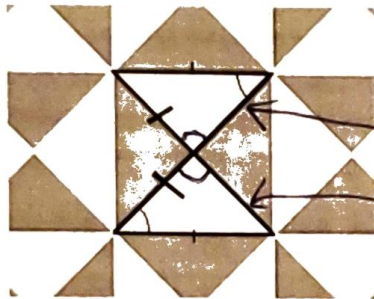


Short Answer

Can the triangles be proven congruent with the information given in the diagram? If so, state the theorem you would use.

1.



Vertical Angles congruent

AAS

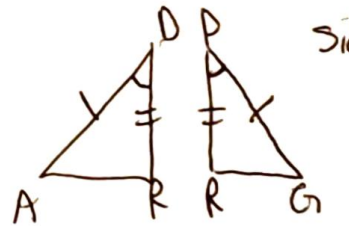
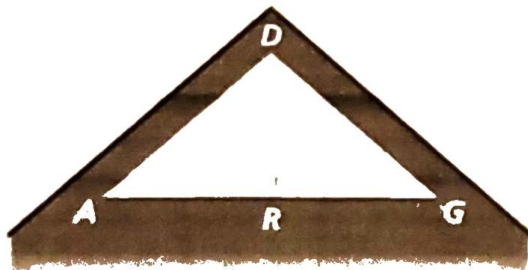
ASA

Not matching

Not Congruent

2.

You are designing the window shown in the photo. You want to make $\triangle DRA$ congruent to $\triangle DRG$. You design the window so that $\overline{DA} \cong \overline{DG}$ and $\angle ADR \cong \angle GDR$.
prove $\triangle DRA \cong \triangle DRG$.

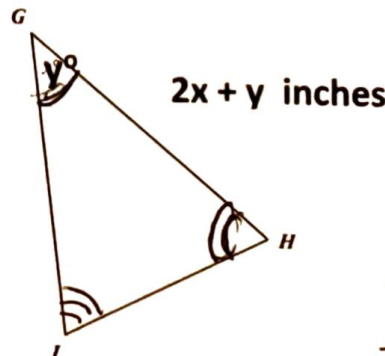
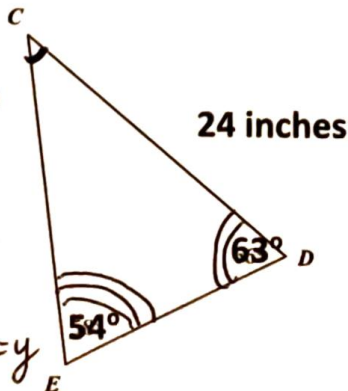


Side Angle Side

SAS
Congruence

Reflexive Property
 $\overline{DR} \cong \overline{DR}$

3. In the diagram, $\triangle CDE \cong \triangle GHI$. Find the value of x .



Triangle Sum Theorem
Angles in a triangle
add up to 180

$$\begin{aligned} m\angle C + 54 + 63 &= 180 \\ m\angle C + 117 &= 180 \\ -117 \quad -117 & \\ m\angle C &= 63^\circ \end{aligned}$$

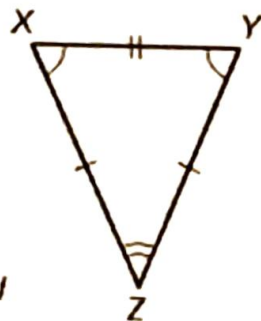
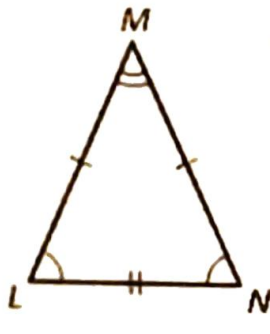
$$m\angle C = m\angle G = y$$

$y = 63^\circ$

$$\begin{aligned} \overline{CD} &\cong \overline{GH} \\ 24 &\cong 2x + y \\ 24 &\cong 2x + 63 \\ -63 \quad \quad -63 & \\ \hline -39 &\cong 2x \end{aligned}$$

$$\begin{aligned} \frac{-39}{2} &= \frac{2x}{2} \\ \mathbf{-19.5} &= \mathbf{x} \end{aligned}$$

4. Write an equation of the line passing through the point (6, 4) that is parallel to the line $y = \frac{9}{19}x + 14$.
- Solve for b
 catch signs
- Play in point given for x and y
- Same slope
- $$y = -\frac{9}{19}x + b$$
- $$4 = -\frac{9}{19}(6) + b$$
- $$4 = -2.842 + b$$
- $$+2.842 \quad +2.842 \quad \rightarrow b = 6.842$$
- $$y = \frac{9}{19}x + 6.842$$
5. Write an equation of the line passing through the point (3, 5) that is perpendicular to the line $y = \frac{9}{19}x + 14$.
- opposite reciprocal slope
- opposite sign flip fraction
- $$y = +\frac{19}{9}x + b$$
- $$5 = \frac{19}{9}(3) + b$$
- $$5 = 6.\bar{3} + b$$
- $$-6.\bar{3} \quad -6.\bar{3}$$
- $$-1.\bar{3} = b$$
- $$y = \frac{19}{9}x - 1.\bar{3}$$
6. Write a congruence statement for the triangles and Write all the congruent parts.



$$\triangle LMN \cong \triangle YZX \text{ or } \triangle XZY$$

Sides

$$\overline{LM} \cong \overline{YZ}$$

$$\overline{MN} \cong \overline{ZX}$$

$$\overline{LN} \cong \overline{XY}$$

Angles

$$\angle L \cong \angle Y$$

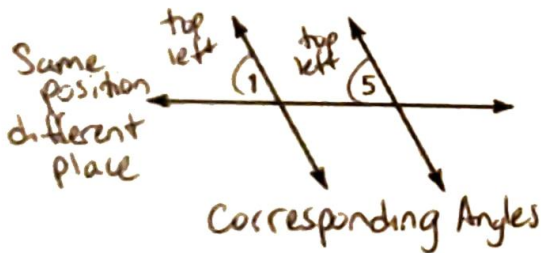
$$\angle M \cong \angle Z$$

$$\angle N \cong \angle X$$

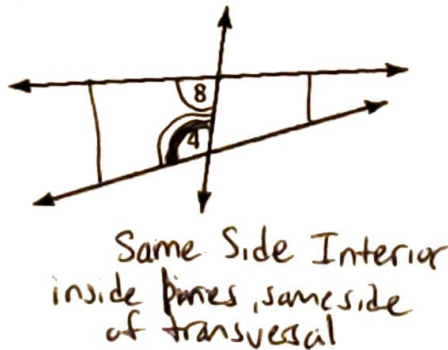
Matchup
order of
letters

Classify the pair of numbered angles.

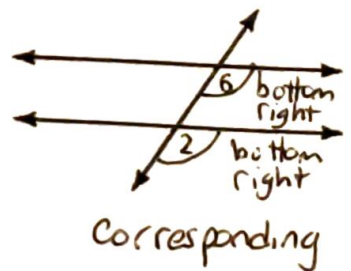
7.



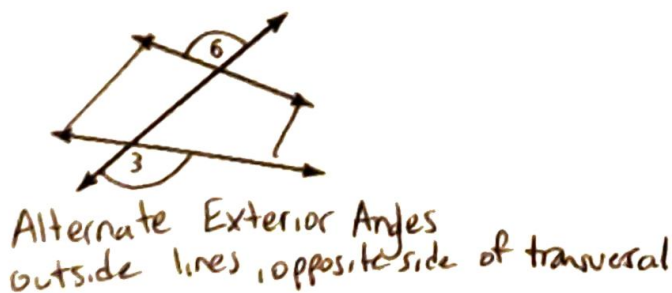
8.



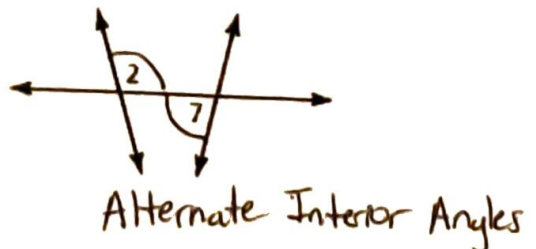
9.



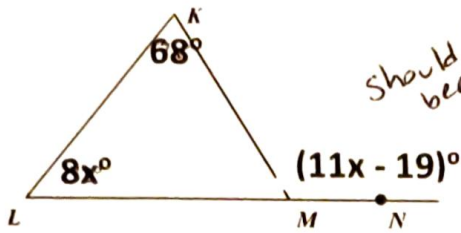
10.



11.



12. Find $m\angle KMN$.



Should have been $180 - 140$ then angle is 129°

Exterior Angle Theorem
non adjacent angles add to exterior angle of a triangle

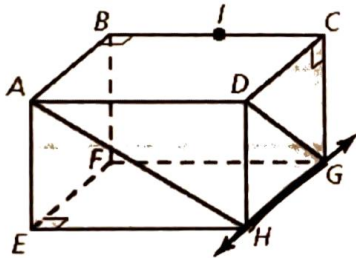
$$\begin{array}{r} (8x) + (68) = 11x - 19 \\ -8x \quad -8x \\ \hline 68 = 3x - 19 \\ +19 \quad +19 \end{array}$$

$$\begin{array}{r} 87 = 3x \\ \hline 29 = x \end{array}$$

$$\begin{aligned} m\angle KMN &= 11x - 19 \\ &= 11(29) - 19 \\ m\angle KMN &= 319 - 19 \\ m\angle KMN &= 300^\circ \end{aligned}$$

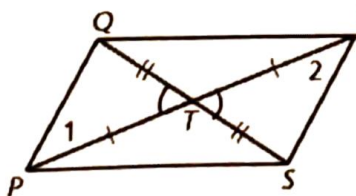
doesn't make sense but is the answer here

In the diagram, think of each segment in the figure as part of a line.



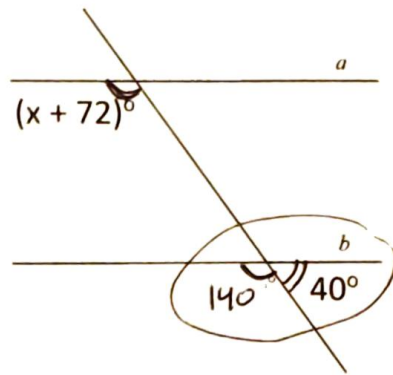
- Name the line(s) that appear parallel to \overleftrightarrow{HG} . $\overleftrightarrow{DC}, \overleftrightarrow{AB}, \overleftrightarrow{EF}$
Never crosses, but if box was crushed the lines would overlap
- Name the line(s) that appear skew to \overleftrightarrow{HG} . $\overleftrightarrow{BC}, \overleftrightarrow{AD}, \overleftrightarrow{AE}, \overleftrightarrow{BF}$
would cross if box was crushed, but in 3D they never will
- Name the line(s) that appears perpendicular to \overleftrightarrow{HG} . $\overleftrightarrow{DH}, \overleftrightarrow{CG}, \overleftrightarrow{EH}, \overleftrightarrow{FG}$
Forms a right 90° angle

17. How can you prove that $\angle 1 \cong \angle 2$?



Because vertical angles are congruent
 $\angle QTP \cong \angle STR$
By SAS $\triangle QTP \cong \triangle STR$
 $\angle TPQ \cong \angle TRS$
 $\angle 1 \cong \angle 2$

13. In the diagram, $a \parallel b$. Find the value of x .

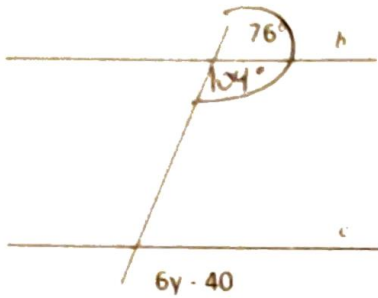


Corresponding angles congruent

$$\begin{aligned} x + 72 &= 140 \\ -72 \quad -72 \\ \hline x &= 68 \end{aligned}$$

Linear Pair
 $180 - 40 = 140$

18. In the diagram, $b \parallel c$. Find the value of y .



Linear Pair
 $180 - 76 = 104$

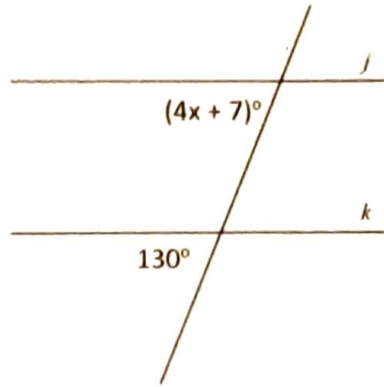
Corresponding angles congruent

$$\begin{array}{r} 6y - 40 = 104 \\ +40 \quad +40 \\ \hline 6y = 144 \\ \underline{\quad 6} \quad \underline{\quad 6} \\ y = 24 \end{array}$$

Same-side Exterior
 add up to 180

$$\begin{array}{r} (76) + (6y - 40) = 180 \quad \text{or} \\ 6y + 36 = 180 \\ -36 \quad -36 \\ \hline 6y = 144 \\ y = 24 \end{array}$$

19. Find the value of x that makes $j \parallel k$.



Corresponding

$$\begin{array}{r} 4x + 7 = 130 \\ -7 \quad -7 \\ \hline 4x = 123 \\ \underline{\quad 4} \quad \underline{\quad 4} \\ x = 30.75 \end{array}$$

20. A ramp is designed with the profile of a right triangle. The measure of one acute angle is 5 times the measure of the other acute angle. Find the measure of each acute angle.



Corollary to Exterior Angle Theorem
 acute angles add up to 90°

$$\begin{array}{r} 5x + x = 90 \quad \text{or} \\ 6x = 90 \\ \underline{\quad 6} \quad \underline{\quad 6} \\ x = 15 \\ \hline 5x = 5(15) = 75 \end{array}$$

Triangle Sum Thm

$$\begin{array}{r} 5x + x + 90 = 180 \\ 6x + 90 = 180 \\ -90 \quad -90 \\ \hline 6x = 90 \\ \underline{\quad 6} \quad \underline{\quad 6} \\ x = 15 \\ \hline 5x = 75 \end{array}$$

21. Let p be "you are taking finals" and let q be "it is the end of the semester." Write the inverse, converse, and contrapositive. Then decide whether it is true or false.

Conditional: If you are taking finals, then it is the end of the semester.
 True

Inverse: If you are not taking finals, then it is not the end of the semester.
 Same order, Negate
 False, you could be sick

Converse: If it is the end of the semester, then you are taking finals.
 Switch order
 True

Contrapositive: If it is not the end of the semester, then you are not taking finals.
 Switch order and Negate
 True

★ Contrapositives always have the same truth value as the conditional
 if true, then true if false then false