

Geometry - First Semester Final Review

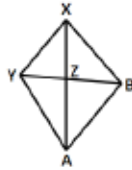
Know the vocabulary. You will be able to use your postulate packet but it takes a lot of time if you don't know what you are looking for!

angle	angle bisector
linear pair	midpoint
coplanar	bisect
postulate	collinear
vertical angles	supplementary angles
adjacent angles	straight angle
segment bisector	congruent segments
right angle	congruent angles
theorem	obtuse angle
acute angle	complementary angles
midpoint	equidistant
perpendicular lines	perpendicular bisector
angle bisector	concurrent lines
point of concurrency	perpendicular bisector of a triangle
circumcenter	angle bisector of a triangle
incenter	median of a triangle
centroid	altitude of a triangle
orthocenter	midsegment of a triangle

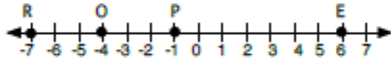
You are able to use ONE 3"X 5" INDEX card to write any definition, formula, note, example, etc. to use on your midterm.

Use the figure to the right to answer the following questions.

- Name three collinear points.
- Name three noncollinear points.
- Name an angle of which B is the vertex.



Use the number line to answer the following questions.



- Give the coordinate of point E.
- Give the coordinate of the midpoint of \overline{OE} .
- $OE + RO =$ _____ (number value)
- $\overline{PE} + \overline{OP} =$ _____ (segment)

State the following formulas.

- Distance Formula
- Midpoint Formula

On a coordinate plane, let X(-5, 2) and Y(-3, 1).

- Find XY.
- Find the midpoint of \overline{XY} .

Use the following conditional statement to answer the following questions.

If a figure is a square then it has four sides.

- State the hypothesis (p) and conclusion (q).
 p = _____
 q = _____
- Write the converse.

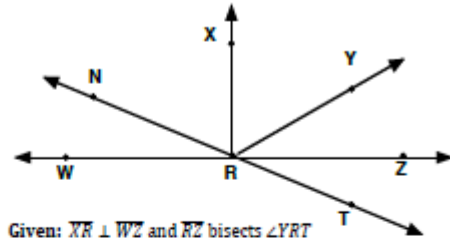
Use the following hypothesis and conclusion to write the conditional, inverse, converse, and contrapositive statements. (Hint: Write out your if-then statements using p and q first, then fill in with words!)

- p: three points are on the same line q: they are collinear
 Conditional: _____
 Inverse: _____
 Converse: _____
 Contrapositive: _____

Use the following conditional and converse to write a biconditional statement.

- Conditional: If a tomato is ripe, then it is red.
 Converse: If a tomato is red, then it is ripe.

Use the following diagram to answer the following questions.



Given: $\overline{XR} \perp \overline{WZ}$ and \overline{RZ} bisects $\angle YRT$

- Name a set of complementary angles.
- Name a set of supplementary angles.
- Name a set of congruent angles.
- Name a set of vertical angles.
- Name a right angle.
- Name an acute angle.
- If $\angle YRZ = 3x - 8$ and $\angle TRZ = 5(x - 5)$, find x.

- If $\angle NRW = 5x + 4$ and $\angle NRX = 2x - 12$, find x.

Using the figure to the right, state how the two angles are related. Then state whether they are congruent or supplementary.

- $\angle 2$ and $\angle 7$

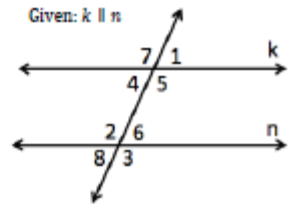
- $\angle 3$ and $\angle 7$

- $\angle 5$ and $\angle 6$

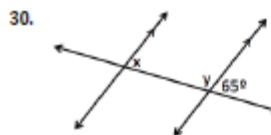
- $\angle 1$ and $\angle 8$

- $\angle 4$ and $\angle 6$

- $\angle 1$ and $\angle 4$



Find each variable in the following diagrams.



State whether the following lines are parallel, perpendicular, or neither.

32. Line 1: $y = 2x - 3$ 33. Line 1: $y = -\frac{3}{5}x - 3$
 Line 2: $y = 9 + 2x$ Line 2: $3y - 5x = -33$

Answer the following questions about congruent figures.

34. Name five ways to prove that two triangles are congruent.

35. What does CPCTC stand for?

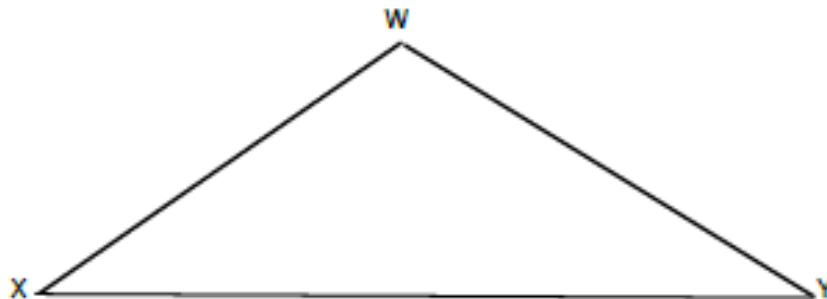
36. If $\triangle XYZ \cong \triangle ABC$, then $\overline{AB} \cong$ _____ and $\angle X \cong$ _____.

Solve the following using properties of triangles.

37. In $\triangle FUN$, the measure of $\angle F$ is 33° .
 The measure of $\angle U$ is six times the measure of $\angle N$.
 Find $m\angle N$ and $m\angle U$.

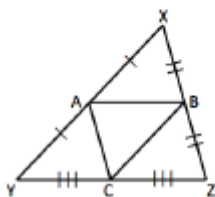
Complete the following constructions.

42. In the following triangle, draw the median from the perpendicular bisector of \overline{WX} .

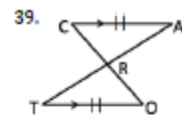
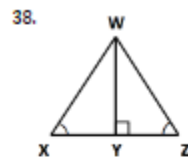


Use the diagram of $\triangle XYZ$ where A, B, and C are midpoints of the sides to answer the following questions.

43. If $AC = 3$, then $XZ =$ _____
 44. If $YZ = 7$, then $AB =$ _____

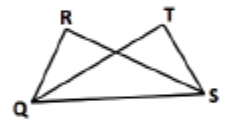


State if the following triangles can be congruent. If yes, state the congruent statement and the congruence postulate or theorem.

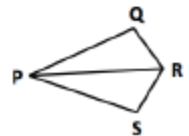


Write a two-column proof of the following.

40. Given: $\angle TQS \cong \angle RSQ$
 $\angle T \cong \angle R$
 Prove: $\triangle TQS \cong \triangle RSQ$



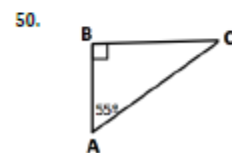
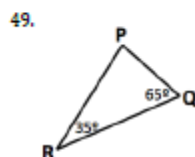
41. Given: \overline{PR} bisects $\angle QPS$
 $\overline{PQ} \cong \overline{PS}$
 Prove: $\angle Q \cong \angle S$



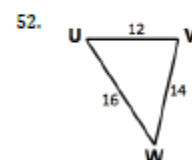
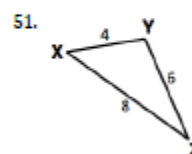
Decide whether the following side lengths can create a triangle.

45. 9, 12, 14 46. 2, 18, 7
 47. 35, 90, 46 48. 1, 1, 2

Name the shortest and longest sides of each triangle.



Name the smallest and largest angles of each triangle.

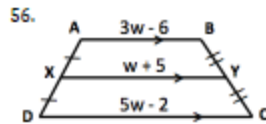
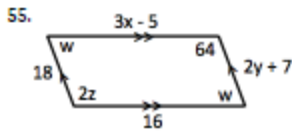


Answer the following questions about polygon angle measures.

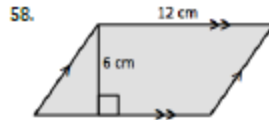
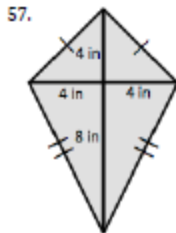
53. Find the sum of the measures of the interior angles of a polygon with 5 sides.

54. Find the measure of one interior angle of a regular polygon with 30 sides.

Find each variable in the following diagrams.



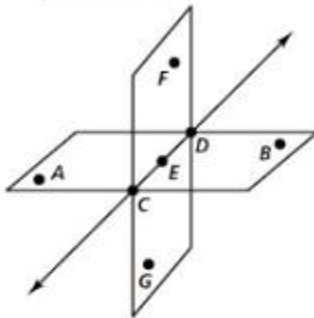
State the shape and then find the area of the following polygons.



GEOMETRY MIDTERM MULTIPLE CHOICE PRACTICE

1.

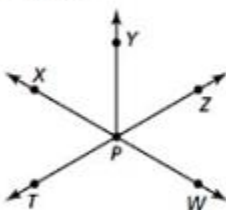
In the diagram below, which point is not coplanar with the points A and B on the plane shown?



- F F H D
G E J C

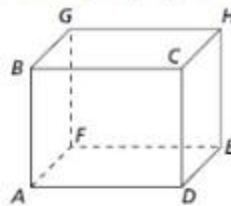
2.

In the figure below, you cannot assume that ?.



3.

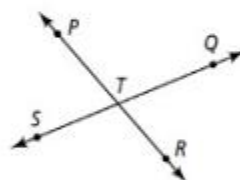
Which group of points is not coplanar?



- A D, A, F, E C F, G, B, A
B E, F, G, H D G, B, F, D

4.

Given the diagram below, which of the following statements is NOT true?



- F \overline{PR} and \overline{SQ} intersect in point T
G \overline{PT} and \overline{TQ} are both rays
H \overline{ST} and \overline{PR} are both segments
J \overline{PT} and \overline{QT} are opposite rays

5.

$\angle TUV$ and $\angle VUW$ are adjacent complementary angles. If $m\angle TUV = 80^\circ$, what is $m\angle VUW$?

- A 10° C 70°
B 90° D 170°

5.

6.

What is the distance between points

$A(1, 9)$ and $B(4, -2)$?

- A $\sqrt{58}$ C $\sqrt{130}$
 B 58 D 130

7.

\overline{AB} has endpoints $A(2, 4)$ and $B(8, y)$. If AB is 10, what is the value of y ?

- F 8 H 64
 G 12 J 100

8.

Use the Transitive Property of Congruence to complete the statement. If $\angle M \cong \angle T$ and $\angle T \cong \angle A$, then _____.

- A $\angle M \cong \angle M$ C $\angle M \cong \angle A$
 B $\angle A \cong \angle T$ D $\angle T \cong \angle M$

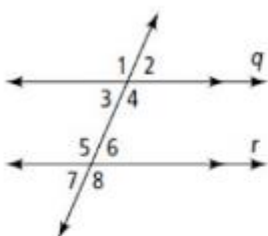
9.

Given that $\angle QRS \cong \angle ABC$, which statement is an example of the Symmetric Property of Congruence?

- F $\angle QRS \cong \angle QRS$ H $\angle QRS \cong \angle ABC$
 G $\angle ABC \cong \angle QRS$ J $\angle ABC \cong \angle ABC$

12.

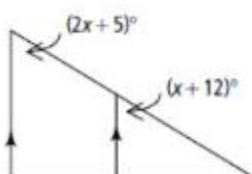
Use the figure below, in which $q \parallel r$. Which of the following could be the measures of $\angle 4$ and $\angle 6$?



- A $m\angle 4 = 60^\circ, m\angle 6 = 60^\circ$
 B $m\angle 4 = 70^\circ, m\angle 6 = 20^\circ$
 C $m\angle 4 = 110^\circ, m\angle 6 = 110^\circ$
 D $m\angle 4 = 160^\circ, m\angle 6 = 20^\circ$

13.

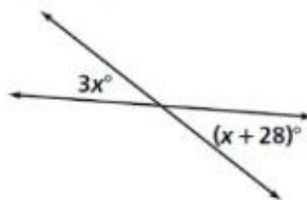
Find the value of x .



- A $x = 3.5$
 B $x = 7$
 C $x = 8.5$
 D $x = 17$

10.

Find the value of x .

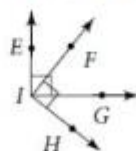


- F $x = 7$ H $x = 9.3$
 G $x = 14$ J $x = 4.7$

11.

Name pairs of congruent angles in the figure.

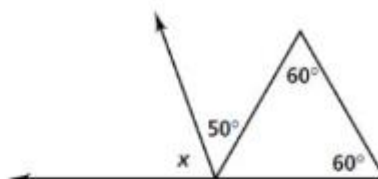
- I. $\angle EIF$ and $\angle GIH$
 II. $\angle GIF$ and $\angle GIH$
 III. $\angle EIF$ and $\angle GIF$
 IV. $\angle EIG$ and $\angle FIH$



- F I and IV H I and II
 G II and III J I only

14.

In the diagram below, what is the value of x ?



- F 70° H 50°
 G 60° J 40°

15.

Which of the following lines is parallel to the line that passes through $(-1, -3)$ and $(5, 0)$?

- A $y = \frac{1}{2}x + 9$
 B $y = -\frac{1}{2}x - 3$
 C $y = 2x + 5$
 D $6x - 3y = -1$

- F 23
 G $\frac{1}{3}$
 H 8
 J 10

16.

What is the y -intercept of the line that is perpendicular to $y = -3x - 5$ and passes through the point $(-3, 7)$?

- 17 Complete the congruence statement, given that quadrilateral $ABCD \cong PQRS$,
 $\overline{AD} \cong \underline{\quad?}$

- F \overline{PQ}
 G \overline{PR}
 H \overline{PS}
 J \overline{QR}

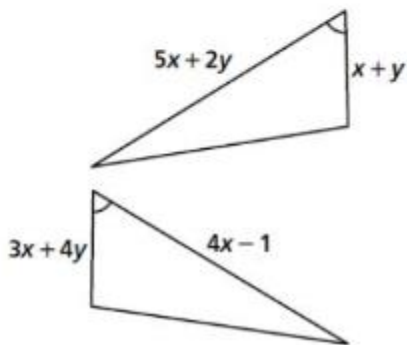
18.

If $MNPQ \cong ABCD$, which of the following conclusions can you make?

- A $\angle NMP \cong \angle BCD$
 B $\angle NPQ \cong \angle BCD$
 C $\angle PQM \cong \angle BAD$
 D none of these

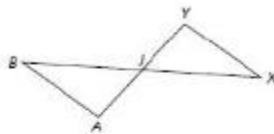
19.

For what values of x and y are the triangles congruent?



- 20 Use the diagram and the information given to complete the missing element of the two-column proof.

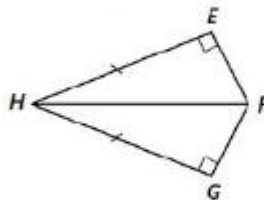
Given: $\overline{AB} \parallel \overline{XY}$
 \overline{AY} bisects \overline{XB} .
 Prove: $\triangle AJB \cong \triangle YJX$.



Statements	Reasons
1. $\overline{AB} \parallel \overline{XY}$	1. Given
2. $\angle B \cong \angle X$ $\angle A \cong \angle Y$	2. Converse of the Alternate Interior Angles Theorem. then alt. int. \angle s are \cong .
3. \overline{AY} bisects \overline{XB} .	3. Given
4. $\overline{JB} \cong \overline{JX}$	4. Definition of segment bisector
5. $\triangle AJB \cong \triangle YJX$	5. _____
A ASA	C SAS
B AAS	D SSS

21.

Which congruence statement can be used to prove that $\triangle EFH \cong \triangle GFH$?



- F HL
 G SAS
 H SSS
 J ASA

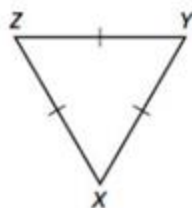
22.

A triangle has vertices A , B , and C . Which of the following does NOT describe a right, isosceles triangle?

- F $m\angle B = 90^\circ$ and $m\angle A = m\angle C$
- G $m\angle A = 90^\circ$ and $AB = AC$
- H $AB = AC$ and $m\angle A = 45^\circ$
- J $AB = AC$ and $m\angle B = 45^\circ$

23.

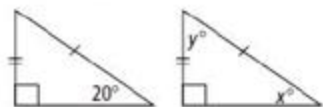
What is the best description of the triangle shown in the figure below?



- A right
- B isosceles
- C equilateral
- D scalene

24.

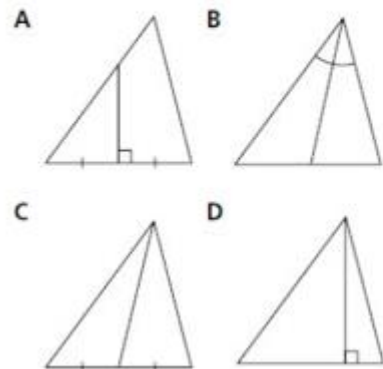
The sails of two boats are pictured below. What is the value of y ?



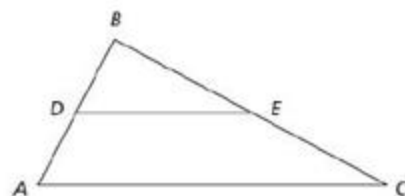
- A 20
- B 60
- C 70
- D 90

27.

Which of the following is an illustration of an angle bisector?



25.

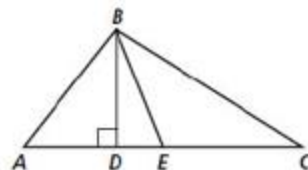


If you know that $\overline{DE} \parallel \overline{AC}$, and that D and E are midpoints, which of the following guarantees that $AC = 2DE$?

- A Triangle Midsegment Theorem
- B Median-Altitude Theorem
- C CPCTC
- D Definition of triangle bisector

26.

Which segment is the altitude of the largest triangle in the diagram?

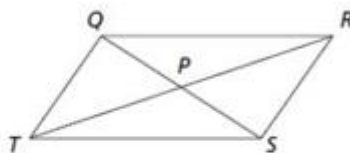


$$\overline{AE} \cong \overline{EC}$$

- F \overline{AD}
- G \overline{DC}
- H \overline{BE}
- J \overline{BD}

30.

Which of the following would prove that quadrilateral $QRST$ is a parallelogram?



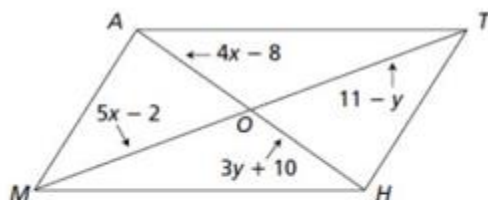
- F $\overline{QR} \cong \overline{ST}$
- G $\overline{QR} \parallel \overline{ST}$
- H $\overline{QP} \cong \overline{PS}$ and $\overline{TP} \cong \overline{PR}$
- J Two pairs of sides are congruent.

28. What is the point of concurrency of the altitudes of a triangle?

- A circumcenter
- B incenter
- C orthocenter
- D centroid

29.

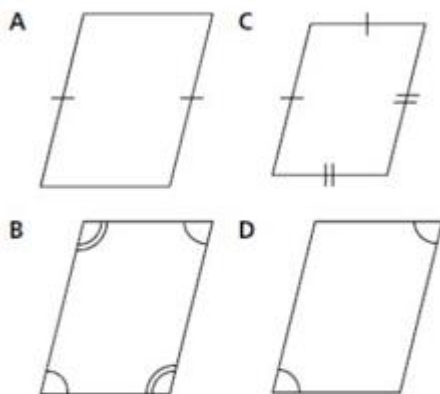
21. The diagonals of parallelogram $MATH$ bisect each other. What is the length of \overline{OH} ?



- A -2
- B 3
- C 4
- D 13

33.

Which quadrilateral must be a parallelogram?



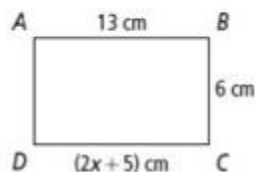
34.

Which is the most specific name for a quadrilateral with four congruent sides?

- F square
- G rhombus
- H rectangle
- J parallelogram

31.

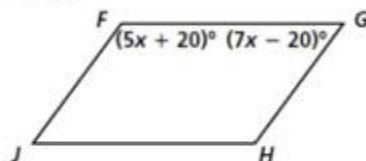
If $ABCD$ is a parallelogram, then what is the value of x ?



- A 4
- B 6
- C 8
- D 13

32.

Find the value of x in parallelogram $FGHJ$.



- F 5
- G 10
- H 15
- J 20

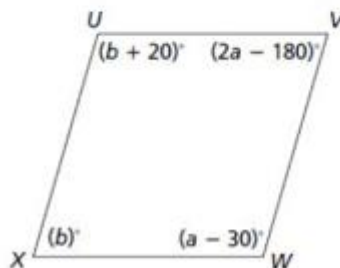
36.

Which of the following statements is NOT true?

- F The diagonals of a rhombus are perpendicular to each other.
- G The diagonals of a kite are perpendicular to each other.
- H The diagonals of a kite bisect each other.
- J The diagonals of a parallelogram bisect each other.

37.

Quadrilateral $UVWX$ is a rhombus. What is the value of b ?



- A 60
- B 80
- C 100
- D 130

35.

Quadrilateral $JKLM$ has four congruent sides and four congruent angles. What is $m\angle JKL$?

- A 45°
- B 60°
- C 90°
- D 180°

39.

Quadrilateral $JKLM$ has vertices $J(-4, -1)$, $K(-1, 2)$, and $L(6, 2)$. For what coordinates of point M is $JKLM$ a parallelogram?

- A $(3, -2)$
- B $(3, -1)$
- C $(4, 0)$
- D $(4, -1)$

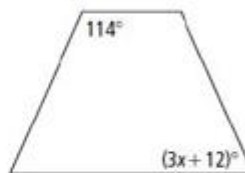
38.

The coordinates of three vertices of a parallelogram are $(0, 0)$, $(8, 5)$, and $(15, 7)$. Which of the following is not a possible fourth vertex?

- F $(-7, -2)$
- G $(-3, -8)$
- H $(23, 12)$
- J $(7, 2)$

40.

What is the value of x that makes the shape an isosceles trapezoid?



- A 16
- B 18
- C 22
- D 66