



Geometry

Week # 2

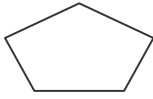


3-1 Additional Practice

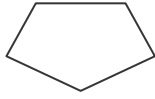
Reflections

Tell whether the transformation appears to be a rigid motion. Explain.

1.

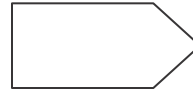


Preimage

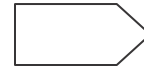


Image

2.



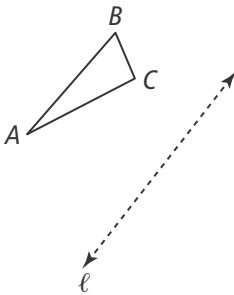
Preimage



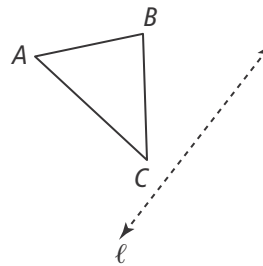
Image

Show the reflection of $\triangle ABC$ across line ℓ .

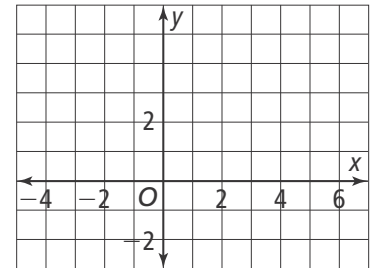
3.



4.



5. Suppose the equation of line ℓ is $x = 1$. Given points $M(3, 3)$, $N(4, 4)$, and $O(5, 2)$, graph $\triangle MNO$ and the reflection image $R_{\ell}(\triangle MNO)$.



6. **Understand** What is the reflection rule for the triangle and image with coordinates $A(2, 4)$, $B(4, 6)$, $C(5, 2)$, and $A'(-4, -2)$, $B'(-6, -4)$, $C'(-2, -4)$?

7. **Apply** Student A sits in a chair facing a mirror and sees the reflection image B' of Student B in the mirror. Show the actual position of Student B .

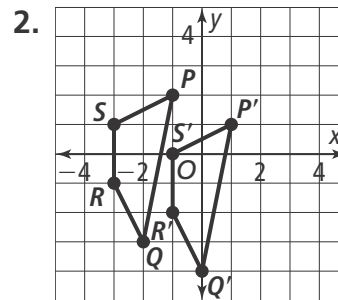
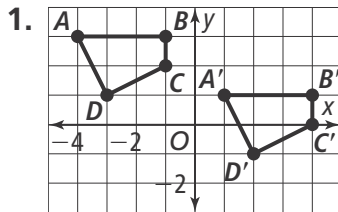




3-2 Additional Practice

Translations

What is the rule for the translation shown?



The vertices of $\triangle ABC$ are $A(2, -3)$, $B(-3, -5)$, and $C(4, 1)$. For each translation, give the vertices of $\triangle A'B'C'$.

3. $T_{\langle -2, 3 \rangle}(\triangle ABC)$

4. $T_{\langle -4, -1 \rangle}(\triangle ABC)$

5. $T_{\langle 4, 6 \rangle}(\triangle ABC)$

Write the composition of transformations as one transformation.

6. $T_{\langle 4, 5 \rangle} \circ T_{\langle 3, 1 \rangle}$

7. $T_{\langle -1, -3 \rangle} \circ T_{\langle 2, -2 \rangle}$

8. $T_{\langle 1, 1 \rangle} \circ T_{\langle -4, -3 \rangle}$

Given $\triangle XYZ$ with vertices $X(-2, 1)$, $Y(-1, 3)$, and $Z(-4, 2)$, write the translation equivalent to the composition of transformations. Suppose the equation of line m is $x = 5$, the equation of line n is $y = 4$, and the equation of line p is $x = 3$.

9. $R_m \circ R_{y\text{-axis}}$

10. $R_n \circ R_{x\text{-axis}}$

11. $R_p \circ R_{y\text{-axis}}$

12. **Understand** How far apart are two parallel lines ℓ and m such that $T_{\langle 4, 0 \rangle}(\triangle DEF) = (R_m \circ R_\ell)(\triangle DEF)$?

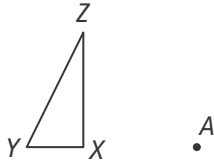
13. **Apply** The composition of rigid motions $T_{\langle 10, 2 \rangle} \circ T_{\langle -23, -3 \rangle}$ describes the route of a limousine in New York City from its starting position. How would you describe the route in words?



3-3 Additional Practice

Rotations

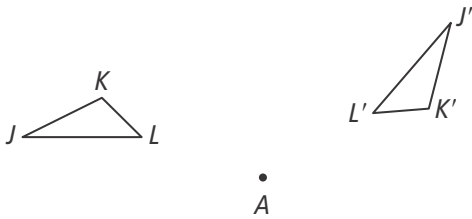
1. Draw the rotated image. $r_{(270^\circ, A)}(\triangle XYZ)$



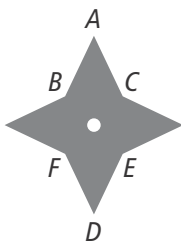
For Exercises 2 and 3, give the coordinates of each image.

2. $r_{(90^\circ, O)}(\triangle MN)$ for $M(3, -5)$, $N(2, 4)$
3. $r_{(180^\circ, O)}(\triangle ABC)$ for $A(1, 1)$, $B(3, 5)$, $C(5, 2)$

4. **Understand** Draw two lines of reflection so that the composition of the reflections across the lines maps onto the image shown.



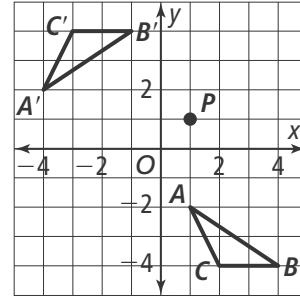
5. **Apply** A blender has blades as shown. What rotation will map the blade formed by $\triangle ABC$ onto the blade formed by $\triangle DEF$?



3-4 Additional Practice

Classification of Rigid Motions

For Exercises 1–5, use the diagram.

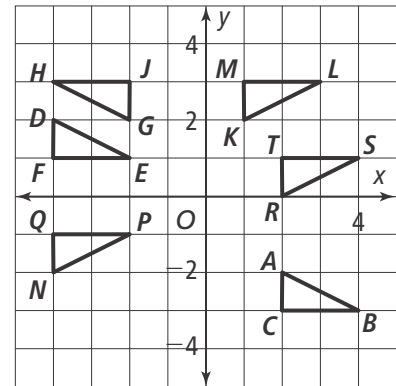


1. What composition of two rigid motions maps $\triangle ABC$ to $\triangle A'B'C'$?

For Exercises 2–5, find the coordinates of P' under each transformation. Suppose the equation of line m is $y = 2$ and the equation of line n is $x = -1$.

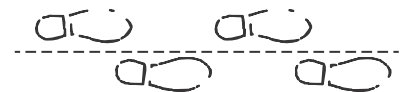
2. $T_{\langle -2, 0 \rangle} \circ R_m$ _____
3. $T_{\langle 0, -5 \rangle} \circ R_n$ _____
4. $T_{\langle 0, 2 \rangle} \circ R_{y\text{-axis}}$ _____
5. $T_{\langle 3, 0 \rangle} \circ R_{x\text{-axis}}$ _____

For Exercises 6–12, describe the rigid motion that produces each image.



6. $\triangle ABC \rightarrow \triangle DEF$ _____
7. $\triangle ABC \rightarrow \triangle GHJ$ _____
8. $\triangle ABC \rightarrow \triangle KLM$ _____
9. $\triangle ABC \rightarrow \triangle NPQ$ _____
10. $\triangle ABC \rightarrow \triangle RST$ _____
11. $\triangle DEF \rightarrow \triangle GHJ$ _____
12. $\triangle GHJ \rightarrow \triangle KLM$ _____
13. **Understand** Define the term *glide reflection*.

14. **Apply** The series of footprints can be described as a series of glide reflections. The composition of two identical glide reflections, for example, from the first step to the third, is equivalent to what rigid motion?



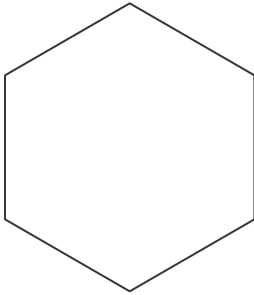


3-5 Additional Practice

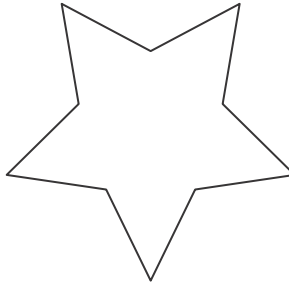
Symmetry

For Exercises 1–6, draw all lines of symmetry for each figure, or write “None” in the figure.

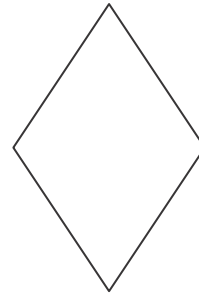
1.



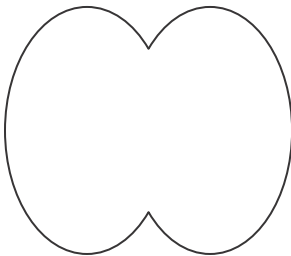
2.



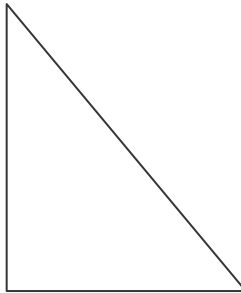
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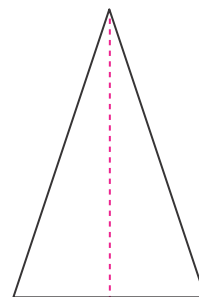
4.



5.

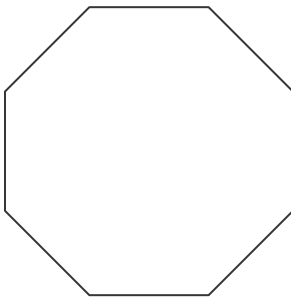


6.

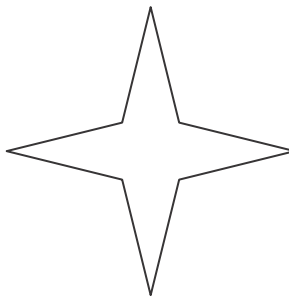


For Exercises 7–9, find every angle of rotation that maps the figure onto itself, or write “None” in the figure.

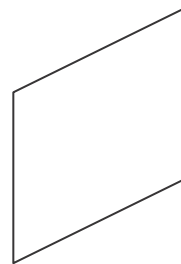
7.



8.



9.



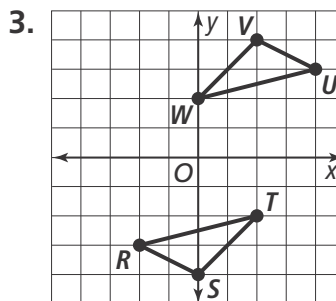
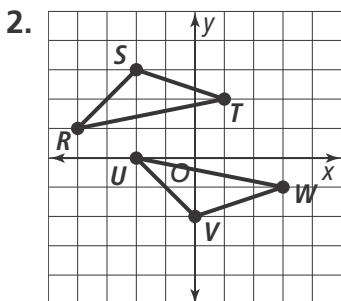
10. **Understand** What does it mean for a figure to have reflectal symmetry? Rotational symmetry?

4-1 Additional Practice

Congruence

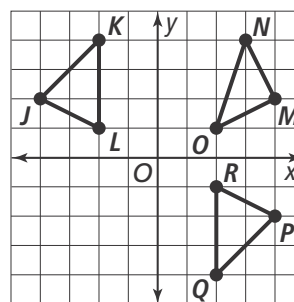
1. A reflection over the x -axis maps $\triangle ABC$ to $\triangle A'B'C'$. Do the preimage and image have the same size and shape? Explain.

Find a congruence transformation that maps $\triangle RST$ to $\triangle UVW$.



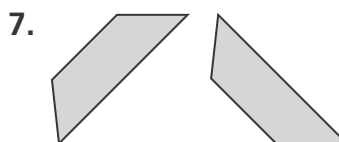
State whether each pair of triangles is congruent. If so, describe a composition of rigid motions that maps one triangle onto the other. If not, explain.

4. $\triangle JKL$ and $\triangle MNO$



5. $\triangle JKL$ and $\triangle PQR$

Determine whether each pair of objects is congruent. If so, describe a composition of rigid motions that maps one object onto the other.



8. **Understand** The composition of transformations $R_{y=-5} \circ r_{(90^\circ, A)}$ maps $\triangle ABC$ to $\triangle XYZ$. If the perimeter of $\triangle XYZ$ is 26, what is a possible set of values of AB , BC , and AC ? Explain.

9. **Apply** Are the pockets on this shirt congruent? If so, describe a composition of rigid motions that maps one pocket to the other.



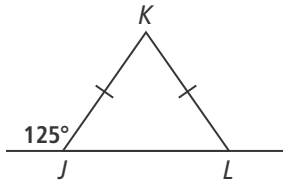


4-2 Additional Practice

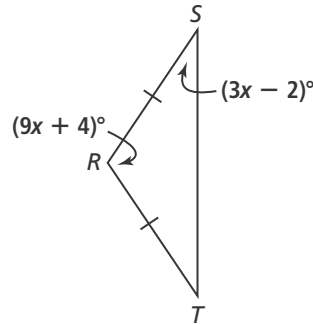
Isosceles and Equilateral Triangles

For Exercises 1 and 2, find the unknown angle measures in each triangle.

1.

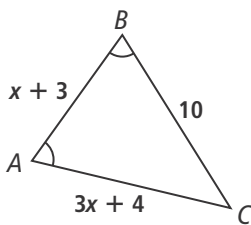


2.

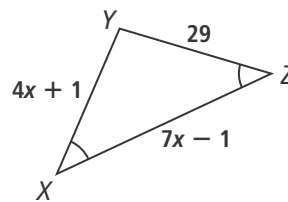


For Exercises 3 and 4, find the lengths of all sides of each triangle.

3.



4.

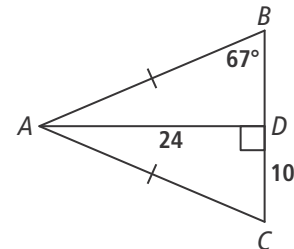


For Exercises 5–7, use $\triangle ABC$ to find the missing measures.

5. $\angle DAC$

6. AB

7. BC

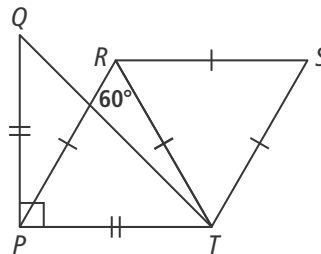


For Exercises 8–10, use the diagram to find the missing angle measures.

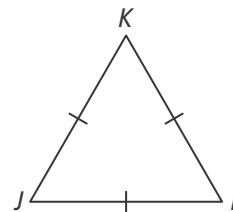
8. $\angle PTQ$

9. $\angle QTR$

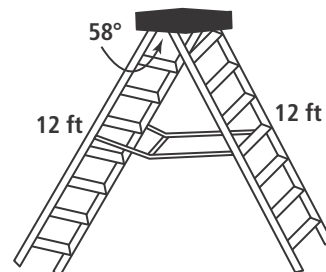
10. $\angle PTS$



11. **Understand** What is the measure of $\angle JKL$? Explain.



12. **Apply** When a stepladder is placed as shown, is it possible for the lower ends of the ladder to be 12 feet apart? Explain.

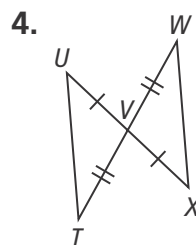
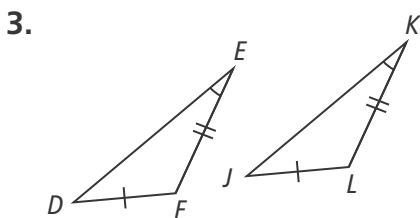
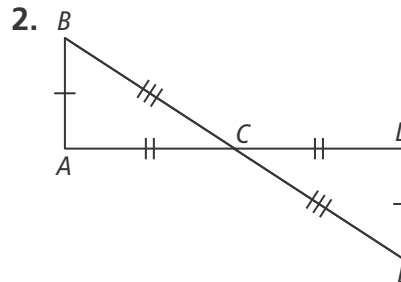
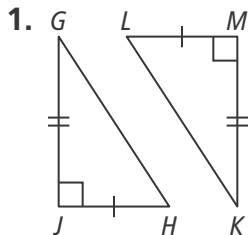




4-3 Additional Practice

Proving and Applying the SAS and SSS Congruence Criteria

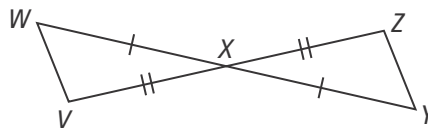
Label each pair of triangles *congruent by SAS*, *congruent by SSS*, or *not enough information*.



5. Complete the proof.

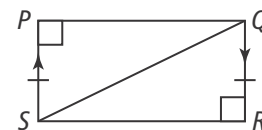
Given: $WX = XY, VX = XZ$

Prove: $\angle WVX \cong \angle YZX$

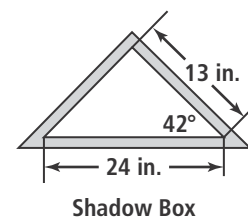


Statements	Reasons
1. $WX = XY, VX = XZ$	1.
2.	2. Vertical Angles Theorem
3. $\triangle VXW \cong \triangle YXZ$	3.
4.	4.

6. **Understand** Is there sufficient information to prove $\triangle SPQ \cong \triangle QRS$ by SSS? Explain.



7. **Apply** Will the folded flag fit in the shadow box shown? Explain.



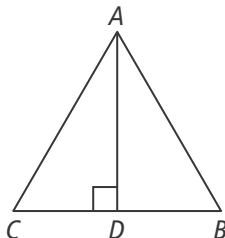


4-4 Additional Practice

Proving and Applying the ASA and AAS Congruence Criteria

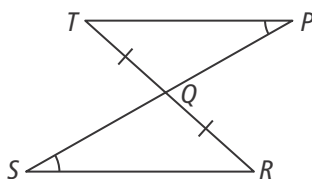
For Exercises 1 and 2, complete each two-column proof.

1. **Given:** \overline{AD} bisects $\angle A$.
Prove: $\triangle ADB \cong \triangle ADC$



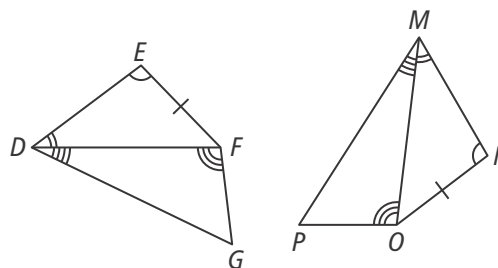
Statements	Reasons
1. \overline{AD} bisects $\angle A$.	1.
2.	2.
3.	3. Reflexive property of congruence
4. $\angle CDA \cong \angle BDA$	4.
5. $\triangle ADB \cong \triangle ADC$	5.

2. **Given:** $\angle P \cong \angle S$, $\overline{TQ} \cong \overline{RQ}$
Prove: $\triangle QRS \cong \triangle QTP$

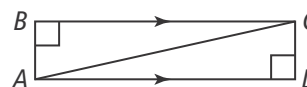


Statements	Reasons
1.	1. Given
2. $\angle RQS \cong \angle TQP$	2.
3.	3. AAS

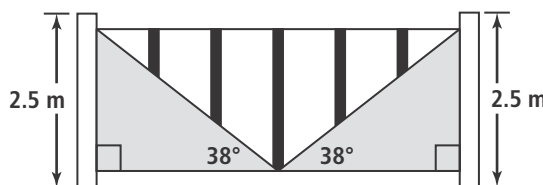
3. Is quadrilateral $DEFG$ congruent to quadrilateral $MNOP$? Explain.



4. **Understand** Chen says there is not enough information to prove that $\triangle ABC \cong \triangle CDA$. Explain why Chen is incorrect.



5. **Apply** Casey builds the gate shown, with two solid triangular panels. Each support post runs 10 cm above and below the gate. Are the solid panels congruent? Explain.



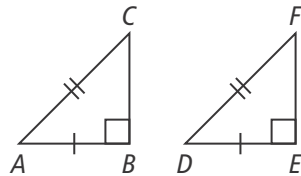


4-5 Additional Practice

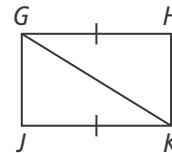
Congruence in Right Triangles

For Exercises 1–4, what is the minimum additional information needed to prove each triangle pair is congruent using the given theorem?

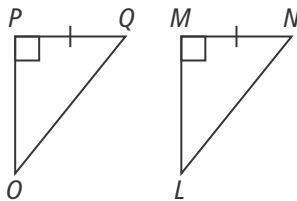
1. SAS



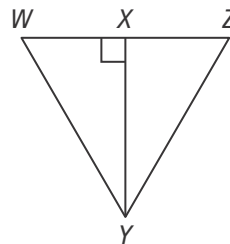
2. HL



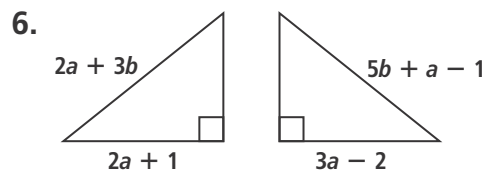
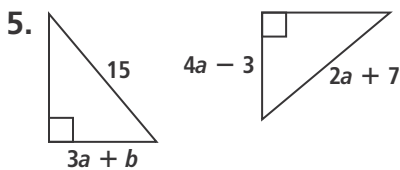
3. ASA



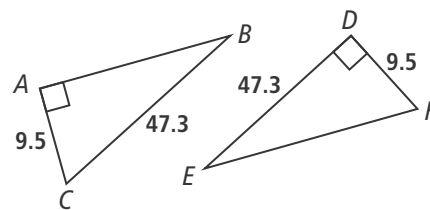
4. AAS



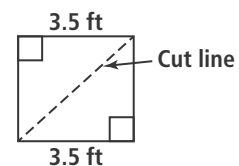
For Exercises 5 and 6, for what values of a and b are the triangle pairs congruent by the HL Theorem?



7. **Understand** Adam says $\triangle ABC \cong \triangle DEF$ by the HL Theorem. Explain why Adam is incorrect.



8. **Apply** Olivia cuts a piece of plywood as shown. How can she verify that the two pieces are identical without making any additional measurements?



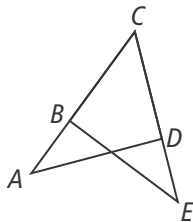


4-6 Additional Practice

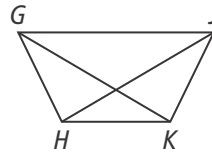
Congruence in Overlapping Triangles

For Exercises 1 and 2, list the corresponding sides and angles in each pair of triangles.

1. $\triangle CDA$ and $\triangle CBE$



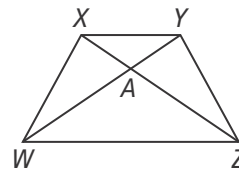
2. $\triangle GHJ$ and $\triangle JKG$



For Exercises 3 and 4, you are given $\triangle WXZ \cong \triangle ZYW$. Name the side or angle that corresponds to the given side or angle.

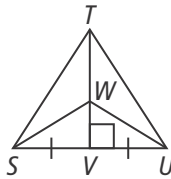
3. $\angle WZX$

4. \overline{XZ}



Use $\triangle STU$ for Exercises 5–7.

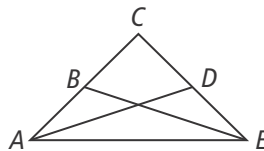
5. Is $\triangle WVS \cong \triangle WVU$? Explain.



6. Is $\triangle TVS \cong \triangle TVU$? Explain.

7. Is $\triangle TWS \cong \triangle TWU$? Explain.

8. **Understand** Draw separate diagrams showing $\triangle ACD$ and $\triangle ECB$.



9. **Apply** Renaldo creates the string art shown. Can he use the same length of string to make $\triangle LOJ$ and $\triangle NKJ$? Explain.

