parallel Lines & Transversals

| If two PARALLEL lines are cut by a transversal, then... |
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| • Each pair of **corresponding angles** is <u>congruent</u> |
| • Each pair of **alternate interior angles** is <u>congruent</u>. |
| • Each pair of **alternate exterior angles** is <u>congruent</u>. |
| • Each pair of **consecutive interior angles** is <u>supplementary</u>. |
| And recall from Unit 1, **vertical angles** are always <u>congruent</u> and a **linear pair is** always <u>supplementary</u>. |

{So if we know one angle measure, then we can find them all}

**Example 1** Given $m\angle 1 = 65°$, find the measure of each missing angle. Give your reasoning.
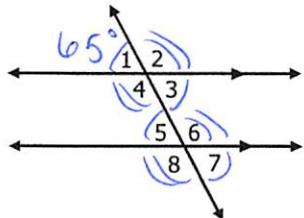
a. $m\angle 2 = 115°$	linear pair to ∠1
b. $m\angle 3 = 65°$	vertical to ∠1
c. $m\angle 4 = 115°$	vertical to ∠2
d. $m\angle 5 = 65°$	corresponding to ∠1
e. $m\angle 6 = 115°$	alt. interior to ∠4
f. $m\angle 7 = 65°$	alt. exterior to ∠1
g. $m\angle 8 = 115°$	vertical to ∠6

**Example 2** Given $m\angle 6 = 142°$, find the measure of each missing angle. Give your reasoning.
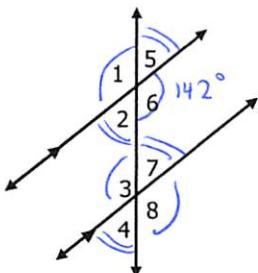
a. $m\angle 1 = 142°$	vertical to ∠6
b. $m\angle 2 = 38°$	linear pair to ∠6
c. $m\angle 3 = 142°$	alt. interior to ∠6
d. $m\angle 4 = 38°$	corresponding to ∠2
e. $m\angle 5 = 38°$	vertical to ∠2
f. $m\angle 7 = 38°$	corresponding to ∠5
g. $m\angle 8 = 142°$	alt. exterior to ∠1

Example 3 Given m∠5 = 82°, find the measure of each missing angle.
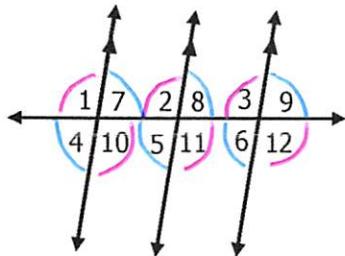
a. m∠1 = 98°	**e.** m∠6 = 82°	**i.** m∠10 = 98°
b. m∠2 = 98°	**f.** m∠7 = 82°	**j.** m∠11 = 98°
c. m∠3 = 98°	**g.** m∠8 = 82°	**k.** m∠12 = 98°
d. m∠4 = 82°	**h.** m∠9 = 82°	

Example 4 Given m∠12 = 121° and m∠6 = 75°, find the measure of each missing angle.
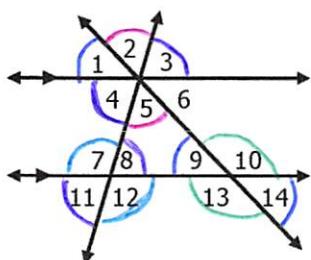
a. m∠1 = 75°	**e.** m∠5 = 46°	**i.** m∠10 = 105°
b. m∠2 = 46°	**f.** m∠7 = 121°	**j.** m∠11 = 59°
c. m∠3 = 59°	**g.** m∠8 = 59°	**k.** m∠13 = 105°
d. m∠4 = 59°	**h.** m∠9 = 75°	**l.** m∠14 = 75°

Example 5 Given m∠7 = 38° and m∠10 = 102°, find the measure of each missing angle.
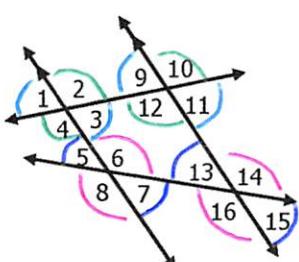
a. m∠1 = 78°	**f.** m∠6 = 142°	**k.** m∠13 = 38°
b. m∠2 = 102°	**g.** m∠8 = 142°	**l.** m∠14 = 142°
c. m∠3 = 78°	**h.** m∠9 = 78°	**m.** m∠15 = 38°
d. m∠4 = 102°	**i.** m∠11 = 78°	**n.** m∠16 = 142°
e. m∠5 = 38°	**j.** m∠12 = 102°	

∠5 + ∠8 = 180°
∠10 + ∠11 = 180°

Example 6 Given m∠2 = 41°, m∠5 = 94°, and m∠10 = 109°, find the measure of each missing angle.
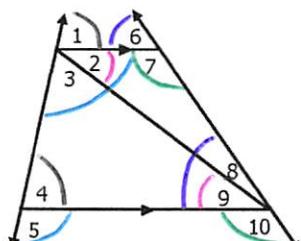
a. m∠1 = 86°	**d.** m∠6 = 71°	**g.** m∠9 = 41°
b. m∠3 = 53°	**e.** m∠7 = 109°	
c. m∠4 = 86°	**f.** m∠8 = 30°	

∠2 + ∠3 = ∠5
∠8 + ∠9 + ∠10 = 180°

∠1 + ∠2 + ∠3 = 180°