ANGLES & PARALLEL LINES

**Complementary Angles:** Two angles that add up to 90º

$$90° - 35° = 55°$$

35°

? 55°
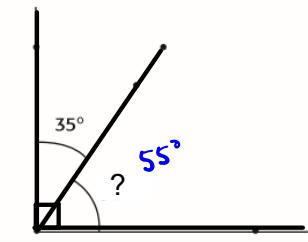
**Supplementary Angles:** Two angles that add up to 180º

$$\angle ABC = 180° - 40°$$
$$= 140°$$

140°
?  40°
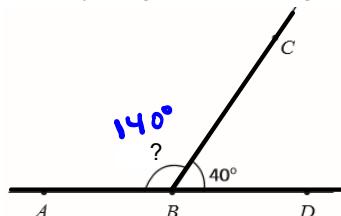
*A*     *B*     *D*

Vertically Opposite Angles:

When two lines intersect, four angles are created.

The angles directly across each other
will have the same angle measure.

*C*     *D*
130°
x   x
130°
*A*    *E*

① $360° - (2(130°))$
$360° - 260° = \dfrac{100°}{2} = 50°$

② $180° - 130° = 50°$
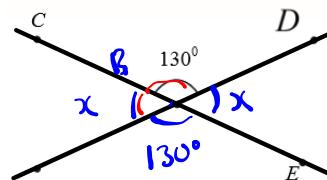
**When a transversal line passes through 2 parallel lines eight angles are created.**

$\angle$ angle     transversal

Corresponding Angles:
 Corresponding angles will always be on the same side
 of the transversal and on either side of the parallel lines.

$\angle 3 = \angle 7$     $\angle 4 = \angle 8$
$\angle 1 = \angle 5$     $\angle 2 = \angle 6$

*G*   2   *F* 1 *E*
3   70   4
*B* 6   *C* 5   *D*
7   8
*A*
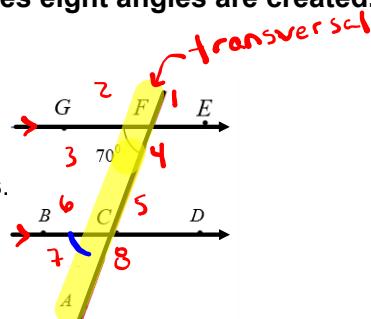
Alternate Interior Angles:
 These angles are always found on opposite side of the transversal line,
 and INSIDE the two parallel lines.

$\angle 4 = \angle 6$

$\angle 3 = \angle 5$

*A*   2   *B*   *C*
3   120°
6   5
7
*F*   8 *E*   *D*
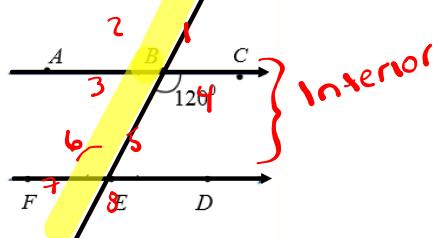
Interior

Alternate Exterior Angles:
 These angles are always found opposite side of the transversal line,
 and OUTSIDE the parallel lines.

$\angle 1 = \angle 7$

$\angle 2 = \angle 8$

Exterior

2   *C*
65°
3   4
*A*   *B*   *D*
6   5
*H*   *F*
7   8   *E*
*G*

Exterior

1
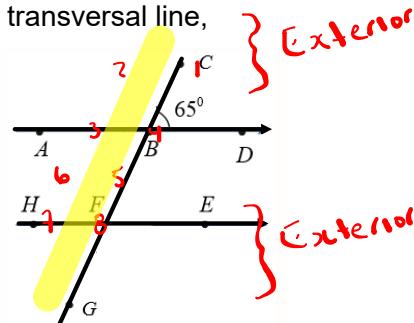
**Find the missing measure "x" for each diagram below and state the definition (type of angle) used to find it**

**1)**

A    B  80°    D

x

C ... E

$x = 80°$  Vertically (VOA) OPP ∠

**2)**

B

C

x  20°

A    D

$x = 90° - 20° = 70°$

Complimentary angles

**3)**

A    B

61°

C  x    D
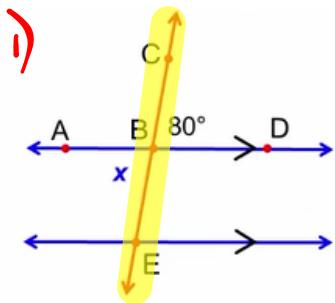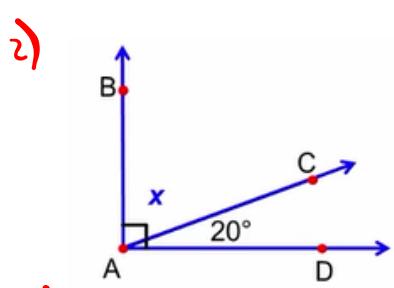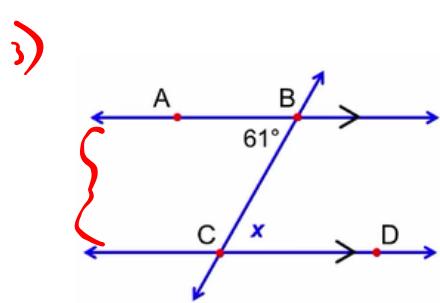
$x = 61°$

Alternate Interior angles

**4)**

A

B  x    C

E   F

71°

G
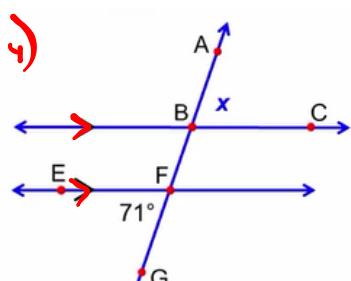
$x = 71°$  Alternate Exterior angles

**5)**

C

A   58°  B

x

E    D
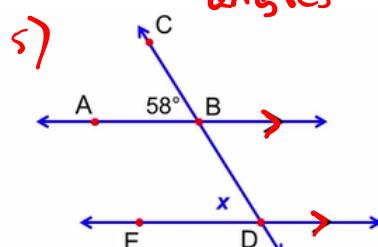
$x = 58°$  Corresponding angles

**6)**

D

142°

x

A    B    C
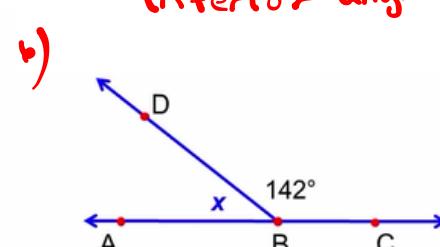
$x = 180° - 142°$
$= 38°$

Supplementary Angle

C    B    D

A

x

E   F  70°    G

H

C

A   72°  B    D

E      F    G

x

H

C    E

105°

A    B    x  D    F

A    B    D

73°

C    E    F

x

A    C

120°

B

D    x    E