PRACTICE & PROBLEM SOLVING

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Practice Tutorial

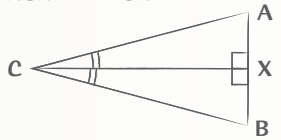
Additional Exercises Available Online

UNDERSTAND

10. Error Analysis Stacy says there is not enough information to prove $\triangle ACX \cong \triangle BCX$. Explain why Stacy's statement is incorrect.

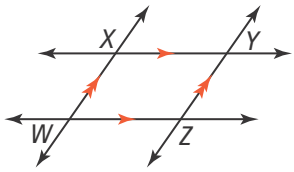
Given: $\angle AXC \cong \angle BXC$, $\angle ACX \cong \angle BCX$

Prove: $\Delta ACX \cong \Delta BCX$

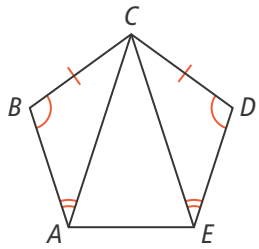


Not enough information ✗

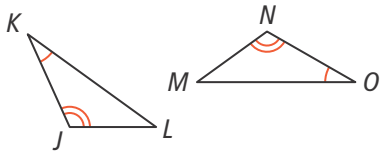
11. Mathematical Connections Given $\overleftrightarrow{WZ} \parallel \overleftrightarrow{XY}$ and $\overleftrightarrow{WX} \parallel \overleftrightarrow{ZY}$, write a two-column proof to show $\overline{WX} \cong \overline{YZ}$.



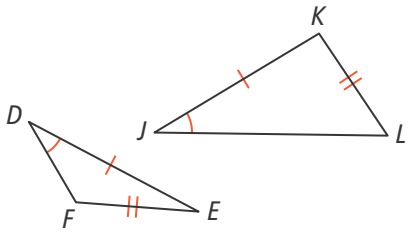
12. Use Structure Given the figure shown, write a two-column proof to prove $\angle CAE \cong \angle CEA$.



13. Reason How might you decide what additional piece of information you need to prove $\triangle JKL \cong \triangle NOM$?

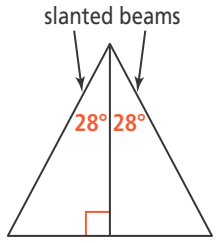


14. Higher Order Thinking Describe a composition of rigid motions that maps $\overline{DE}$ to $\overline{JK}$, $\overline{EF}$ to $\overline{KL}$, and $\angle D$ to $\angle J$. Why does this composition show that there is no angle-side-side congruence criterion?



PRACTICE

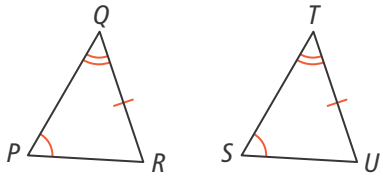
15. Carpenters build a set of triangular roof supports, each with the measurements shown. How can the carpenters be sure all the slanted beams are the same length? SEE EXAMPLES 1–3



16. Prove the Angle-Angle-Side Congruence Criterion. SEE EXAMPLE 4

Given: $\angle P \cong \angle S$, $\angle Q \cong \angle T$, $\overline{QR} \cong \overline{TU}$

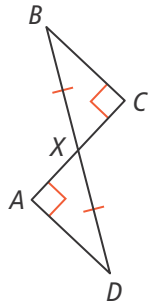
Prove: $\triangle PQR \cong \triangle STU$



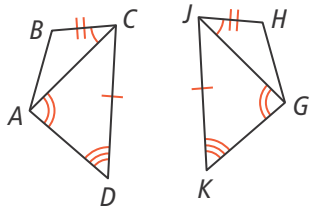
17. Write a proof. SEE EXAMPLE 5

Given: $\angle A \cong \angle C$, $\overline{BX} \cong \overline{DX}$

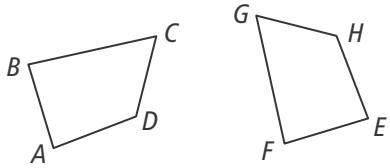
Prove: $\overline{AX} \cong \overline{CX}$



18. Is $ABCD \cong GHJK$? Explain. SEE EXAMPLE 6



19. If $ABCD \cong EFGH$, are all corresponding parts congruent? Explain. SEE EXAMPLE 6



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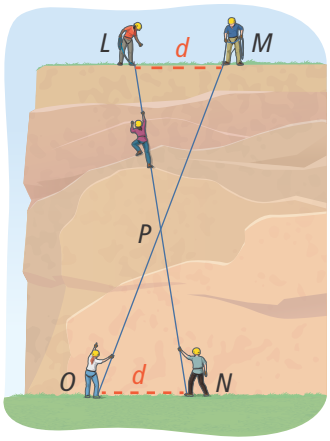
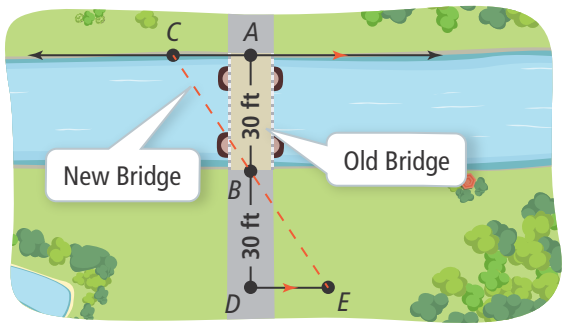
APPLY

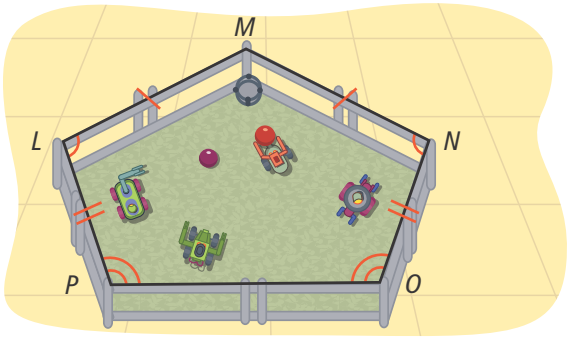
20. Look for Relationships Climbers want to determine a halfway point up a vertical cliff. If the top and bottom are parallel, why is point *P*, where the ropes intersect, halfway up the cliff?



21. Use Appropriate Tools Keisha, Dwayne, and Lonzell are planning for a new bridge to replace the old bridge. The new bridge will start at point *B*, where Dwayne is standing, and end at point *C*, where Keisha is standing. Lonzell walks to point *D* and then walks parallel to the river until he reaches point *E*, where he sees Dwayne and Keisha are aligned. Why is the distance from *E* to *B* the length of the new bridge?



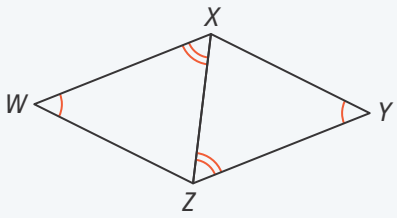
22. Construct Arguments The Robotics Club wants to divide their robot battle arena into two congruent arenas for a tournament. Paxton says that if they build a wall perpendicular to and bisecting $\overline{PO}$ from *M*, then the arenas will be congruent. Is Paxton correct? Explain.



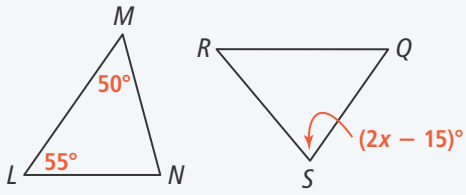
ASSESSMENT PRACTICE

23. Given the figure shown, copy and complete the table to identify the congruent pairs.

$\angle W$	$\angle Y$
	$\angle ZXY$
$\angle WXZ$	
	$\overline{XZ}$
$\overline{WZ}$	

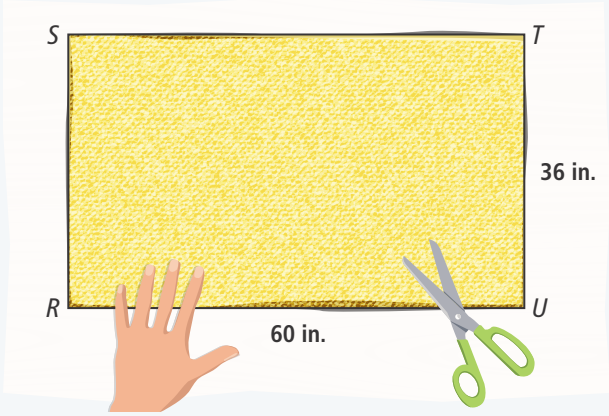


24. SAT/ACT Given $\triangle LMN \cong \triangle QRS$, what is the value of *x*?



Ⓐ 30 Ⓑ 35 Ⓒ 45 Ⓓ 60

25. Performance Task Gregory wants to make four congruent triangular flags using as much of the rectangular canvas shown as possible.



Part A Draw and label a diagram to show how Gregory should cut the fabric.

Part B Explain why the flags are congruent.

Part C Is there another way Gregory can cut the fabric to make 4 congruent triangular flags using the same amount of fabric? Explain.