

CONGRUENCY & SIMILARITY

Name _____ Date _____

WARM UP #1

Lesson 2: Geometric Transformations

Skill: Proportional Relationships Review

1) Is the relationship proportional? Explain.	2) Is the relationship proportional? Explain.
$\frac{4}{5} = \frac{16}{20}$	$\frac{2}{3} = \frac{10}{9}$

Name _____ Date _____

ROTATIONS

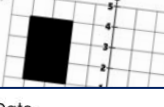
Key Points:

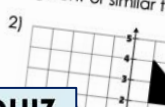
- When you translate an object, you _____ it around a point.
- An image that has been rotated will be _____ to the original image.
- Images can be rotated in _____ ways clockwise or counterclockwise: _____ and _____.

Exam _____

SIMILARITY AND CONGRUENCY

Indicate whether each image is congruent or similar to the pre-image.

1) 

2) 

3) 

or Congruent? _____

Similar or Congruent? _____

above and describe: _____

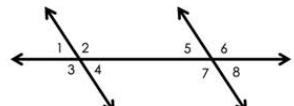
red? _____

Name _____ Date _____

PARALLEL LINES, TRANSVERSALS AND TRANSFORMATIONS

1) List all pairs of vertical angles.

2) List the exterior angles.



Identify the relationship between the following _____

Name _____ Date _____

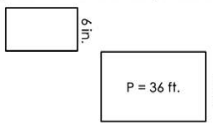
EXIT TICKET #1

Lesson 5: Area & Perimeter of Similar Figures

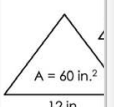
Skill: Area and Perimeter of Similar Figures

The given shapes for each question are similar and not drawn to scale.

1) Find the unknown perimeter.



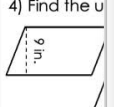
2) Find the unknown area.



3) Find the unknown perimeter.



4) Find the unknown area.



Name _____ Date _____

CONGRUENCY AND SIMILARITY

or congruent? Describe the sequence of transformations that were applied to the pre-image (filled) and image.



Unit 6

CONGRUENCY AND SIMILARITY ASSESSMENT

Congruency and Similarity Unit Exam

lindsayperro@gmail.com [Switch account](#)

* Required

Email *

Your email

unit 6

CONGRUENCY AND SIMILARITY

Vocabulary

- | | |
|---|--|
| <ul style="list-style-type: none"> • Alternate Exterior Angles • Angle-Angle Criterion • Center of Dilation • Congruent • Corresponding Angles • Dilation • Exterior Angles • Interior Angles • Parallel Lines | <ul style="list-style-type: none"> • Reflection • Rotation • Scale Factor • Similar • Transformation • Translation • Transversal • Vertical Angles |
|---|--|

Objectives

- Establish facts about the angles created when parallel lines are cut by a transversal.
- Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
- Given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
- Verify experimentally the properties of rotations, reflections, and translations.
- Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations.
- Given two congruent figures, show a sequence that shows the congruence between them.
- Understand and use the angle-angle criterion to determine similarity of triangles.
- Identify missing dimensions in similar figures when given area or perimeter.

Standards

CCSS

- 7.RP.2
- 8.G.1
- 8.G.2
- 8.G.3
- 8.G.4
- 8.G.5

TEKS

- 8.3(A)
- 8.3(C)
- 8.8(D)
- 8.10(A)
- 8.10(B)
- 8.10(C)
- G.7(A)
- G.7(B)

CONGRUENCY AND SIMILARITY

Lesson	Resources
Unit Prep pages (5 – 13)	- Vocabulary Page - Warm Up Page - Unit Pre-Assessment
1) Parallel Lines and Transversals pages (14 – 19)	1 Warm-Up - Parallel Lines and Transversals Notes - Parallel Lines and Transversals Practice 1 Exit Ticket
2) Transformations pages (20 – 42)	- Four Warm-Ups - Transformations Notes (2 pages) - Translations Notes - Reflections Notes - Rotations Notes - Dilations Notes - Constructing Dilations Notes - Transformations Fold and Flip Notes - Translations Practice - Reflections Practice - Rotations Practice - Dilations Practice - Multi-Step Transformations Practice - Transformations & Ordered Pairs Practice - Parallel Lines, Transversals and Transformations Quiz - Four Exit Tickets
3) Similarity and Congruency pages (43 – 48)	- One Warm-Up - Similarity and Congruency Notes - Similarity and Congruency Practice (2 pages) (for homework or classwork) - One Exit Ticket
4) Similar Triangles pages (49 – 53)	- Two Warm-Ups - Similar Triangles Notes - Similar Triangles Practice (can be used for homework or classwork) - Two Exit Tickets
5) Area and Perimeter of Similar Figures pages (54 – 60)	- Two Warm-Ups - Area and Perimeter of Similar Figures Notes - Area and Perimeter of Similar Figures Guided Practice - Area and Perimeter of Similar Figures Practice (for homework or classwork) - Similar Figures Quiz - Two Exit Tickets
End of Unit pages (61 – 66)	- Review Sheet - Flip Book (separate PDF file) - Unit Post-Assessment

TEACHER RESOURCES

8TH GRADE MATH CURRICULUM - UNIT 6

CONGRUENCY AND SIMILARITY

DAY 1 TOPIC: Unit Prep RESOURCES: - Unit 5 Review Activity {teacher choice} - Unit 6 Pre-Assessment	DAY 2 TOPIC: Parallel Lines and Transversals RESOURCES: - L1 Warm Up 1 - Parallel Lines and Transversals Notes - Parallel Lines and Transversals Practice - Exit Ticket 1	DAY 3 TOPIC: Transformations RESOURCES: - L2 Warm Up 1 - Transformations Notes (2 pages) - Translations Notes - Translations Practice - Exit Ticket 1
DAY 4 TOPIC: Transformations RESOURCES: - L2 Warm Up 2 - Reflections Notes - Rotations Notes - Reflections Practice - Rotations Practice	DAY 5 TOPIC: Transformations RESOURCES: - L2 Warm Up 3 - Dilations Notes* - Dilations Practice*	DAY 6 TOPIC: Transformations RESOURCES: - L2 Warm Up 4 - Finish classwork

- Reflections Notes
- Rotations Notes
- Reflections Practice
- Rotations Practice

- Dilations Notes*
- Dilations Practice*

- Finish classwork

WARM UP #1

Lesson 2: Geometric Transformations

Skill: Proportional Relationships Review

1. Is the relationship proportional? Explain.

16 20	$\frac{2}{3} = \frac{10}{9}$
----------	------------------------------

2. Is the relationship proportional? Explain.

16 20	$\frac{2}{3} = \frac{10}{9}$
----------	------------------------------

3. There are 4 chickens for every one cow on a farm. If the farm has 14 cows, how many chickens are there?

4. There are 4 chickens for every one cow on a farm. If the farm has 14 cows, how many chickens are there?

ROTATIONS

Key Points:

- When you translate an object, you _____ it around a point _____ to the original image.
- An image that has been rotated will be _____ ways clockwise or counterclockwise.
- Images can be rotated in _____ and _____.

Examples:

Rotate 180°

Clockwise around the origin:

+	+	+	+
+	+	+	+
+	+	+	+
+	+	+	+

Rotate 90°

Clockwise around the origin:

+	+	+	+
+	+	+	+
+	+	+	+
+	+	+	+

Notes _____

8TH GRADE MATH CURRICULUM

CONGRUENCY AND SIMILARITY

CONGRUENCY AND SIMILARITY

UNIT VOCABULARY

CONGRUENCY AND SIMILARITY

Alternate Exterior Angles	
Angle - Angle Criterion	
Center of Dilation	
Congruent	
Corresponding Angles	
Dilation	
Similar Angles	

Name _____

Week of _____ to _____

Date:	
Date:	
Date:	

8TH GRADE MATH CURRICULUM - UNIT 6

CONGRUENCY AND SIMILARITY

Name	Pre-Assessment	Assessments	Notes

UNIT 6 LESSON 2

TRANSFORMATIONS

UNIT 6 LESSON 2
TRANSFORMATIONS

[illegible]

CONGRUENCY AND SIMILARITY

[illegible]

GEOMETRIC TRANSFORMATIONS

Resource: 8 th Unit, 6 Lesson 2: Transformations	
Suggested Class Time: 4-6 days	
This Big Idea	
This is a complete lesson and practice for transformations. Students will: - Describe the effect of dilations. - Given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. - Verify experimentally the properties of rotations, reflections, and translations.	
Standards	
CCSS	
• 8.G.1: Verify experimentally the properties of rotations, reflections, and translations. • 8.G.2: Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. • 8.G.3: Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	TEKS • 8.3(A): Generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation. • 8.3(C): Use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation. • 8.10(A): Generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane. • 8.10(B): Differentiate between transformations that preserve congruence and those that do not. • 8.10(C): Explain the effect of translations, reflections over the x- or y-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation.
Prerequisite Skills	
- Angle relationships	
Common Misconceptions	
	- Current Skills - Transformations

WARM UPS AND EXIT TICKETS

Lesson 1: Parallel Lines and Transversals

Skill: Solving Equations Review

$$5x - 6 = 2(-3x - 4)$$

$$2) \frac{2x}{5} + 7 = 24$$

WARM UP #1

Name _____

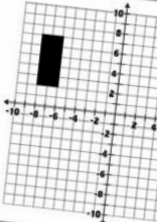
Date _____

Lesson 2: Geometric Transformations

Skill: Translations

- 1) When you translate an object, you _____ it.
- 2) An image that has been translated will be _____ to the original image.
- 3) Images can be translated in _____ directions:

- 5) Translate the shape down 7 units, then right 6 units.



- 6) Translate the shape up 6 units and right 6 units.



WARM UP #1

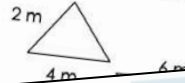
Name _____

Date _____

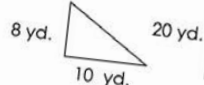
Lesson 4: Similar Triangles

Skill: Similar Triangles

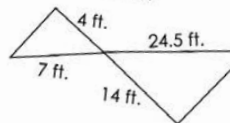
- 1) Are the triangles similar? Explain why or why not. (Triangles are not drawn to scale.)



- 2) Are the triangles similar? Explain why or why not. (Triangles are not drawn to scale.)



- 4) Are the triangles similar? Explain why or why not. (Triangles are not drawn to scale.)



WARM UP #1

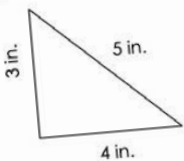
Name _____

Date _____

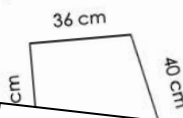
Lesson 5: Area & Perimeter of Similar Figures

Skill: Area and Perimeter Review

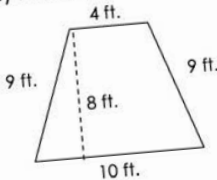
- 1) Find the area and perimeter.



- 2) Find the area and perimeter.



- 3) Find the area and perimeter.



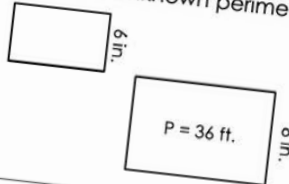
Name _____

Date _____

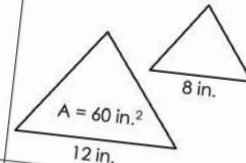
Lesson 5: Area & Perimeter of Similar Figures

Skill: Area and Perimeter of Similar Figures

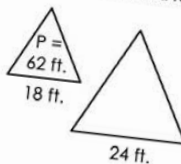
- 1) Find the unknown perimeter.



- 2) Find the unknown area.



- 3) Find the unknown perimeter.



- 4) Find the unknown area.

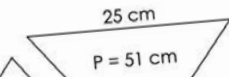


EXIT TICKET

Lesson 5: Area & Perimeter of Similar Figures

Skill: Area and Perimeter

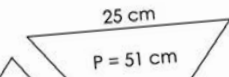
- 1) Find the missing perimeter.



Lesson 5: Area & Perimeter of Similar Figures

Skill: Area and Perimeter

- 1) Find the missing perimeter.



NOTES

GEOMETRIC TRANSFORMATIONS

NOTES

What happens to ordered pairs after a transformation?

Translation

What's the Rule?

Example:

A point $(-2, 6)$ is translated 4 units up. What point?

Reflection

What's the Rule?

Name _____

Date _____

REFLECTIONS

Key Points:

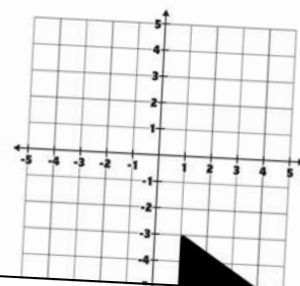
- When you translate an object, you _____ it across a line.
- An image that has been reflected will be _____ to the original image.
- Images can be reflected in _____ directions:
 - _____ and _____

Examples:

Reflect across the x -axis.



Reflect across the y -axis.



SIMILARITY AND CONGRUENCY

Transformations Review:

An image that has been translated will be _____

An image that has been rotated will be _____

An image that has been reflected will be _____

An image that has been dilated will be _____

Identify:

Look at each transformation. Is each pre-image (filled) and image _____



Name _____

Date _____

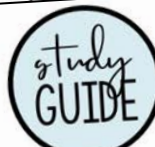
AREA AND PERIMETER OF SIMILAR FIGURES

Explore:

Complete the table for the perimeters and areas of squares with different side lengths

Original side length (square)	Area/Perimeter with original side length	Area/Perimeter with doubled side length	Area/Perimeter with tripled side length	Area/Perimeter with quadrupled side length
		P =	P =	P =
		P =	P =	P =
		P =	P =	P =
		P =	P =	P =
		A =	A =	A =
		A =	A =	A =

CONGRUENCY AND SIMILARITY



GEOMETRIC TRANSFORMATIONS

Translations:

- Vertical or horizontal slide

Reflections:

- Vertical or horizontal flip

Rotations:

- 90° , 180° or 270° clockwise or counterclockwise rotation around a point.

Dilations:

- A stretch or shrink using a given scale factor.

ORDERED PAIR TRANSFORMATIONS

Reflections:

- Across the x -axis (x, y) to $(x, -y)$
- Across the y -axis (x, y) to $(-x, y)$
- $y = x$ (x, y) to (y, x)

Rotations:

- 90° counterclockwise (x, y) to $(-y, x)$
- 180° counterclockwise (x, y) to $(-x, -y)$

Translations:

PARALLEL LINES AND TRANSVERSALS



Parallel Lines	Two lines that never intersect
Transversal	A line that intersects two or more parallel lines
Supplementary Angles	Angles that add up to 180° . Example: $\angle 1$ and $\angle 2$
Interior Angles	Angles inside the parallel lines. Example: $\angle 3$ and $\angle 4$
Alternate angles	Angles that are on opposite sides of the transversal and between the parallel lines. Example: $\angle 2$ and $\angle 7$
Corresponding Angles	Angles that are in the same relative position. Example: $\angle 1$ and $\angle 5$
Vertical angles	Angles that are opposite each other at a vertex. Example: $\angle 1$ and $\angle 4$

TRANSLATIONS

REFLECTIONS

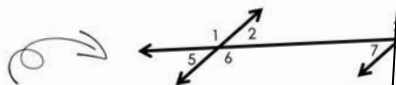
DILATIONS

ROTATIONS

PRACTICE WORKSHEETS

PARALLEL LINES AND TRANSVERSALS

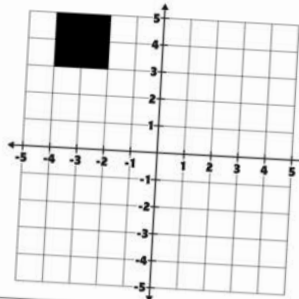
Use the diagram to the right to answer the questions below.



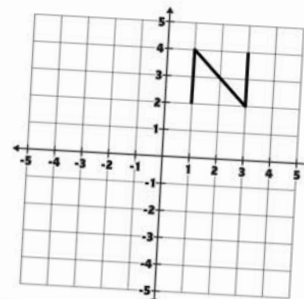
1	Angles that add up to 90° are what kind of angles?	
2	Identify one pair of vertical angles.	
3	Angles 6 and 8 are what kind of angles?	
4	Angles 3 and 4 are what kind of angles?	

TRANSLATIONS

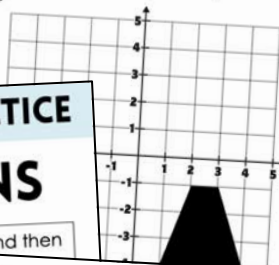
1) Translate the figure 4 units down.



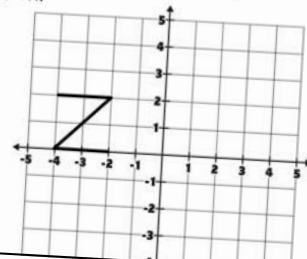
2) Translate the figure 6 units left.



3) Translate the figure 5 units up and 2 units left.

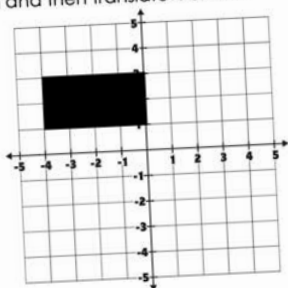


4) Translate the figure 5 units right and 2 units down.

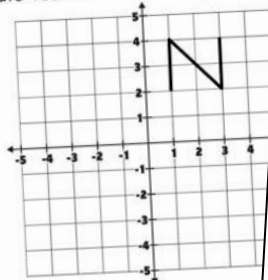


MULTI-STEP TRANSFORMATIONS

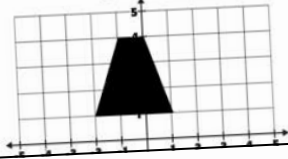
1) Rotate the shape 90° clockwise around the origin and then translate 4 units down.



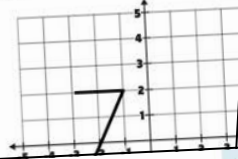
2) Reflect the shape across the y -axis and then rotate 180° around the origin.



3) Translate the shape 6 units down and then reflect across the y -axis.



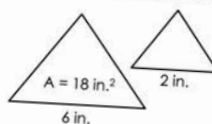
4) Dilate by a scale factor of $\frac{1}{2}$, centered at the origin, and then translate 2 units down.



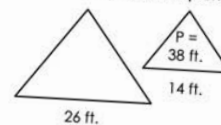
AREA AND PERIMETER OF SIMILAR FIGURES

For #1 - 4: The given shapes for each question are similar and not drawn to scale.

1) Find the unknown area.



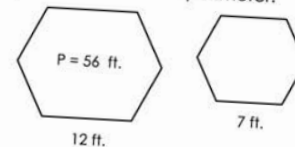
2) Find the unknown perimeter.



3) Find the unknown area.

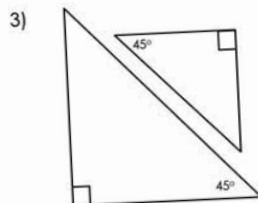
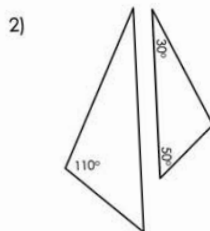
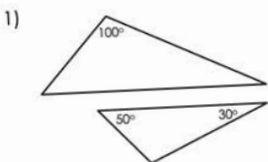


4) Find the unknown perimeter.



SIMILAR TRIANGLES

For #1 - 3: Identify whether the pair of triangles is similar. Explain your answers.



2 feet tall and 25 feet long. A similar wall has an area of 169 square feet. How long is the wall? Show your work.

The ratio of the perimeters of two parallelograms is 25 : 36. What is the ratio of their corresponding sides?

A photo and the frame are similar rectangles. The area of the photo is 16 square feet. What is the area of the frame? Show your work.

Find the area of the shaded region. Round to the nearest tenth.

ASSESSMENTS - PRINT AND DIGITAL

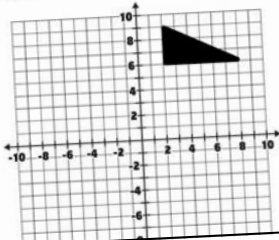
Name _____ Date _____

PRE-ASSESSMENT

CONGRUENCY AND SIMILARITY

For #1 - 4: Apply each transformation.

- 1) 90° clockwise rotation around the origin. 2) Translate 6 units left.



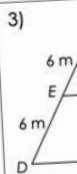
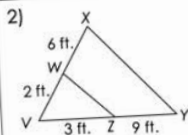
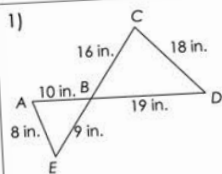
Name _____ Date _____

QUIZ

SIMILAR FIGURES

Note: The given shapes for each question are similar and not drawn to scale. Round to the nearest tenth.

For #1 - 3: Identify whether the triangles are similar.

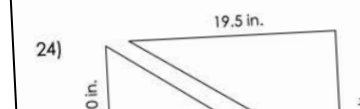
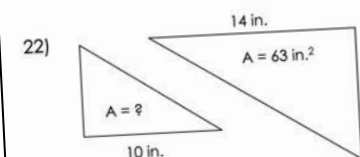
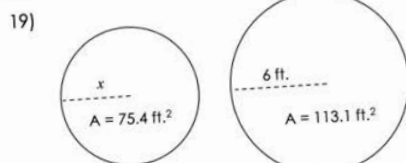
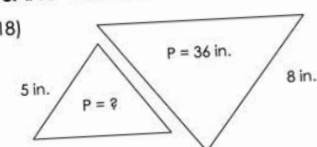


For #4 - 5: Find the value of x in the pair of similar triangles.



CONGRUENCY AND SIMILARITY

For #18 - 25: Find the missing value or values in each pair of similar figures.



21)

23)

25)

Name _____ Date _____

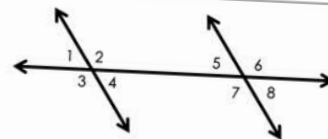
QUIZ

PARALLEL LINES, TRANSVERSALS AND TRANSFORMATIONS

1) List all pairs of vertical angles.

2) List the exterior angles.

3) If $\angle 4 = 83^\circ$, identify the rest of the angle measurements.



Identify the relationship between the following angles:

- 4) Angles 1 & 5 are _____
5) Angles 7 & 8 are _____
6) Angles 4 & 1 are _____

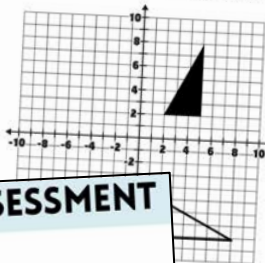
$\angle 2 =$ _____
 $\angle 4 =$ _____
 $\angle 6 =$ _____

Name _____ Date _____

ASSESSMENT

CONGRUENCY AND SIMILARITY

1) Are the figures similar or congruent? Describe the sequence of transformations that were applied between the pre-image (filled) and image.



ASSESSMENT

or congruent? Describe the sequence of transformations that were applied between the pre-image (filled) and image.



Unit 6 CONGRUENCY AND SIMILARITY ASSESSMENT

Congruency and Similarity Unit Exam

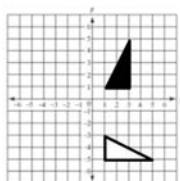
lindsayperro@gmail.com [Switch account](#)

* Required

Email *

Your email

1) Determine if the figures are similar or congruent. Describe the sequence of transformations that were applied between the pre-image (filled) and image.



Your answer

2) Determine if the figures are similar or congruent. Describe the sequence of transformations that were applied between the pre-image (filled) and image.



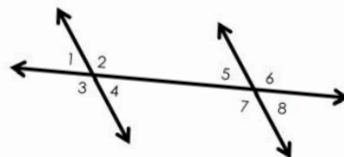
UNIT 6 QUIZ PARALLEL LINES, TRANSVERSALS AND TRANSFORMATIONS

Unit 6 Quiz - Parallel Lines, Transversals, and Transformations

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* Required

Use this figure to answer questions 1-7



1) Which of the following angle pairs are vertical? (Choose all that apply) * 5 points

- ☐ $\angle 6$ & $\angle 8$
☐ $\angle 5$ & $\angle 8$
☐ $\angle 1$ & $\angle 2$
☐ $\angle 2$ & $\angle 3$
☐ $\angle 5$ & $\angle 7$
☐ $\angle 1$ & $\angle 4$
☐ $\angle 2$ & $\angle 4$
☐ $\angle 6$ & $\angle 7$