- _____**COMPLEMENTARY**_____ are angles to add up to 90°

- _____**SUPPLEMENTARY**_____ are angles to add up to 180°

  - These angles are also known as a _____**LINEAR PAIR**_____ because they form a _____**STRAIGHT LINE**_____

    - What are some examples of linear pairs? _____

- Two lines are _____**PARALLEL**_____ if they lie in the same plane and never intersect.

  - If lines m and n are parallel, we write _____$m \parallel n$_____ .

- Transversal: A line that _____**INTERSECTS**_____ two or more lines at _____**2**_____ points.

- Exterior angles: _____**OUTSIDE**_____ the lines

  - Exterior Angles → _____$\angle 1, \angle 2, \angle 7, \angle 8$_____

- Interior angles: _____**INSIDE**_____ the lines

  - Interior Angles → _____$\angle 3, \angle 4, \angle 5, \angle 6$_____
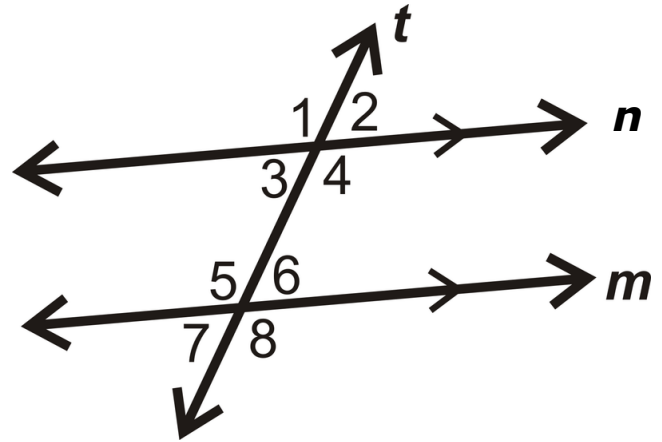
Corresponding Angles

- <u>Corresponding Angles:</u> angles that have corresponding or _____**EQUIVALENT**_____ positions on the parallel lines.

  - When a transversal crosses two parallel lines, the corresponding angles are _____**CONGRUENT**_____ .

- Identify the corresponding angles created when transversal t intersected parallel lines n and m.

  - ∠1 ≅ _**∠5**_   • ∠3 ≅ _**∠7**_

  - ∠2 ≅ _**∠6**_   • ∠4 ≅ _**∠8**_

Vertical Angles

- <u>Vertical Angles:</u> are angles that share the same _____**VERTEX**_____ or corner
  - Vertical angles are _____**CONGRUENT**_____

- Identify the pairs of vertical angles when transversal t intersected parallel lines n and m.

  - ∠1 ≅ _**∠4**_   • ∠3 ≅ _**∠2**_   • ∠5 ≅ _**∠8**_   • ∠7 ≅ _**∠6**_
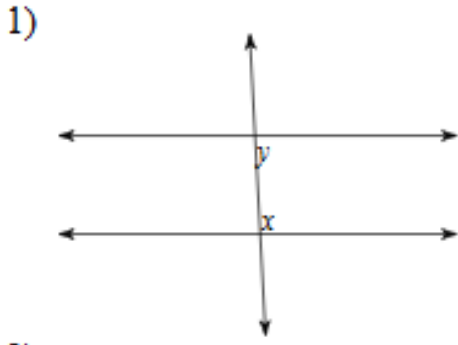
Interior Angles

- <u>Consecutive Interior Angles:</u> angles that are on the __**SAME**__ of the transversal and are __**INSIDE**__ the parallel lines

  - Consecutive interior angles are __**SUPPLEMENTARY**__ (add up to __**180°**__) if the two lines the transversals crosses are parallel

- If l and m are parallel, identify the Consecutive interior angles and their sum.

  - What is the consecutive interior angle corresponding to ∠3? __**∠5**__ (∠3 + __**∠5**__ = __**180°**__)

  - What is the Consecutive interior angle corresponding to ∠4? __**∠6**__ (∠4 + __**∠6**__ = __**180°**__)

- <u>Consecutive Exterior Angles:</u> angles that are on the __**SAME**__ of the transversal and are __**OUTSIDE**__ the parallel lines

  - Consecutive exterior angles are __**SUPPLEMENTARY**__ (add up to __**180°**__) if the two lines the transversals crosses are parallel

- If l and m are parallel, identify the Consecutive exterior angles and their sum.

  - What is the Consecutive exterior angle corresponding to ∠1? __**∠7**__ (∠1 + __**∠7**__ = __**180°**__)

  - What is the Consecutive exterior angle corresponding to ∠2? __**∠8**__ (∠2 + __**∠8**__ = __**180°**__)
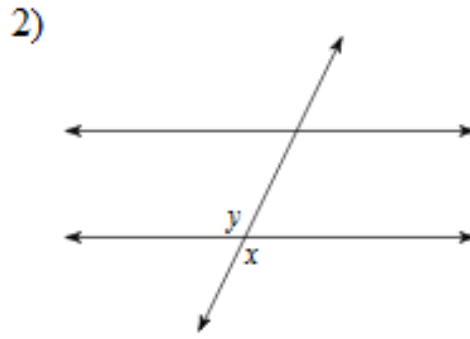
Alternate Angles

- <u>Alternate interior angles:</u> angles that are on __**INSIDE**__ of the transversal and are __**OPPOSITE SIDE**__ the parallel lines

  - Alternate interior angles are __**CONGRUENT**__

- <u>Alternate exterior angles:</u> angles that are on __**OUTSIDE**__ of the transversal and are __**OPPOSITE SIDE**__ the parallel lines

  - Alternate exterior angles are __**CONGRUENT**__

- What type of relationship exists between ∠3 *and* ∠6? __**ALTERNATE INTERIOR**__

  - Name the other pair of alternate interior angles. __**∠4 and ∠5, ∠3 and ∠6**__

- What type of relationship exists between ∠1 *and* ∠8? __**ALTERNATE EXTERIOR**__

  - Name the other pair of alternate exterior angles. __**∠2 and ∠7, ∠1 and ∠8**__
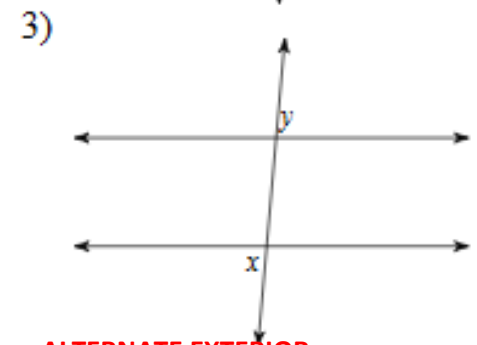
Identify each set of angles below as corresponding, vertical, alternate interior, alternate exterior, Consecutive interior, or Consecutive exterior. What does that tell you about the pair of angles?
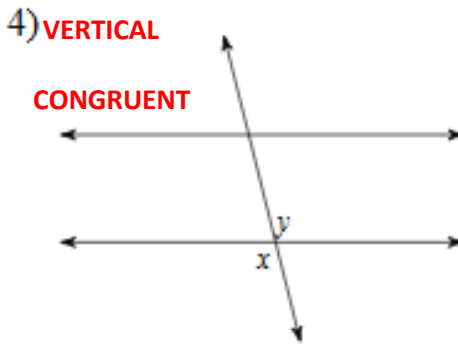
1)

CONSECUTIVE INTERIOR

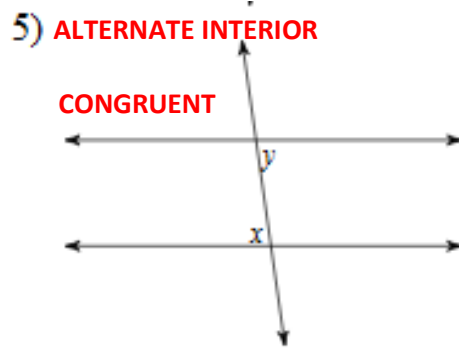**SUPPLEMENTARY**

2)

VERTICAL

CONGRUENT

3)

ALTERNATE EXTERIOR

CONGRUENT
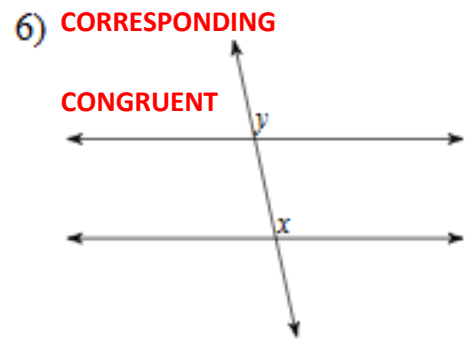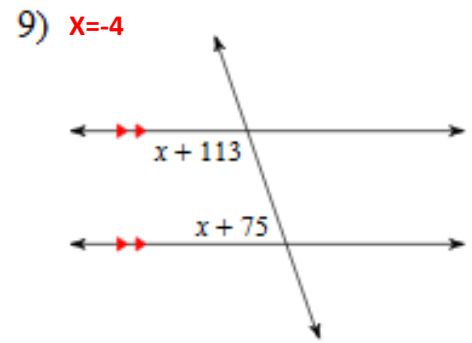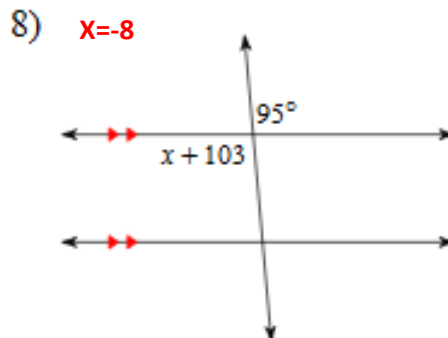
4) **VERTICAL**

CONGRUENT

5) **ALTERNATE INTERIOR**

CONGRUENT

6) **CORRESPONDING**

CONGRUENT

Solve for the value of x in each set of parallel lines below:

7) **X=7**

$8x + 4$

$18x - 6$

8) **X=-8**

$95°$

$x + 103$

9) **X=-4**

$x + 113$

$x + 75$
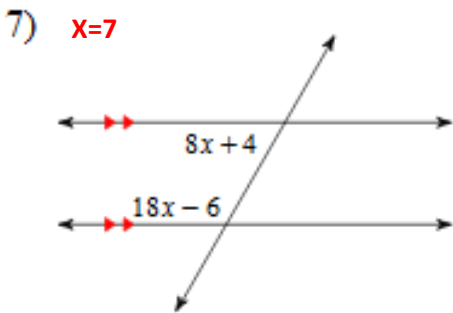
Find the measure of the angle indicated in bold:

10) **X=9**   **∠ = 100°**

$11x + 1$

$10x + 10$

11) **X=96**   **∠ = 80°**

$12x + 8$

$14x - 4$

12) **X=9**   **∠ = 70°**

$13x - 7$ $8x - 2$
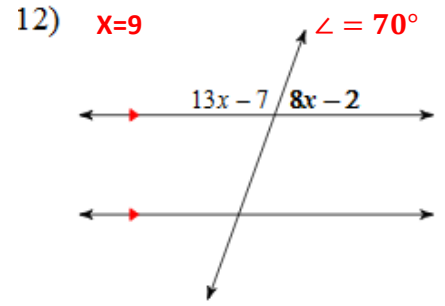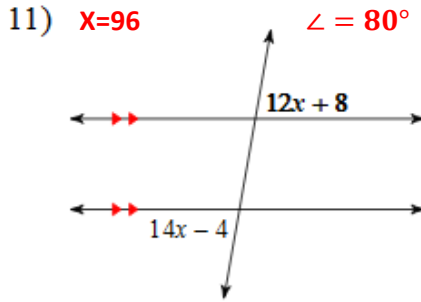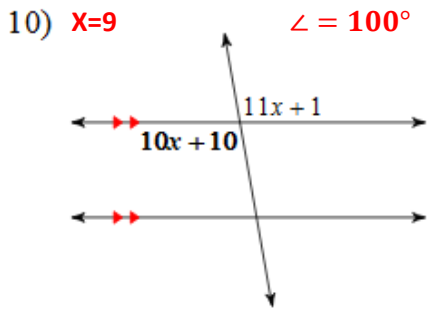
Lesson 1 – Classwork/Homework – Properties of Transversals

Identify each set of angles below as corresponding, vertical, alternate interior, alternate exterior, and consecutive interior or consecutive exterior. Then, determine whether each pair is congruent or supplementary.
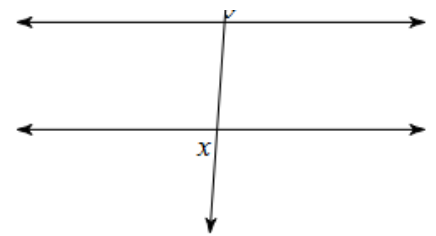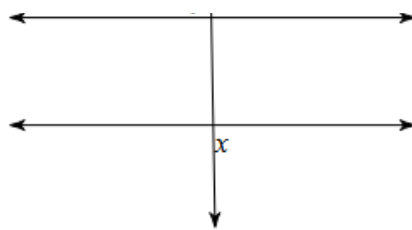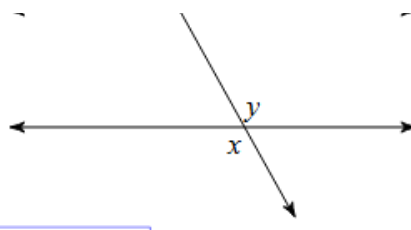
1)

CONSECUTIVE INTERIOR

SUPPLEMENTARY

y

x

ALTERNATE INTERIOR

CONGRUENT

y

x

ALTERNATE EXTERIOR

CONGRUENT

y

x
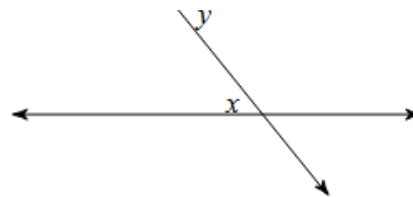
4)

ALTERNATE EXTERIOR

CONGRUENT

x

VERTICAL

CONGRUENT

y

x

CORRESPONDING

CONGRUENT

y

x
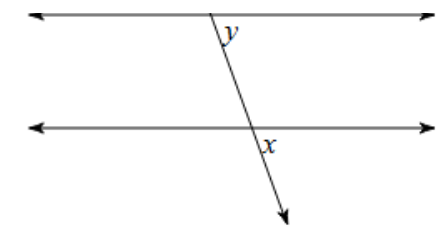
Identify the relationship between the two angles, then solve for x.

7) **X=-3**

$x + 73$

X=6

$70°$

8) **X=9**

$9 + 9x$

$9x + 9$

X=5

9) **X=12**

$80°$

X=11

$5x + 20$

10)

$130°$

$8x + 2$

11)

$19x + 5$

$100°$

12)

$10x + 20$

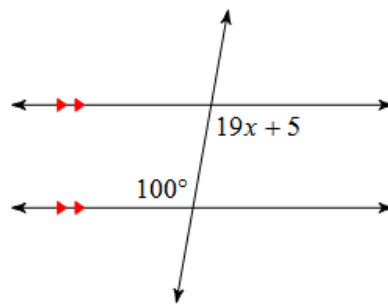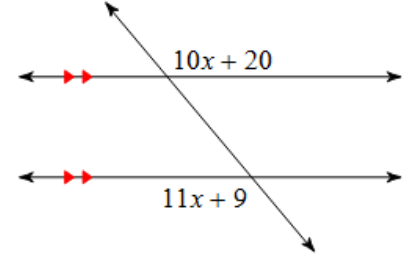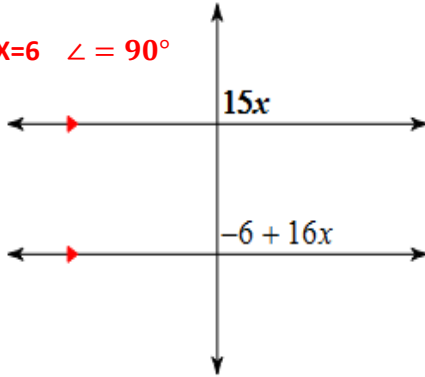$11x + 9$
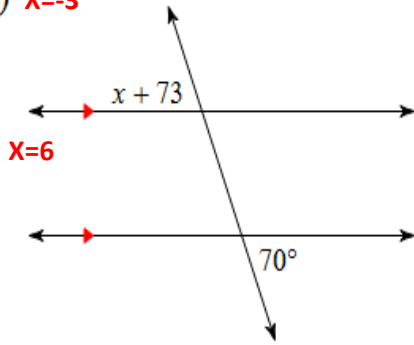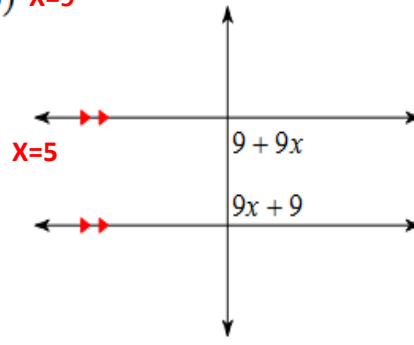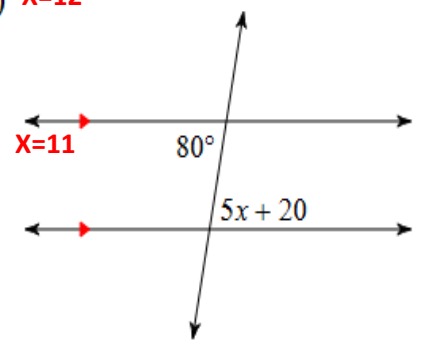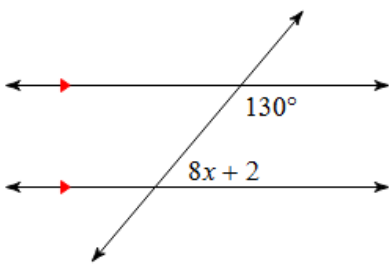
Identify the relationship that exists between the two angles, then find the measure of the bolded angle.

13) **CORRESPONDING**

X=6   ∠ = 90°
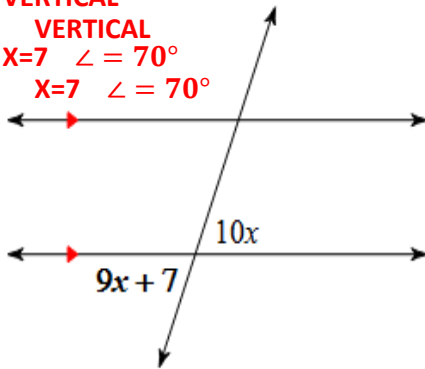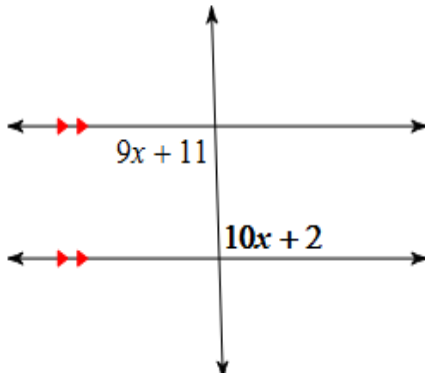
15x

−6 + 16x

14) **VERTICAL**

X=6   ∠ = 120°

19x + 6

21x − 6

15) **VERTICAL**
VERTICAL
X=7   ∠ = 70°
X=7   ∠ = 70°

10x

9x + 7

16)   **LINEAR PAIR**

X=9   ∠ = 135°

5x   14x + 9

17)

9x + 11

10x + 2

18)

23x − 5

22x