

## 19 – 20 Honor's Geometry Midterm Review

Most problems on this review are released questions from the end of course test. These types of problems have accompanying video explanations on my website.

There are two questions at the end that do not have video explanations. I will provide a written explanation of these problems on my website.

## Question 2

Line segment AB has endpoints A  $(-1.5, 0)$  and B  $(4.5, 8)$ . Point C is on line segment AB and is located at  $(0, 2)$ .

What is the ratio of  $\frac{AC}{CB}$ ?

## Question 7

A study reports that in 2010 the population of the United States was 308,745,538 people and the land area was approximately 3,531,905 square miles.

Based on the study, what was the population density, in people per square mile, of the United States in 2010? Round your answer to the nearest tenth.

*people per square mile*

## Question 16

Kevin asked Olivia what parallel lines are. Olivia responded, "They are lines that never intersect."

What important piece of information is missing from Olivia's response?

- (A) The lines must be straight.
- (B) The lines must be coplanar.
- (C) The lines can be noncoplanar.
- (D) The lines form four right angles.

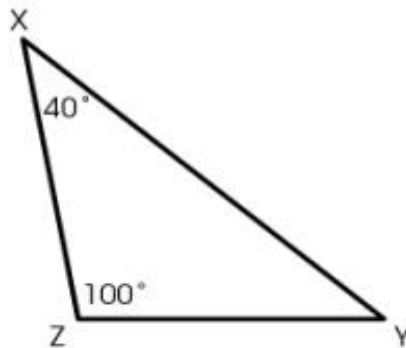
**Question 15**

Square ABCD has vertices at A (1, 2) and B (3, - 3).

What is the slope of  $\overline{BC}$ ?

**Question 3**

Triangle XYZ is shown.

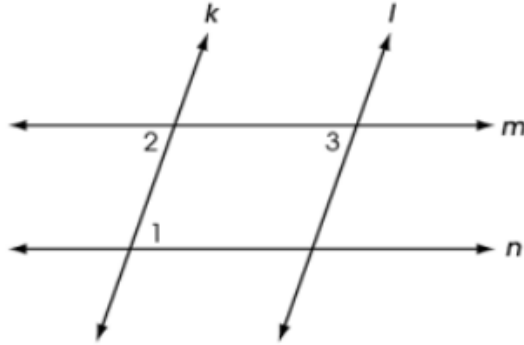


Which triangle must be similar to triangle XYZ?

- (A) a triangle with two angles that measure  $40^\circ$
- (B) a triangle with angles that measure  $40^\circ$  and  $60^\circ$
- (C) a scalene triangle with only one angle that measures  $100^\circ$
- (D) an isosceles triangle with only one angle that measures  $40^\circ$

## Question 13

Two pairs of parallel lines intersect to form a parallelogram as shown.



Place statements and reasons in the table to complete the proof that the opposite angles of a parallelogram are congruent.

Statements		Reasons	
1.	$m \parallel n$ $k \parallel l$	1.	Given
2.		2.	
3.		3.	
4.		4.	

$$\angle 1 \cong \angle 2$$

$$\angle 1 \cong \angle 3$$

$$\angle 2 \cong \angle 3$$

$$\angle 1 \cong \angle 1$$

Alternate exterior angles are congruent.

Alternate interior angles are congruent.

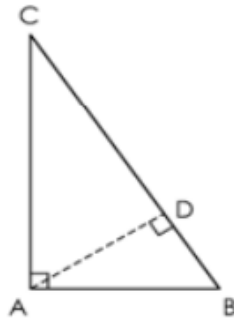
Transitive property of congruence

Opposite angles are congruent.

Corresponding angles are congruent.

## Question 17

James correctly proves the similarity of triangles DAC and DBA as shown.



His incomplete proof is shown.

Statements		Reasons	
1.	$m\angle CAB = m\angle ADB = 90^\circ$	1.	Given
2.	$m\angle ADB + m\angle ADC = 180^\circ$	2.	Angles in a linear pair are supplementary.
3.	$90^\circ + m\angle ADC = 180^\circ$	3.	Substitution
4.	$m\angle ADC = 90^\circ$	4.	Subtraction property of equality
5.	$\angle CAB \cong \angle ADB$ $\angle CAB \cong \angle ADC$	5.	Definition of congruent angles
6.	$\angle ABC \cong \angle DBA$ $\angle DCA \cong \angle ACB$	6.	Reflexive property of congruence
7.	$\triangle ABC \sim \triangle DBA$ $\triangle ABC \sim \triangle DAC$	7.	?
8.	$\triangle DBA \sim \triangle DAC$	8.	Substitution

What is the missing reason for the seventh statement?

- (A) CPCTC
- (B) AA postulate
- (C) All right triangles are similar.
- (D) Transitive property of similarity

**Question 31**

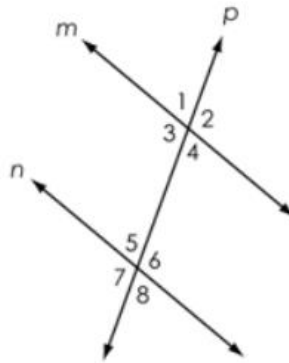
Which term is defined as two intersecting lines that form four right angles in a plane?

- (A) skew lines
- (B) straight lines
- (C) parallel lines
- (D) perpendicular lines

**Question 39**

Given:  $m \parallel n$  and transversal  $p$

Prove:  $\angle 5 \cong \angle 4$



Part of a proof is shown. Place statements and reasons in the table to complete the proof.

Statements	Reasons
1. $m \parallel n$ and transversal $p$	1. Given
2.	2.
3.	3.
4. $\angle 5 \cong \angle 4$	4.

$\angle 8 \cong \angle 1$	Vertical angles theorem
$\angle 1 \cong \angle 4$	Corresponding angles postulate
$\angle 8 \cong \angle 4$	Transitive property
$\angle 5 \cong \angle 8$	Alternate exterior angles theorem
$\angle 5 \cong \angle 7$	Reflexive property
$\angle 4 \cong \angle 7$	Angle addition postulate

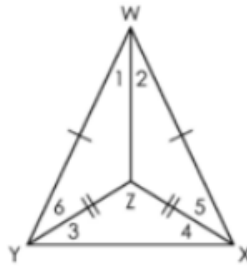
**Question 9**

Line  $k$  has a slope of  $-5$ . Line  $j$  is perpendicular to line  $k$  and passes through the point  $(5, 9)$ .

Create the equation for line  $j$ .

**Question 44**

Triangle  $YWX$  is shown.



Given:  $WY \cong WX$ ,  $ZY \cong ZX$

Prove:  $WZ$  bisects  $\angle YWX$

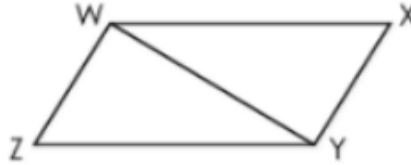
Place statements and reasons in the blank boxes to complete the proof.

Statements	Reasons
$WY \cong WX$ $ZY \cong ZX$	Given
$\triangle WYX \cong \triangle WXY$ $\angle 3 \cong \angle 4$	
$m\angle WYX = m\angle WXY$ $m\angle 3 = m\angle 4$	Measures of congruent angles are equal.
$m\angle WYX = m\angle 6 + m\angle 3$ $m\angle WXY = m\angle 5 + m\angle 4$	
$m\angle 6 + m\angle 3 = m\angle 5 + m\angle 4$	Substitution
	Substitution
$m\angle 6 = m\angle 5$	
	SAS
$\angle YWZ \cong \angle XWZ$	
$WZ$ bisects $\angle YWX$	

$m\angle 6 + m\angle 3 = m\angle 5 + m\angle 3$	$\triangle WYZ \cong \triangle WXZ$	Addition Property of Equality
$m\angle 6 = m\angle 5 + m\angle 4 - m\angle 3$	$\triangle WYX \cong \triangle ZYX$	Substitution
$m\angle 6 + m\angle 3 = m\angle 3 + m\angle 4$	Corresponding parts of congruent triangles are congruent.	Angle Addition Postulate
Base angles of isosceles triangles are congruent.	Definition of angle bisector	Reflexive Property
Corresponding parts of similar triangles are congruent.		

## Question 21

A parallelogram and incomplete proof are shown.



Given:  $WXYZ$  is a parallelogram.

Prove:  $\overline{WX} \cong \overline{YZ}$

Place reasons in the table to complete the proof.

Statements	Reasons
1. $WXYZ$ is a parallelogram.	1. Given
2. $\overline{WX} \parallel \overline{YZ}$ $\overline{WZ} \parallel \overline{XY}$	2. Definition of a parallelogram
3. $\angle ZWY \cong \angle XYW$ $\angle ZYW \cong \angle XWY$	3.
4. $\overline{WY} \cong \overline{WY}$	4.
5. $\triangle WYZ \cong \triangle YWX$	5.
6. $\overline{WX} \cong \overline{YZ}$	6.

Corresponding angles are congruent.	SSS	Transitive property
Alternate exterior angles are congruent.	SAS	Reflexive property
Alternate interior angles are congruent.	ASA	Angle addition postulate
Corresponding parts of congruent triangles are congruent.	AA	Corresponding parts of congruent triangles are similar.

## Question 11

Jeremy wants to know the density of a rock in grams per cubic centimeter. The rock has a mass of 1.08 kilograms and a volume of 400 cubic centimeters.

What is the density of the rock, in **grams** per cubic centimeter  $\left(\frac{g}{cm^3}\right)$ ?

$\frac{g}{cm^3}$



## Question 11

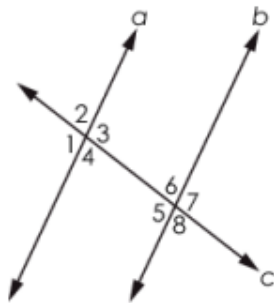
Point A is located at  $(-1, -5)$ . The midpoint of line segment AB is point C  $(2, 3)$ .

What are the coordinates of point B?

(  ,  )

## Question 40

Two parallel lines,  $a$  and  $b$ , are cut by a transversal  $c$  as shown.



Drag a statement or reason to each blank in the table to complete the proof that  $\angle 1 \cong \angle 7$ .

Statements	Reasons
1. $a \parallel b$	1. Given
2. <input type="text"/>	2. <input type="text"/>
3. <input type="text"/>	3. <input type="text"/>
4. $\angle 1 \cong \angle 7$	4. <input type="text"/>

$\angle 1 \cong \angle 3$     $\angle 1 \cong \angle 4$     $\angle 1 \cong \angle 5$     $\angle 3 \cong \angle 5$

$\angle 3 \cong \angle 7$     $\angle 4 \cong \angle 6$     $\angle 5 \cong \angle 7$     $\angle 6 \cong \angle 7$

Transitive property   Vertical angles are congruent.

Definition of supplementary angles.

Corresponding angles formed by parallel lines are congruent.

Alternate interior angles formed by parallel lines are congruent.

Alternate exterior angles formed by parallel lines are congruent.

## Question 21

Trisha wants to create the perpendicular bisector of line segment AB.

She places her compass on point A and opens it with the width equal to the length of the line segment AB. She makes arcs above and below the line segment.

What could be Trisha's next step to create the perpendicular bisector of line segment AB?

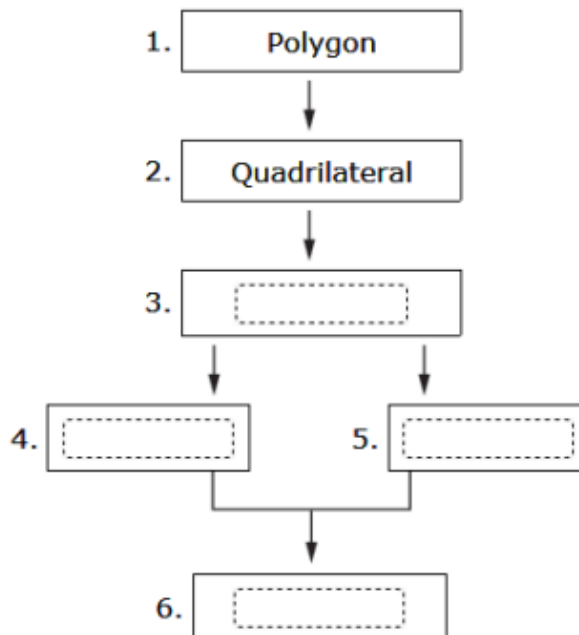
- (A) connect the two arcs using a straightedge
- (B) connect each arc with point B using a straightedge
- (C) place the compass on the approximate midpoint and draw intersecting arcs
- (D) place the compass on point B and complete the same steps that she did for point A

## Question 12

A partially completed chart shows the hierarchy of a set of polygons.

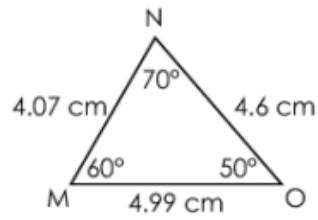
Move a term to each blank box to complete the chart.

Kite    Parallelogram    Rectangle    Rhombus    Square

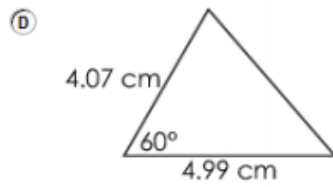
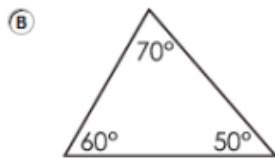
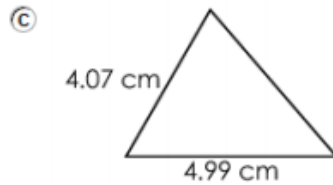
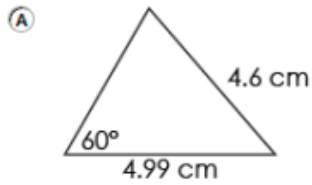


**Question 34**

Triangle MNO is shown.



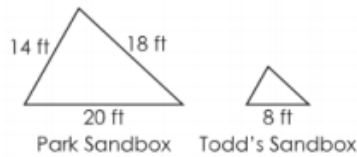
Which triangle can be shown to be congruent to triangle MNO with only the given information?



**Question 49**

A park has a triangular sandbox. Todd wants to create a smaller sandbox at his backyard having the same angles as the park sandbox.

Drawings of both sandboxes are shown.



What is the perimeter, in feet (ft), of Todd's sandbox?

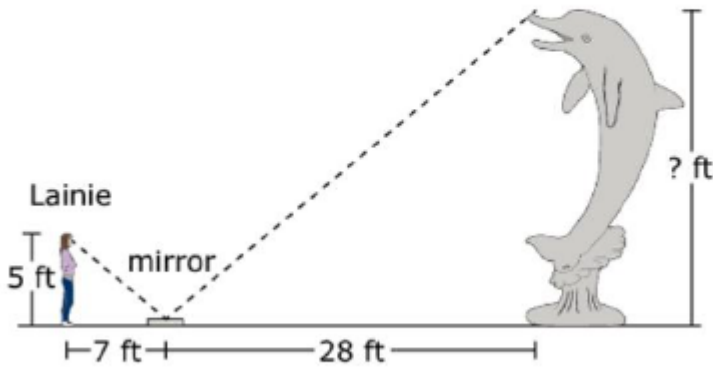
ft



1	2	3
4	5	6
7	8	9
	0	
.	-	$\frac{\square}{\square}$

Written work on website, not a video

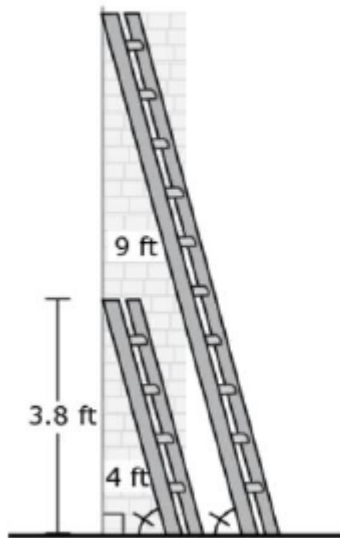
Lainie wants to calculate the height of the sculpture. She places a mirror on the ground so that when she looks into the mirror she sees the top of the sculpture, as shown.



What is the height, in feet, of the sculpture?

Written work on website, not a video

A 9-foot ladder and a 4-foot ladder are leaning against a house. The two ladders create angles of the same measure with the ground. The 4-foot ladder has a height of 3.8 feet against the house.



What is the height, in feet, of the 9-foot ladder against the house?