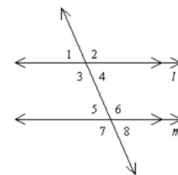


Complete the statements below:

1. If a transversal intersects two parallel lines, then corresponding angles are \cong .
2. If a transversal intersects two parallel lines, then same-side interior angles are suppl.
" ext \angle s
3. If a transversal intersects two parallel lines, then alternate interior angles are \cong .
" ext \angle s
vert $\angle \cong$
linear pair
suppl

Use the diagram below to answer questions 4 – 11. Justify your answers.



4. If $m\angle 1 = 65^\circ$, find $m\angle 5$. 65°
corresp.
5. If $m\angle 2 = 110^\circ$, find $m\angle 7$. 110°
alt ext \cong
6. If $m\angle 4 = 95^\circ$, find $m\angle 6$. 85°
SSI suppl.
7. If $m\angle 7 = 115^\circ$, find $m\angle 6$. 115°
vert \angle s
8. If $m\angle 1 = 70^\circ$, find $m\angle 7$. 40°
SSI suppl.
9. If $m\angle 6 = 123^\circ$, find $m\angle 3$. 123°
alt int \cong
10. If $m\angle 8 = 73^\circ$, find $m\angle 4$. 73°
corresp \cong
11. If $m\angle 3 = 112^\circ$, find $m\angle 5$. 68°
SSI

12. $y = -(x - 3)^2 + a$

In the equation above, a is a constant. The graph of the equation in the xy -plane is a parabola. Which of the following is true about the parabola?

- A) Its minimum occurs at $(-3, a)$.
- B) Its minimum occurs at $(3, a)$.
- C) Its maximum occurs at $(-3, a)$.
- ☒ D) Its maximum occurs at $(3, a)$.

13. The volume of a sphere is given by the formula

$$V = \frac{4}{3}\pi r^3, \text{ where } r \text{ is the radius of the sphere. Which}$$

of the following gives the radius of the sphere in

terms of the volume of the sphere?

A) $\frac{4\pi}{3V}$

B) $\frac{3V}{4\pi}$

C) $\sqrt[3]{\frac{4\pi}{3V}}$

☒ D) $\sqrt[3]{\frac{3V}{4\pi}}$

$$V = \frac{4\pi r^3}{3}$$

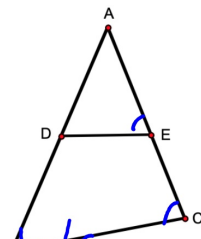
$$3V = \frac{4\pi r^3}{1}$$

$$\frac{3V}{4\pi} = \frac{r^3}{1}$$

$$\sqrt[3]{\frac{3V}{4\pi}} = \sqrt[3]{\frac{r^3}{1}}$$

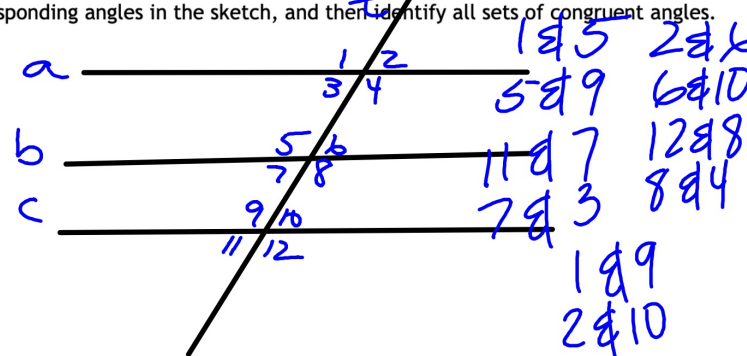
$$\sqrt[3]{\frac{3V}{4\pi}} = r$$

7. **REINFORCE** The support of a swing set is in the shape of an "A". However, the swing set sits on uneven ground, as shown in the diagram. Explain how you can move the support bar, \overline{DE} , to make it parallel to the ground, represented by \overline{BC} . Use angles in your explanation.



measure $\angle ACB$.
 move pt E along \overline{AC}
 so that $m\angle AED = m\angle ACB$
 corresp \angle s. which will create \parallel lines
 $\overline{DE} \parallel \overline{BC}$

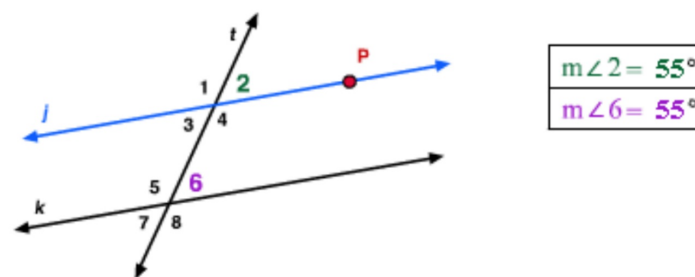
8. **REINFORCE** Draw three parallel lines cut by a single transversal. Identify all pairs of corresponding angles in the sketch, and then identify all sets of congruent angles.



9. Now write the converse of the conjecture you wrote in question 3 about corresponding angles.

If two lines are cut by a transversal so that corresp \angle s are \cong , then the lines are \parallel .

10. Given $m\angle 2 = m\angle 6$, what is true about lines j and k ? Can you prove this?



11. Use the given tiles to fill in the blanks and complete the proof of the following conjecture:

If two parallel lines are cut by a transversal, then the alternate interior angles are congruent.

$\angle 3 \cong \angle 6$	alternate interior	$\angle 3 \cong \angle 2$	corresponding	Given	$\angle 2 \cong \angle 6$
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Given: $j \parallel k$
Prove: $\angle 6 \cong \angle 3$



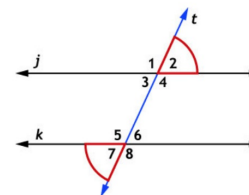
Statements	Reasons
1. $j \parallel k$	1.
2.	2. Vertical angles are congruent.
3.	3. If parallel lines are cut by a transversal, angles are congruent.
4.	4. Transitive Property of Congruence

12. Use the given tiles to fill in the blanks and complete the proof of the following conjecture:

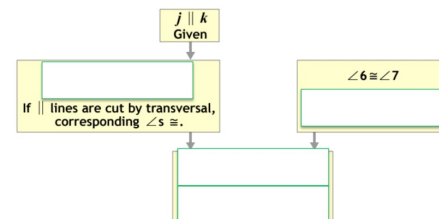
If two parallel lines are cut by a transversal, then the alternate exterior angles are congruent.

Given: $j \parallel k$

Prove: $\angle 2 \cong \angle 7$



Vertical Angle Theorem	If \parallel lines are cut by transversal, alternate interior \angle s \cong .	$\angle 2 \cong \angle 7$
$\angle 2 \cong \angle 6$	Transitive Property	$\angle 3 \cong \angle 6$



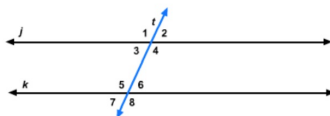
13. Use the given tiles to fill in the blanks and complete the proof of the following conjecture:

If two parallel lines are cut by a transversal, then the consecutive interior angles are supplementary.

$m\angle 6 + m\angle 4 = 180^\circ$	\parallel lines are \cong	$j \parallel k$
Def. of $\cong \angle$ s	Def. of supplementary \angle s	

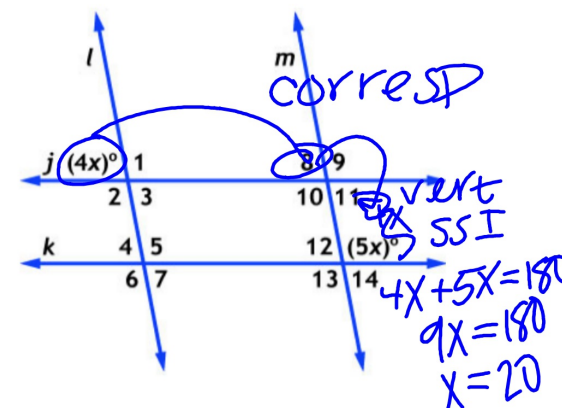
Given: $j \parallel k$

Prove: $\angle 6$ and $\angle 4$ are supplementary

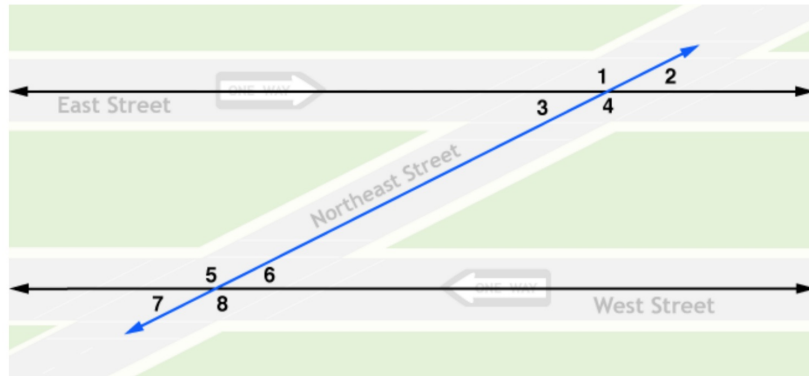


Statements	Reasons
1. <input type="text"/>	1. Given
2. $\angle 2 \cong \angle 6$	2. Corresponding \angle s formed by <input type="text"/>
3. $m\angle 2 = m\angle 6$	3. <input type="text"/>
4. $\angle 2$ and $\angle 4$ are supplementary	4. Linear Pair Theorem
5. $m\angle 2 + m\angle 4 = 180^\circ$	5. <input type="text"/>
6. <input type="text"/>	6. Substitution
7. $\angle 6$ and $\angle 4$ are supplementary	7. Def. of supplementary \angle s

14. In the diagram, $j \parallel k$ and $l \parallel m$. Find the value of x . Explain your reasoning.



15. Suppose you work for the department of transportation and are planning for some new streets. How could you use your knowledge about the angles formed by parallel lines to ensure that East Street is constructed parallel to West Street?



Hwk #21 - Worksheet & Agile Mind Questions (due tomorrow)