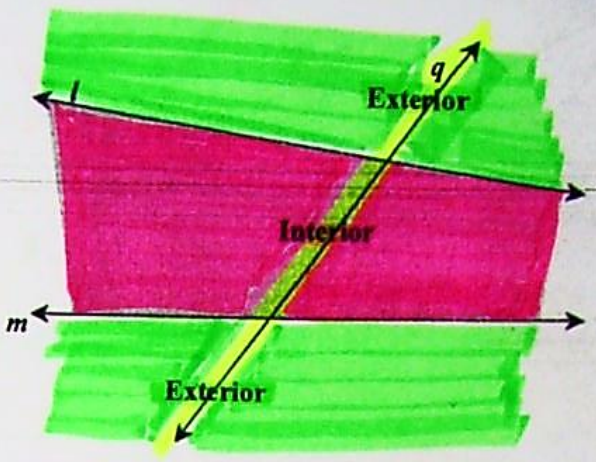
Notes p.1

Geometry: 4.5 - Intro to Parallel Lines

For lines *l* and *m*, and ***transversal*** *q*:
(a line that intersects two coplanar lines)



The region between *l* and *m* is the ***interior*** region. "inside"

The rest is the ***exterior*** region. "outside"

Angle Pairs Formed by Transversals

Alternate Interior Angles - ∠s on the interior of 2 lines and on opposite sides of the transversal

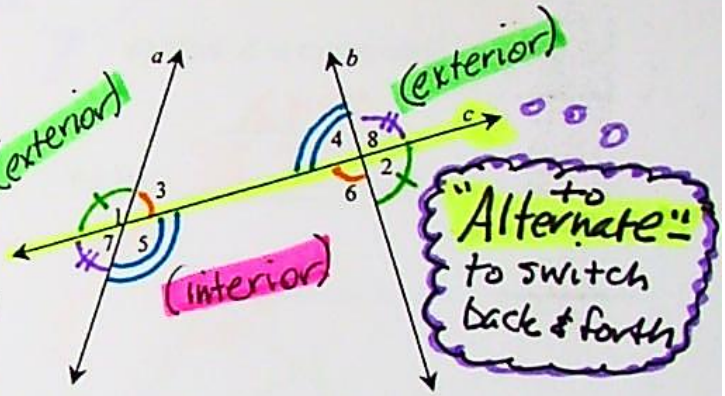
Name all pairs of Alt. Int. ∠s in this diagram:

∠3 & ∠6 ∠4 & ∠5

Alternate Exterior Angles - ∠s on the exterior of 2 lines and on opposite sides of the transversal

Name all pairs of Alt. Ext. ∠s in this diagram:

∠1 & ∠2 ∠7 & ∠8



Corresponding Angles - ∠s on the same side of the transversal where one ∠ int. and one ∠ ext.

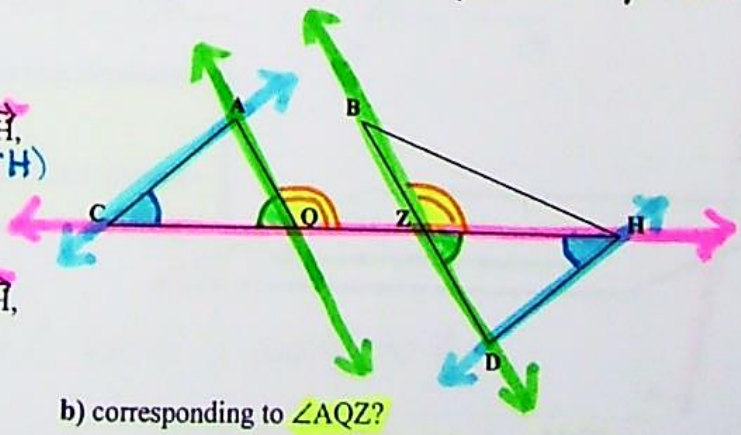
Name all pairs of Corr. ∠s in this diagram: ∠1∠4; ∠3∠8; ∠7∠6; ∠5∠2

Example

For lines $\overleftrightarrow{AC}$, $\overleftrightarrow{HD}$, and trans. $\overleftrightarrow{CH}$, what ∠ is alt. int. to ∠C? (∠ACH)

∠DHC

For lines $\overleftrightarrow{AQ}$, $\overleftrightarrow{BD}$, and trans. $\overleftrightarrow{CH}$, what ∠ is:



a) alt. ext. to ∠AQC?

∠DZH

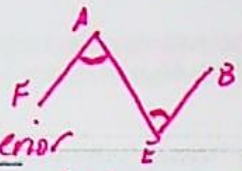
b) corresponding to ∠AQZ?

∠BZH

Notes p2 cont'd

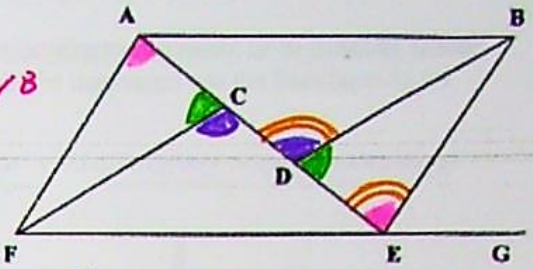
2. In the diagram shown,

a) $\angle FAC$ & $\angle BED$ are what type of angles?

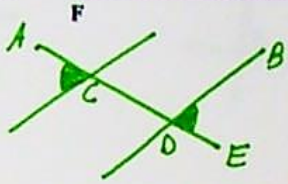


alternate interior

For lines $\overleftrightarrow{FA}$ $\overleftrightarrow{EB}$ and transversal $\overleftrightarrow{AE}$

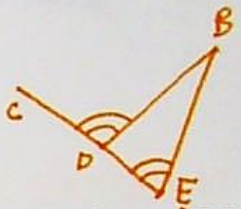


b) $\angle FCA$ & $\angle EDB$ are what type of angles?

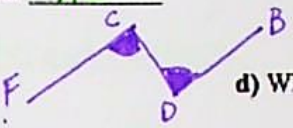


alternate exterior

For lines $\overleftrightarrow{FC}$ $\overleftrightarrow{BD}$ and transversal $\overleftrightarrow{AE}$



c) $\angle FCD$ & $\angle BDC$ are what type of angles?



alternate interior

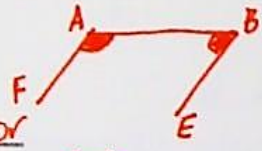
For lines $\overleftrightarrow{FC}$ $\overleftrightarrow{DB}$ and transversal $\overleftrightarrow{CD}$

d) What $\angle$ is corresponding to $\angle BDC$?

$\angle BED$

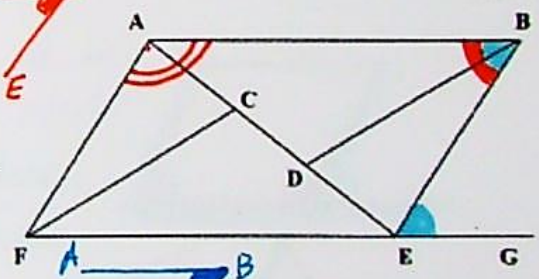
For lines $\overleftrightarrow{BD}$ $\overleftrightarrow{BE}$ and transversal $\overleftrightarrow{CE}$

e) $\angle FAB$ & $\angle EBA$ are what type of angles?

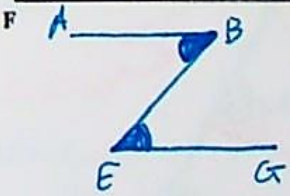


same-side interior

For lines $\overleftrightarrow{FA}$ $\overleftrightarrow{EB}$ and transversal $\overleftrightarrow{AB}$



f) $\angle BEG$ & $\angle EBA$ are what type of angles?

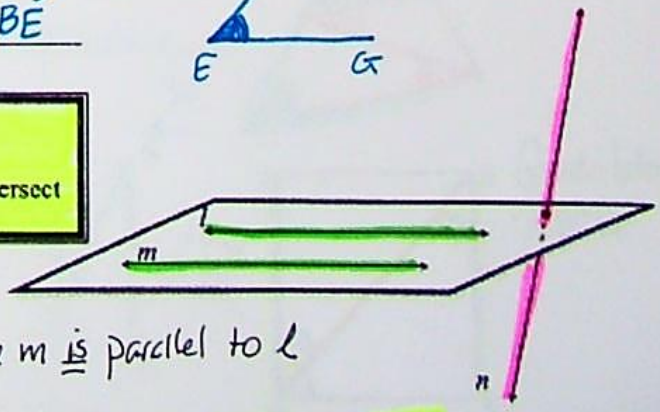


alternate interior

For lines $\overleftrightarrow{AB}$ $\overleftrightarrow{EG}$ and transversal $\overleftrightarrow{BE}$

Definition:

Parallel Lines - coplanar lines that do not intersect



ex: $m \parallel l$, but $m \nparallel n$

$m \parallel l$ line m is parallel to l

BUT $m \nparallel n$ and $l \nparallel n$ → line n is NOT parallel to lines m & l (non-coplanar)

even though they will never intersect

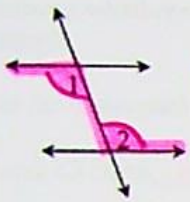
Notes p3 cont'd

WS: 4.5 – Angles Formed by 2 Lines Cut by a Transversal

Determine whether each pair of numbered angles is alternate interior, alternate exterior, corresponding, same-side interior or same-side exterior. Use colored pencils to highlight the transversal and the lines forming the specified angles.

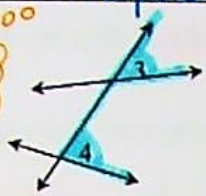
1. alternate interior

"Z" shape



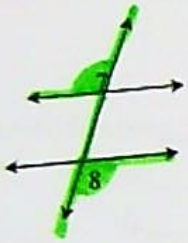
2. corresponding

"F" shape

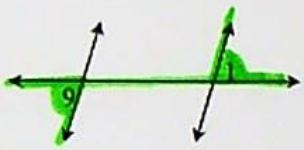


3. same-side interior

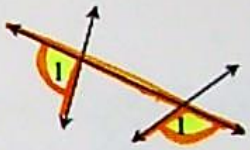
4. alternate exterior



5. alternate exterior

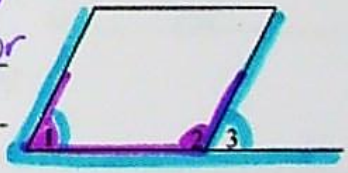


6. same-side exterior



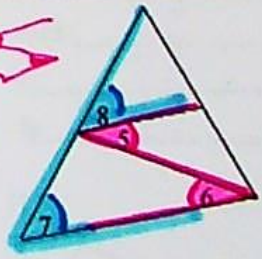
7. What type of angles are angles 1 and 2? same-side interior

8. What type of angles are angles 1 and 3? corresponding



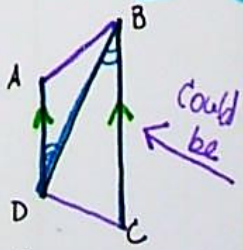
9. What type of angles are angles 5 and 6? alternate interior

10. What type of angles are angles 7 and 8? corresponding

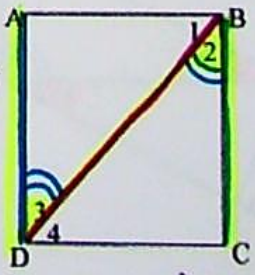


11. Name a pair of alternate interior angles formed by transversal $\overline{BD}$ and segments $\overline{AD}$ and $\overline{BC}$.

∠2 and ∠3



Could be



Quadrilateral ABCD

We don't know whether the figure is a parallelogram — AND we need more info to know if it is at least a TRAPEZOID

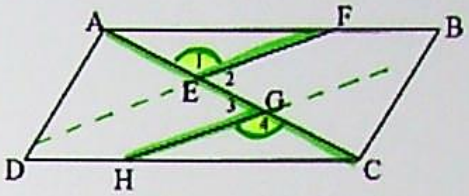
If and only if

If $\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$, then $\angle 3 \cong \angle 2$

Notes p4 (cont'd)

12. Name a pair of alternate exterior angles formed by transversal $\overline{AC}$ and segments $\overline{EF}$ and $\overline{GH}$.

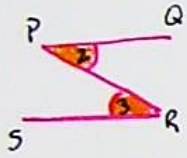
∠1 and ∠4



(A) Determine whether each pair of numbered angles is alternate interior, corresponding, or same-side interior.

(B) Name the transversal and the two lines which form them.

13. ∠2 and ∠3 class: alternate interior

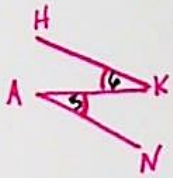


trans: $\overleftrightarrow{PR}$

l_1: $\overleftrightarrow{PQ}$

l_2: $\overleftrightarrow{SR}$

14. ∠5 and ∠6 class: alternate interior

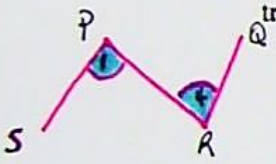


trans: $\overleftrightarrow{AK}$

l_1: $\overleftrightarrow{HK}$

l_2: $\overleftrightarrow{AN}$

15. ∠1 and ∠4 class: alternate interior

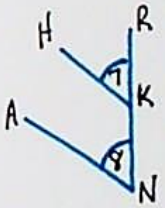


trans: $\overleftrightarrow{PR}$

l_1: $\overleftrightarrow{SP}$

l_2: $\overleftrightarrow{RQ}$

16. ∠7 and ∠8 class: Corresponding



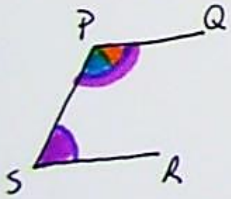
trans: $\overleftrightarrow{RN}$

l_1: $\overleftrightarrow{HK}$

l_2: $\overleftrightarrow{AN}$

(∠SPQ)

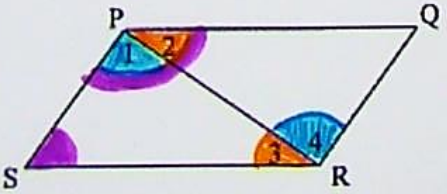
17. ∠P and ∠PSR class: same-side interior



trans: $\overleftrightarrow{PS}$

l_1: $\overleftrightarrow{PQ}$

l_2: $\overleftrightarrow{SR}$



18. ∠8 and ∠HAN class: same-side interior

trans: $\overleftrightarrow{AN}$

l_1: $\overleftrightarrow{HA}$

l_2: $\overleftrightarrow{RN}$