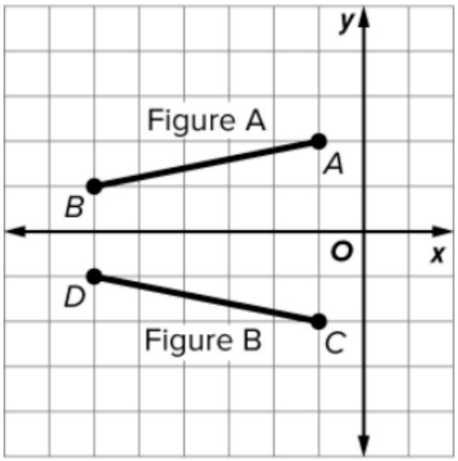
Question 1

Consider the line segments shown.



Which transformation maps Figure A to Figure B?

- **A)** reflection in the y-axis
- **B)** reflection in the x-axis
- **C)** translation of 4 units down
- **D)** counterclockwise rotation by 90° about the origin

Question 2

The coordinates of the image of a point with coordinates $(1,\ 4)$ is $(4,\ -4)$.

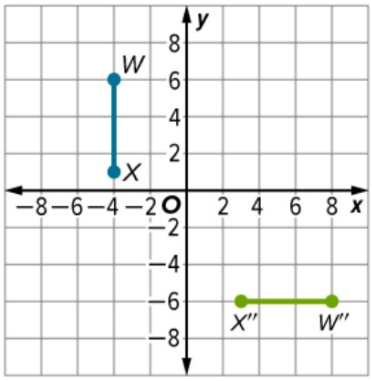
Use the information to complete the transformation rule.

$(x,\ y) \longrightarrow (x +$ Select Choice $,\ y -$ Select Choice $)$

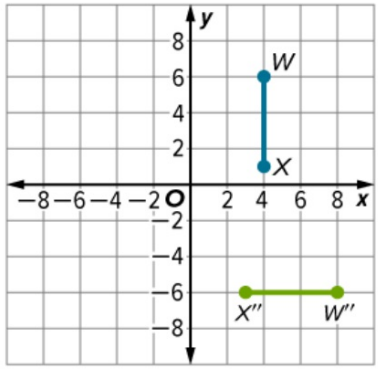
Question 3

Graph $\overline{WX}$ with endpoints $W(-4, 6)$ and $X(-4, 1)$ and its image after the composition of a reflection in the x-axis and a rotation counterclockwise 90° about the origin.

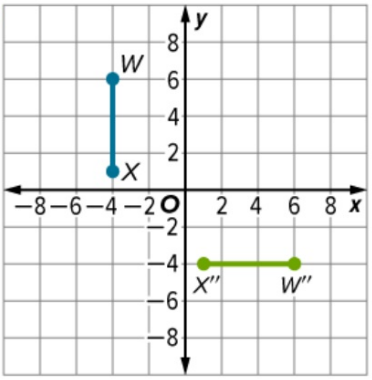
A)



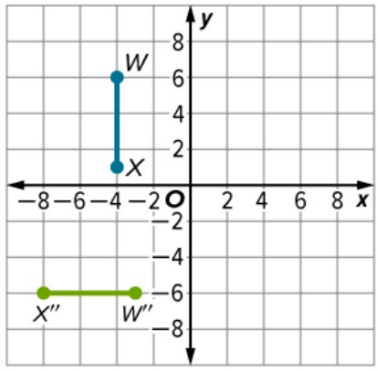
C)



B)

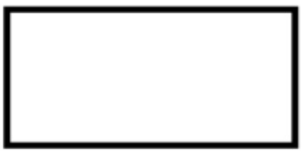


D)



Question 4

A rectangle is shown.



Which transformations will map the rectangle to itself? Select all that apply.

- ☐ **A)** $90°$ rotation about its center
- ☐ **B)** $180°$ rotation about its center
- ☐ **C)** $270°$ rotation about its center
- ☐ **D)** reflection in a horizontal line through its center
- ☐ **E)** reflection in a vertical line through its center
- ☐ **F)** reflection in a diagonal line through its center

Question 5

The coordinates of the image of point $P(4, -5)$ after the transformation $(x, y) \longrightarrow (-x, -y)$ are

(,).

Question 6

On a number line, M is located at -5 and N is located at 3. The midpoint of $\overline{MN}$ is located at Select Choice .

Question 7

Find the measures of two complementary angles if the measure of the larger angle is 2 less than 3 times the measure of the smaller angle.

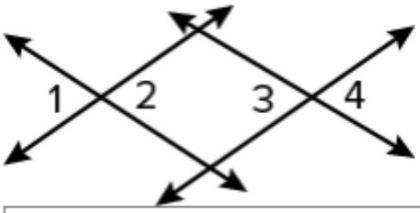
The measure of the smaller angle is [ ]°, and the measure of the larger angle is [ ]°.

Question 8

Complete the proof by selecting the missing reasons.

Given: $\angle 2 \cong \angle 3$

Prove: $\angle 1 \cong \angle 4$



Statements	Reasons
1. $\angle 2 \cong \angle 3$	1. Given
2. $\angle 1 \cong \angle 2$	2. Select Choice
3. $\angle 3 \cong \angle 4$	3. Select Choice
4. $\angle 1 \cong \angle 4$	4. Select Choice

Question 9

B is the midpoint of $\overline{AC}$, where the coordinates of A are $(2,\ 8)$ and the coordinates of B are $(-2,\ 2)$. What are the coordinates of C?

- **A)** $(-6,\ -4)$
- **B)** $(0,\ 5)$
- **C)** $(0,\ 10)$
- **D)** $(6,\ 14)$

Question 10

Line m is represented by $y = \frac{3}{5}x - 3$. Match each equation to the term that accurately describes its relationship to line m.

Instructions

$y = -\frac{5}{3}x + 3$	⟷	
$y = -\frac{3}{5}x + 3$	⟷	
$y = \frac{3}{5}x + 3$	⟷	

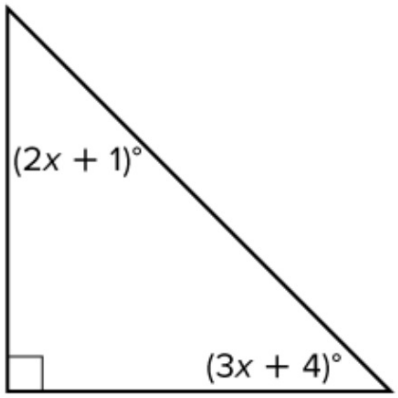
perpendicular

neither parallel nor perpendicular

parallel

Question 11

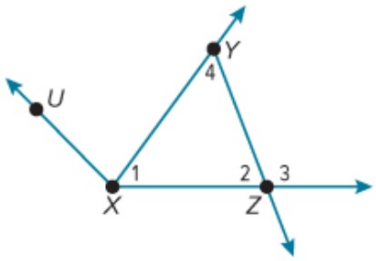
The angle measures of the right triangle are shown. Find the value of x.



$x =$ ____ °

Question 12

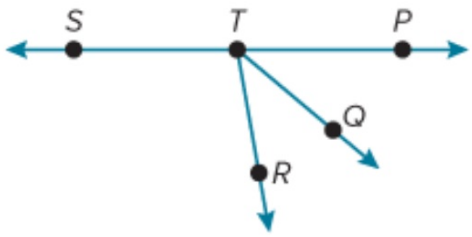
Use the figure to name the vertex of $\angle 3$.



- A) Z
- B) X
- C) Y
- D) U

Question 13

In the figure, $\overrightarrow{TP}$ and $\overrightarrow{TS}$ are opposite rays. $\overrightarrow{TQ}$ bisects $\angle RTP$.

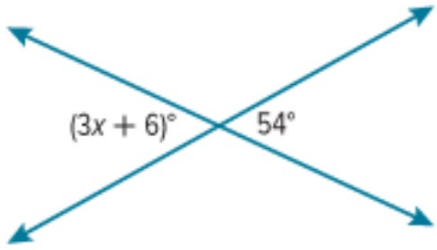


If $m\angle PTQ = 12x + 4$ and $m\angle RTQ = 15x - 5$, find $m\angle RTP$.

$\square^\circ$

Question 14

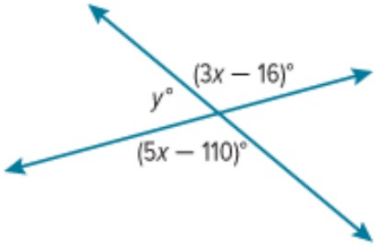
Find the value of x.



$x =$

Question 15

Find the values of x and y.



$x =$ ☐

$y =$ ☐

Question 16

What is the contrapositive of the statement “If a triangle is a right trianlge , then it has a right angle.”?

- **A)** If a triangle has a right angle, then it is a right triangle.
- **B)** If a triangle is a right triangle, then it has a right angle.
- **C)** If a triangle is not a right triangle, then it does not have a right angle.
- **D)** If a triangle does not have a right angle, then it is not a right triangle.

Question 17

Indicate whether each statement is the converse, inverse, or contrapositive of the given statement.

If a quadrilateral is a parallelogram, then the diagnals bisect each other.

If a quadrilateral is not a parallelogram, then its diagonals do not bisect each other. Select Choice

If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram. Select Choice

If the diagonals of a quadrilateral do not bisect each other, then it is not a parallelogram. Select Choice

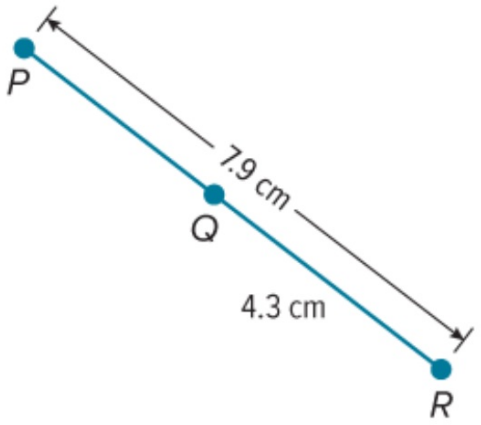
Question 18

Find the value of x if Q is between P and R, $PQ = 5x - 10$, $QR = 3(x + 4)$, and $\overline{PQ} \cong \overline{QR}$.

x=

Question 19

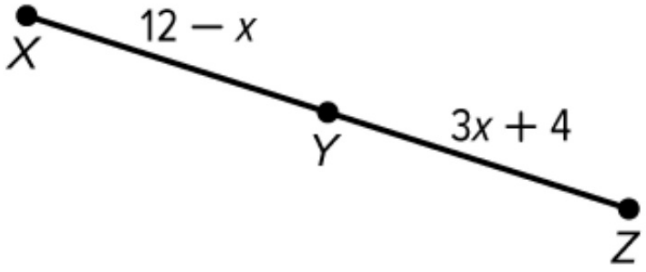
Find the measure of $\overline{PQ}$.



cm

Question 20

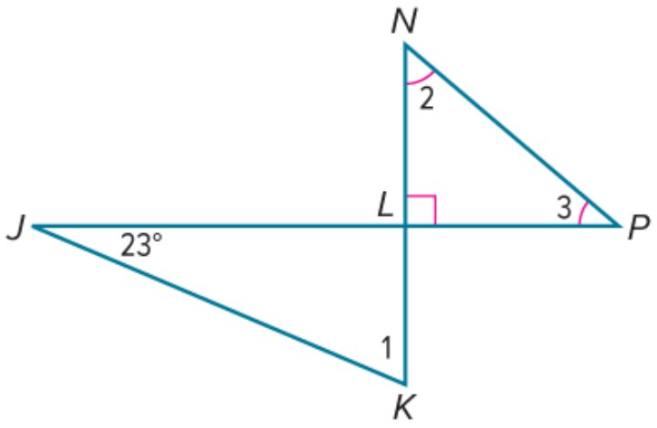
Find the measure of $\overline{YZ}$ if Y is the midpoint of $\overline{XZ}$.



- **A)** 2
- **B)** 10
- **C)** 16
- **D)** 20

Question 21

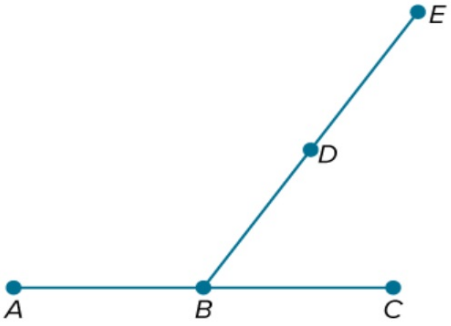
Find the measure of each numbered angle.



$m\angle 1 =$ [ ]°, $m\angle 2 =$ [ ]°, $m\angle 3 =$ [ ]°

Question 22

PROOF Complete the two-column proof to prove the geometric relationship. Drag the missing statements and reasons into the correct order.



Given: B is the midpoint of $\overline{AC}$.
D is the midpoint of $\overline{BE}$.
$\overline{BC} \cong \overline{BD}$

Prove: $\overline{AC} \cong \overline{BE}$

Proof:

Statements	Reasons
1. ?	1. Given
2. $AB = BC$ $BD = DE$	2. ?
3. ?	3. Definition of Congruent Segments
4. $AC = AB + BC$ $BE = BD + DE$	4. ?
5. $AC = BC + BC$ $BE = BD + BD$	5. Substitution Property
6. ?	6. Substitution Property
7. $AC = 2BD$	7. Substitution Property
8. $AC = BE$	8. Substitution Property
9. $\overline{AC} \cong \overline{BE}$	9. ?

$AC = 2BC$
$BE = 2BD$

B is the midpoint of $\overline{AC}$.
D is the midpoint of $\overline{BE}$.
$\overline{BC} \cong \overline{BD}$

Definition of midpoint

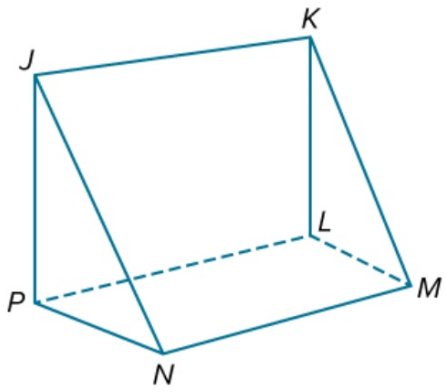
Definition of ≅ Segments

Segment Addition Postulate

$BC = BD$

Question 23

Identify two segments skew to $\overline{MN}$ using the figure shown. Assume that lines and planes that appear to be parallel or perpendicular are paral respectively.



- A) $\overline{JN}$ and $\overline{KM}$
- B) $\overline{JP}$ and $\overline{KL}$
- C) $\overline{JK}$ and $\overline{PL}$
- D) $\overline{PN}$ and $\overline{LM}$

Question 24

Identify the hypothesis and conclusion of the conditional statement. (Assume H and C are hypothesis and conclusion.)

"If there is no struggle, there is no progress." (Frederick Douglass).

H: Select Choice

C: Select Choice

Question 25

Identify the hypothesis and conclusion for the conditional statement. Then write the statement in if-then form.

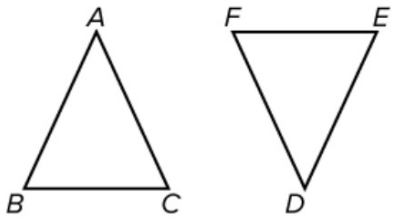
Get a free water bottle with a one-year membership.

H: Select Choice ; C: Select Choice ;

If Select Choice , then Select Choice .

Question 26

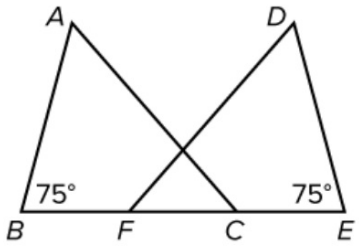
A student is trying to prove that $\triangle ABC$ and $\triangle DEF$ are congruent. If $\overline{FE} \cong \overline{CB}$ and $\overline{ED} \cong \overline{BA}$, then which piece of information is needed to prove whether the two triangles are congruent by SSS?



The relationship between [Select Choice] is needed to determine whether $\triangle ABC$ is congruent to $\triangle DEF$ by SSS.

Question 27

In the figure, $\overline{FB} \cong \overline{CE}$ and $\overline{ED} \cong \overline{BA}$.



Which statement explains the criterion that can be used to prove that $\triangle ABC \cong \triangle DEF$?

A) SSS should be used because the three sides of $\triangle ABC$ are congruent to the three sides of $\triangle DEF$.

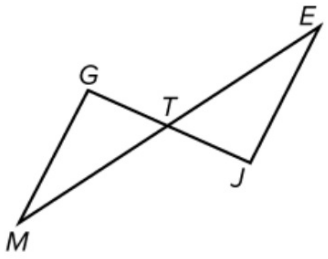
B) HL should be used because the hypotenuse and leg of $\triangle ABC$ are congruent to the hypotenuse and leg of $\triangle DEF$.

C) SAS should be used because two sides and the included angle of $\triangle ABC$ are congruent to two sides and the included angle of $\triangle DEF$.

D) ASA should be used because two angles and the included side of $\triangle ABC$ are congruent to two angles and the included side of $\triangle DEF$.

Question 28

In the diagram, T is the midpoint of $\overline{ME}$ and $\overline{GJ}$.

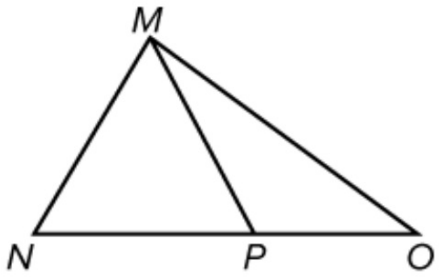


Complete the given proof to show $\triangle MTG \cong \triangle ETJ$.

Statements	Reasons
1. T is the midpoint of $\overline{ME}$ and $\overline{GJ}$.	1. Given
2. $\overline{MT} \cong \overline{ET}$ and $\overline{GT} \cong \overline{JT}$.	2. Select Choice
3. $\angle MTG \cong \angle ETJ$	3. Select Choice
4. $\triangle MTG \cong \triangle ETJ$	4. Select Choice

Question 29

In $\triangle MNP$, $\overline{MN} \cong \overline{MP}$ and $m\angle NMP = 56°$.



If $\overline{MP} \cong \overline{PO}$, then $m\angle MPO =$ [ ]°.