

Transversals

$\angle 1$

$\angle 2$

$\angle 5$

$\angle 6$



$\angle 3$

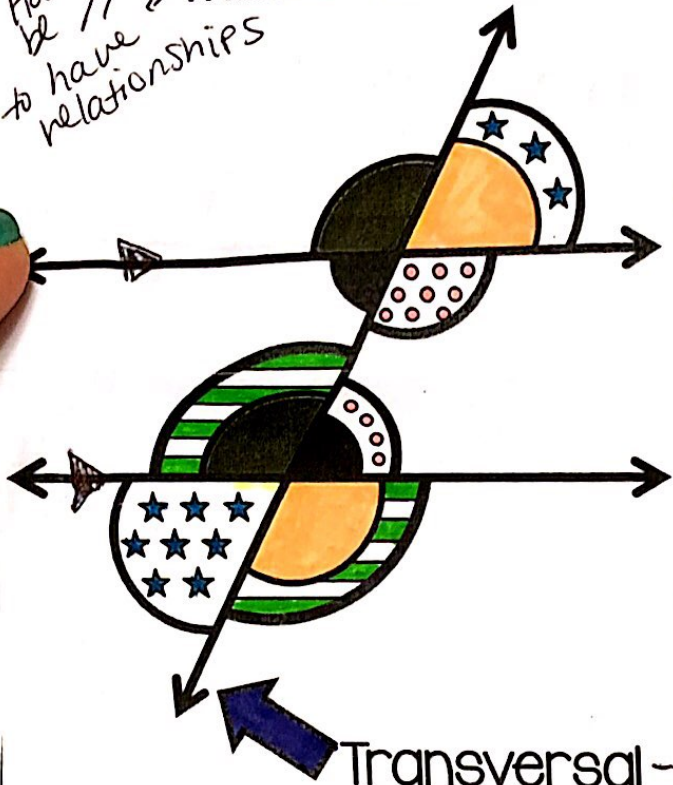
$\angle 4$







$\angle 7$

$\angle 8$

Has to be // to have relationships

PARALLEL LINES CUT BY A TRANSVERSAL



-  corresponding (\cong) same side same pos
-  alternate exterior (\cong) opp/outside
-  vertical (\cong)
-  same-side interior ($= 180$) inside
-  alternate interior (\cong) opp / inside
-  same side exterior ($= 180$)

Transversal - a line that passes through two lines in the same plane

transformations



$\angle 1$

$\angle 2$

$\angle 5$

$\angle 6$

1 2
3 4

5 6
7 8

$\angle 3$

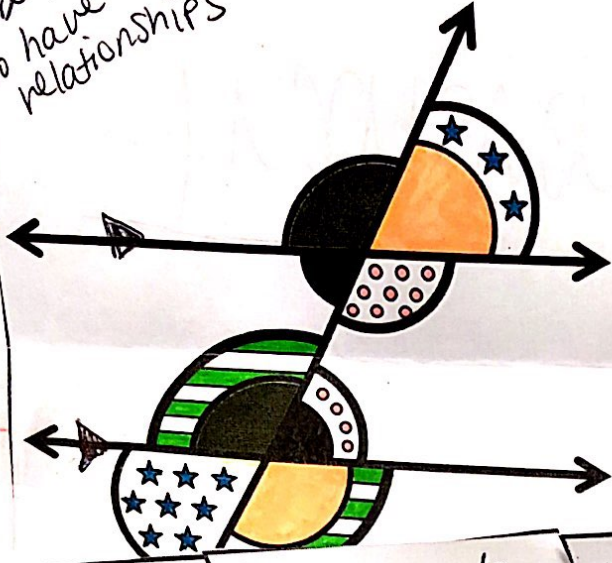
$\angle 4$

$\angle 7$

$\angle 8$

Has to be // to have relationships

PARALLEL LINES CUT BY A TRANSVERSAL



- corresponding (\cong) *same side same pos*
- alternate exterior (\cong) *opp/outside*
- vertical (\cong)
- same-side interior (\cong) *inside* ($= 180$)
- alternate interior (\cong)

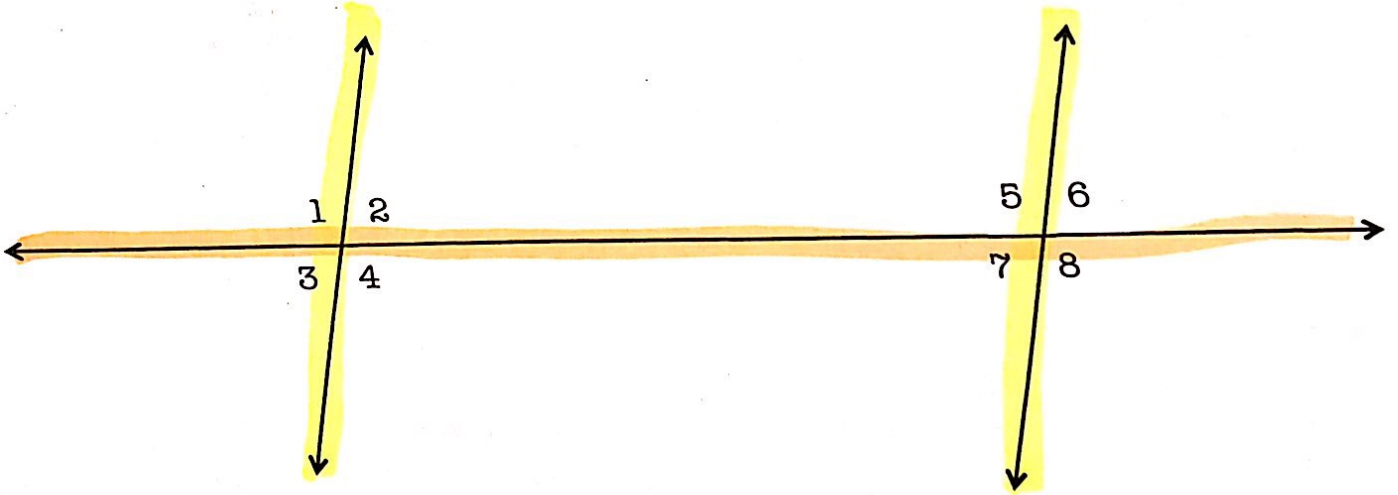
Corresponding \angle s: 5
 Alternate exterior \angle s: 8
 Same side exterior \angle s: 6

Corresponding \angle s: 6
 Alternate interior \angle s: 7
 Same side interior \angle s: 5

Corresponding \angle s: 1
 Alternate interior \angle s: 4
 Same side interior \angle s: 2

Corresponding \angle s: 2
 Alternate exterior \angle s: 3
 Same side exterior \angle s: 1

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Corresponding \angle s: 7
 Alternate exterior \angle s: 6
 Same side exterior \angle s: 8

Corresponding \angle s: 8
 Alternate interior \angle s: 5
 Same side interior \angle s: 7

Corresponding \angle s: 3
 Alternate interior \angle s: 2
 Same side interior \angle s: 4

Corresponding \angle s: 4
 Alternate exterior \angle s: 1
 Same side exterior \angle s: 3

Practice!

Parallel Lines Cut By A Transversal

Name Ms. Mahan

$a \parallel b$ and p is a transversal. Fill in the blanks describing the angle relationships with regard to $\angle 3$.

$\angle 3$ and $\angle 1$ are a linear pair

$\angle 3$ and $\angle 4$ are a linear pair

$\angle 3$ and $\angle 2$ are vertical angles

$\angle 3$ and $\angle 7$ are corresponding angles

$\angle 3$ and $\angle 6$ are alternate interior angles

$\angle 3$ and $\angle 5$ are consecutive interior angles

(same-side)

$a \parallel b$ and p is a transversal. If $m\angle 1 = 140^\circ$, find the measure of each angle giving one reason for each answer.

$m\angle 2 = 40$

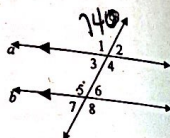
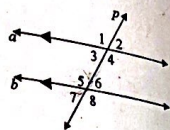
$m\angle 3 = 40$

$m\angle 4 = 140$

$m\angle 5 = 140$

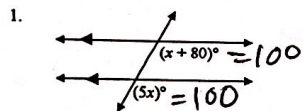
$m\angle 6 = 40$

$m\angle 7 = 140$



$m\angle 8 = 140$

Identify the type of angles and their relationship. Write the equation used to solve for x . Then, find the value of x . Put a box around your answer.



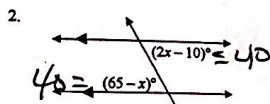
type of angles: Corresponding

relationship: congruent

equation: $5x = x + 80$

$4x = 80$

$x = 20$



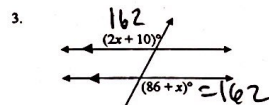
type of angles: Alt Interior

relationship: congruent

equation: $2x - 10 = 65 - x$

$x = 25$

Identify the type of angles and their relationship. Write the equation used to solve for x . Then, find the value of x . Put a box around your answer.



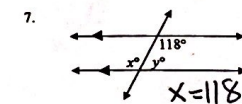
type of angles: Alt Exterior

relationship: congruent

equation: $2x + 10 = 86 + x$

$x = 76$

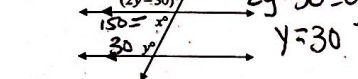
Find the values of x and y . Put a box around your answer.



$x = 118$

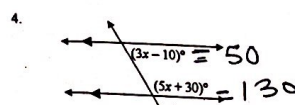
$y = 62$

Find the values of x and y . Put a box around your answer.



$2y - 30 = 10$

$y = 30$

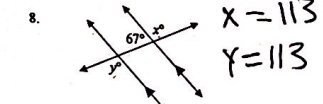


type of angles: Same-side Int.

relationship: = 180 (supp)

equation: $5x + 30 + 3x - 10 = 180$

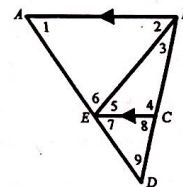
$x = 20$



$x = 113$

$y = 113$

In the diagram, $\overline{AB} \parallel \overline{EC}$, $m\angle 1 = 58^\circ$, $m\angle 2 = 47^\circ$ and $m\angle 3 = 26^\circ$. Find the measure of each angle.



13. $m\angle 7 =$ _____

14. $m\angle 5 =$ _____

15. $m\angle 6 =$ _____

16. $m\angle 4 =$ _____

17. $m\angle 8 =$ _____

18. $m\angle 9 =$ _____

Challenge!