The volume will increase to between 3 and 4 times the original volume.
D. The volume will increase to between 4 and 5 times the original volume.

6 Mr. Kelly’s company manufactures a cylindrical soup can that has a diameter of 6 inches and a volume of 226 in³. If the diameter stays the same and the height is doubled, what will happen to the can’s volume?

A. It will remain the same.
B. It will double.
C. It will triple.
D. It will quadruple.

7 Island Crafts sells a square tablecloth that covers an area of 16 square feet and a rectangular tablecloth that has the same width, but double the length of the square tablecloth. What are the perimeter and area of the rectangular tablecloth?

A. perimeter: 16 ft, area: 16 ft²
B. perimeter: 16 ft, area: 24 ft²
C. perimeter: 24 ft, area: 32 ft²
D. perimeter: 32 ft, area: 64 ft²

8 If the dimensions of a square pyramid are changed by a factor of 6, what is the effect on the volume of the original pyramid?

A. The volume changes by a factor of 6.
B. The volume changes by a factor of 18.
C. The volume changes by a factor of 36.
D. The volume changes by a factor of 216.

9. The figures below represent cheese cubes made for a gourmet shop.

How does the volume of the smaller cube compare to the volume of the larger cube?

A. It is \( \frac{1}{2} \) the volume of the larger cube.
B. It is \( \frac{1}{4} \) the volume of the larger cube.
C. It is \( \frac{1}{8} \) the volume of the larger cube.
D. It is \( \frac{1}{16} \) the volume of the larger cube.
Right Triangles Review

When should you use the Pythagorean Theorem? _____________________________________________

What is the Pythagorean Theorem? ____________________

Example

On his way home from school, Khalil regularly takes a shortcut across the park instead of walking along the sidewalk. How much distance does he cut off the trip by taking the shortcut?

Khalil walks _________ fewer feet on his shortcut.

When should you use the Special Right Triangles? _____________________________________________

What are the Special Right Triangles?__________________ and ________________

What is the length of the shorter leg in this triangle?

The length of the shorter leg is ________ centimeters.
A 48-foot-wide stage has an apron at its front that juts toward the audience. The apron of a stage has the shape of a trapezoid composed of a rectangle and two congruent isosceles right triangles, as represented in the diagram below.

The owners of the stage want to place lights along the edge of the apron. How long is this edge?

**The front of the stage apron measures**

When should you use Trigonometry?

What is Trigonometry?

Find the value of $x$ in the triangle shown.
1. Jenna is flying a kite on a very windy day. The kite string makes a 60° angle with the ground. The kite is directly above the sandbox, which is 28 feet away from where Jenna is standing. Approximately how much of the kite string is currently being used?
   A 56 feet  B 48.5 feet  C 40 feet  D 14 feet

2. $\triangle FGH$ is an equilateral triangle. Which value is closest to the perimeter of $\triangle FGH$?

3. Mr. Elmore has a garden shaped like an equilateral triangle that measures 11 feet on each side. He has placed a watering hose that extends from the faucet located at a vertex to the opposite side, as shown below.

   Which is closest to the length of the hose in the garden?
   A 7.8 ft  B 9.5 ft  C 6.4 ft  D 5.5 ft

4. A small tree is staked to give it strength as it grows. A 30 foot long wire is attached to the tree at a height of 15 feet.

   What is a possible angle of elevation from the ground?
   A 30°  B 45°  C 60°  D 90°

5. Mr. Jones is building a house. The pitch of the roof is 34 feet long and the support beam is 16 feet long. What is $x$, the length of the roof?
   A 30 ft  B 18 ft  C 60 ft  D 50 ft
6. A guy wire is attached to the top of a pole at a 63° angle from the ground.

![Diagram of a guy wire attached to a pole.]

Which is closest to the height of the pole?

A. 84 ft  
B. 165 ft  
C. 208 ft  
D. 363 ft

7. The angle of depression from a helicopter hovering 15 meters above its landing pad to the base of the nearest tree is 41°.

![Diagram showing the angle of depression between a helicopter and a tree.]

Which of the following is closest to the distance from the landing pad to the nearest tree?

A. 10 m  
B. 17 m  
C. 23 m  
D. 13 m

**For 9 and 10 use information below**

A telephone pole is attached to the ground with a guy wire as shown. The guy wire is secured to the ground 15 feet from the base of the pole.

![Diagram of a pole with a guy wire.]

8. To lift a heavy beam, construction workers attach a rope to the beam at the base of a building. They then run the rope over a pulley wheel at the top of the building and down to a winch on the ground 12 feet away from the building, as shown below.

What is the minimum length of rope needed?

A. 20 ft  
B. 28 ft  
C. 32 ft  
D. 36 ft

9. What is the height of the pole, $h$?

A. $7.5$ ft  
B. $15\sqrt{2}$ ft  
C. $15\sqrt{3}$ ft  
D. 30 ft

10. What is the length of the guy wire, $g$?

A. $7.5$ ft  
B. $15\sqrt{2}$ ft  
C. $15\sqrt{3}$ ft  
D. 30 ft
**Surface Area**

Find the surface area and the lateral surface area of the paperweight shown.

The paperweight is the shape of a square pyramid.

The formula for finding the surface area of a pyramid is ________________.

To find the slant height, you can use the Pythagorean theorem. The slant height is the hypotenuse of a right triangle in which one leg is the height of the pyramid and the other leg is half the length of the square base of the pyramid.

**Geometric Probability**

Cassandra has a rectangular geometric dart board. What is the probability of Cassandra not hitting any of the interior shapes?

A) \( \frac{5}{24} \)

B) \( \frac{19}{24} \)

C) \( \frac{24}{19} \)

D) \( \frac{24}{5} \)

**Measurement Conversions**

Two identical rectangular doors have glass panes in the top half and each bottom half is made of solid wood. If 1 meter is approximately equal to 3.28 feet, what is the approximate length of \( x \) in feet?

A) 5.3 feet
B) 8.5 feet
C) 2.6 feet
D) 7.1 feet
1. The diameter of a sphere is 24 millimeters. What is the surface area of the sphere?
   A. 144π mm²
   B. 576π mm²
   C. 2,304π mm²
   D. 9,216π mm²

2. The rectangular flag shown below consists of a black triangle and two white triangles.

   What is the probability that a randomly chosen point on the flag will be on the black triangle?
   A. 33.3%
   B. 40%
   C. 50%
   D. 66.7%

3. A circular plate has a diameter of 10 inches. Since 1 inch is equal to 2.54 centimeters, what is the circumference of the plate?
   A. 12.4 cm
   B. 25.4 cm
   C. 79.8 cm
   D. 159.5 cm

4. The figure below shows a trapezoid and its midsegment.

   What is the probability that a randomly chosen point on the figure will be above the midsegment of the trapezoid?
   A. \( \frac{13}{30} \)
   B. \( \frac{1}{2} \)
   C. \( \frac{13}{15} \)
   D. The probability cannot be determined from the given information.

5. A pattern for a skirt requires fabric cut in the shape shown below, with the given dimensions.

   What is the area of this piece of fabric, in square centimeters?
   A. 800 cm²
   B. 4,000 cm²
   C. 4,200 cm²
   D. 8,000 cm²

6. A right pentagonal pyramid has a height of approximately 6.9 centimeters and a slant height of 7 centimeters. The pyramid's base is a regular pentagon with a side length of 2 centimeters and an apothem of approximately 1.4 centimeters.

   What is the best estimate for the lateral surface area of the pentagonal pyramid?
   A. 7 cm²
   B. 14 cm²
   C. 35 cm²
   D. 70 cm²