Do Now!!!

1. $x + 2x + 3x = 180$

2. $(w + 23) + (4w + 7) = 180$

3. $90 = 2y - 30$

4. $180 - 5y = 135$

Write an equation and solve the problem.

5. The sum of an angle and twice its complement is 136. Find each angle.

Geometry

Ch. 3 Handout 3.1

Properties of Parallel Lines

Parallel Lines

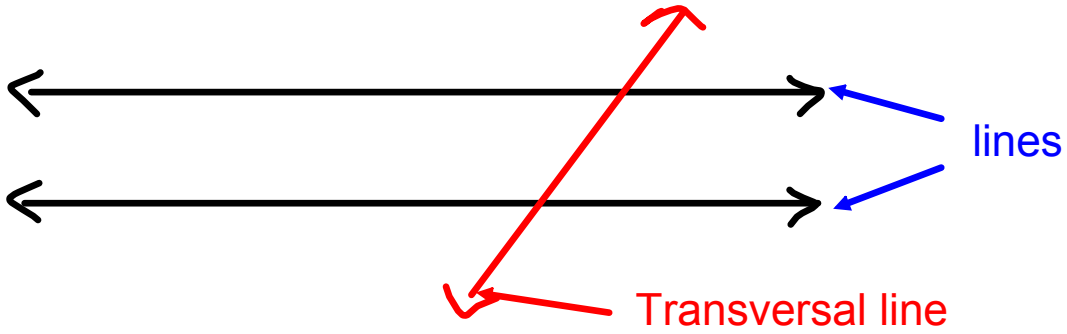
Parallel lines never intersect. These lines are parallel:

Parallel lines never intersect because they lie in the same plane and they have the same slope. They maintain an equal distance from each other.

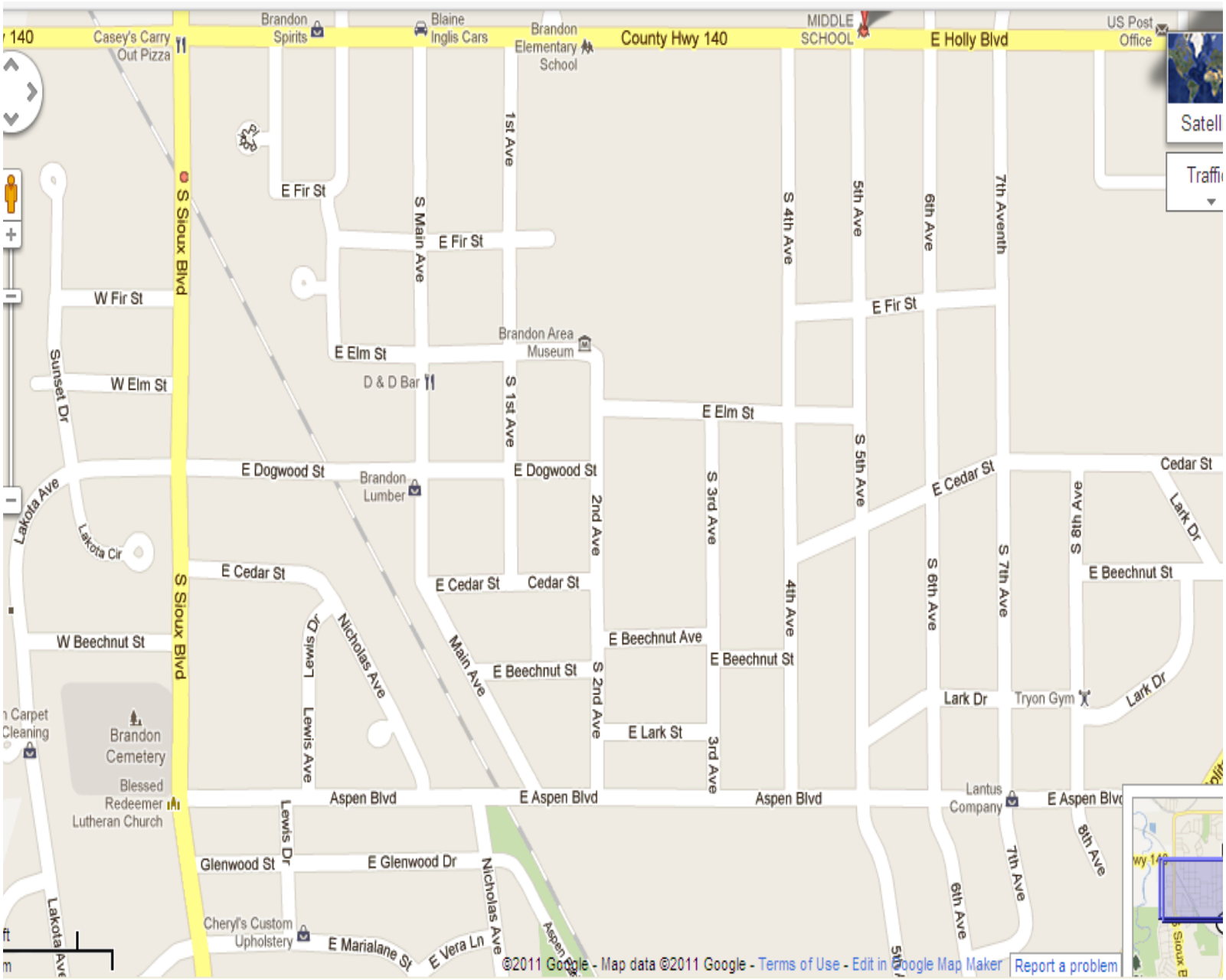
Notice that transversals are not always parallel to each other and that they can be perpendicular to the lines of intersection.

Transversal

A **transversal** is a line that intersects at least two other lines. The intersected lines are usually parallel.



Can you draw another transversal that intersects the parallel lines above?


140
Casey's Carry Out Pizza
Brandon Spirits
Blaine Inglis Cars
Brandon Elementary School
County Hwy 140
MIDDLE SCHOOL
E Holly Blvd
US Post Office
Satell
Traffi
S Sioux Blvd
E Fir St
S Main Ave
1st Ave
S 4th Ave
5th Ave
6th Ave
7th Aventh
W Fir St
E Elm St
Brandon Area Museum
D & D Bar
W Elm St
Sunset Dr
S 1st Ave
E Dogwood St
Brandon Lumber
2nd Ave
S 3rd Ave
S 5th Ave
E Cedar St
Cedar St
Lakota Ave
Lakota Cir
S 8th Ave
Lark Dr
E Beechnut St
W Beechnut St
Lewis Dr
Nicholas Ave
Main Ave
E Beechnut Ave
4th Ave
S 6th Ave
S 7th Ave
Lark Dr
Tryon Gym
E Lark St
3rd Ave
S 2nd Ave
Carpet Cleaning
Brandon Cemetery
Blessed Redeemer Lutheran Church
Aspen Blvd
E Aspen Blvd
Lantus Company
Lewis Ave
Glenwood St
E Glenwood Dr
8th Ave
7th Ave
6th Ave
Cheryl's Custom Upholstery
E Marialane St
E Vera Ln
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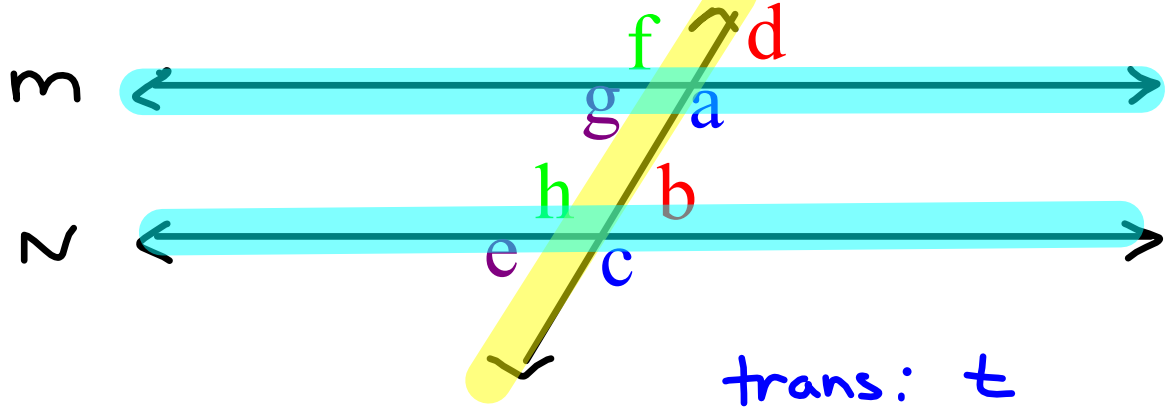
Report a problem

Corresponding Angles

Corresponding angles are pairs of angles that occupy the same position. For example, angles *a* and *c* both lie below the parallel line and to the right of the transversal. Corrs. ∠'s

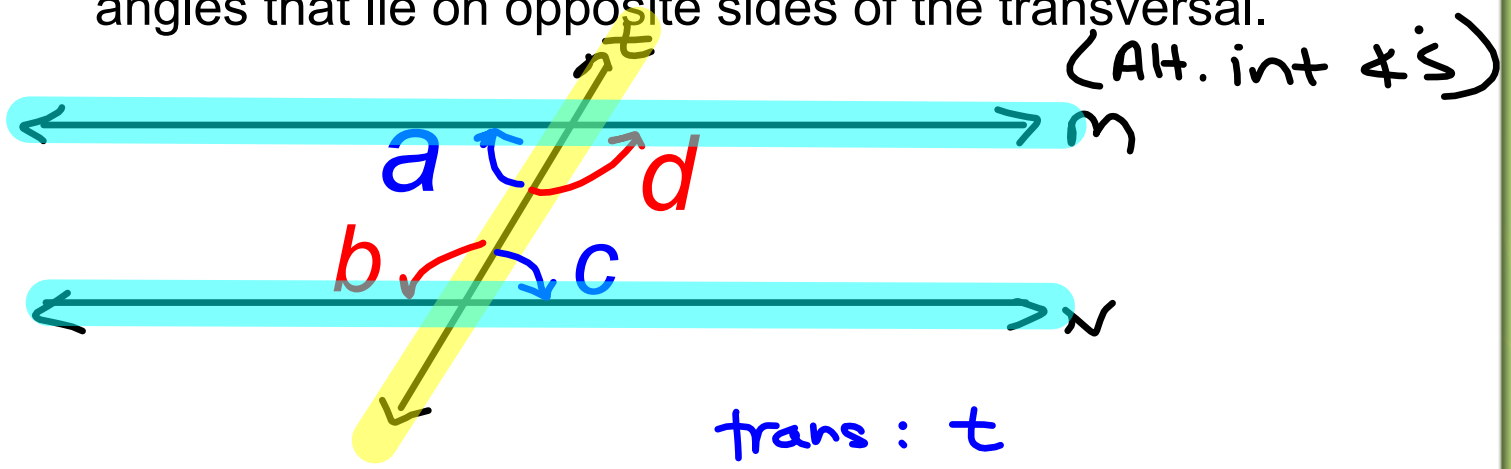


Mark the corresponding pairs of angles

trans: t
lines: m and n

Alternate Interior Angles

Alternate interior angles are nonadjacent interior angles that lie on opposite sides of the transversal.



(Alt. int ∠s)

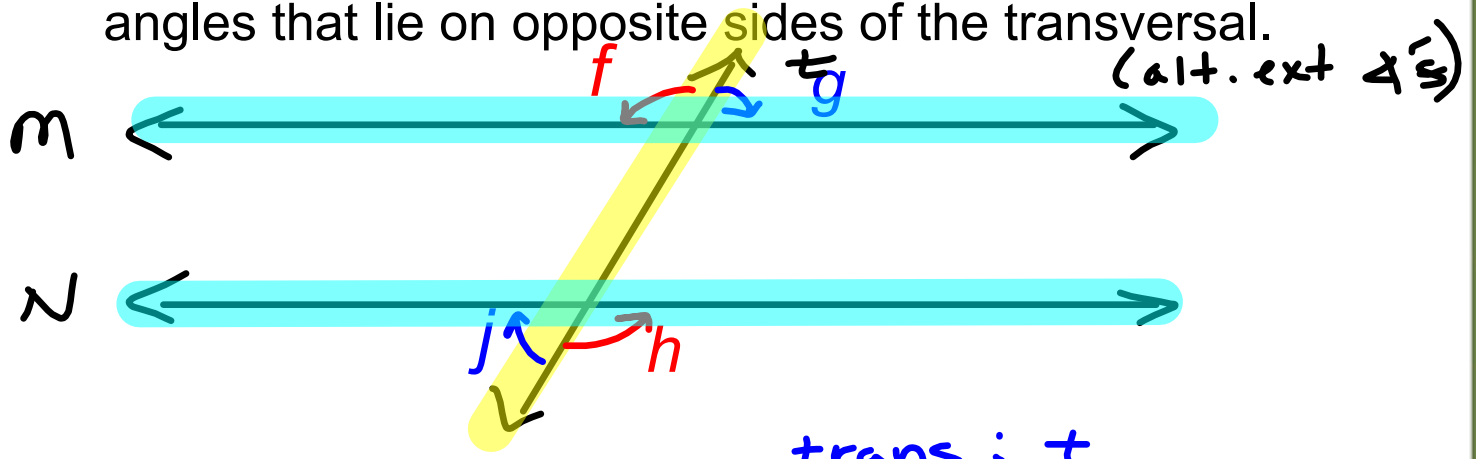
trans : t

lines : m and n

Mark the pairs alternate interior of angles

Alternate Exterior Angles

Alternate exterior angles are nonadjacent exterior angles that lie on opposite sides of the transversal.



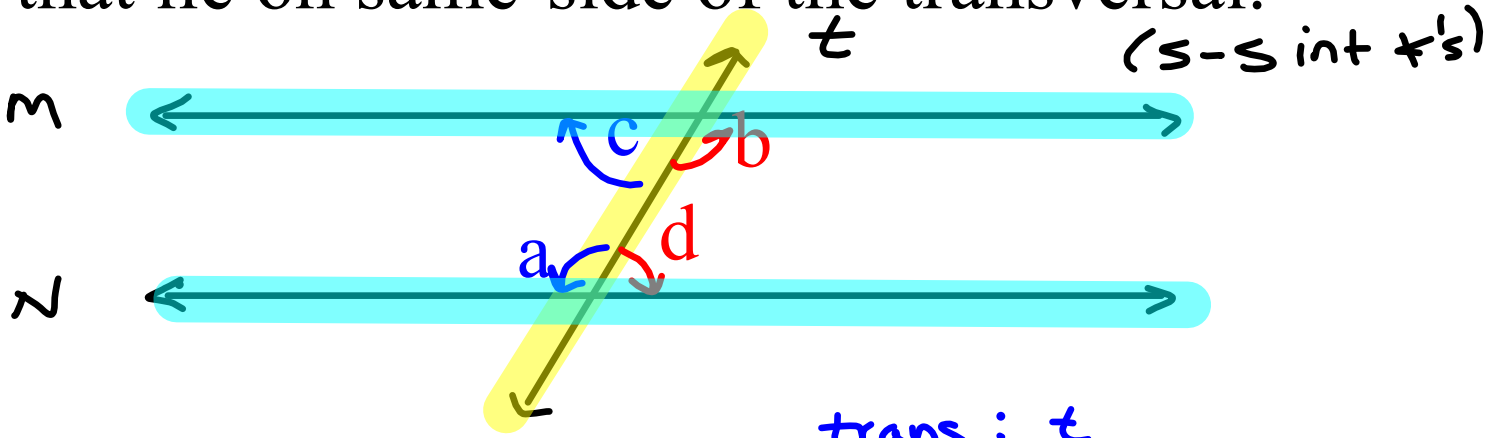
(alt. ext ∠'s)

Mark the pairs of alternate exterior angles

trans : t
lines : m and n

Same-Side Interior Angles

Same-side interior angles are interior angles that lie on same-side of the transversal.

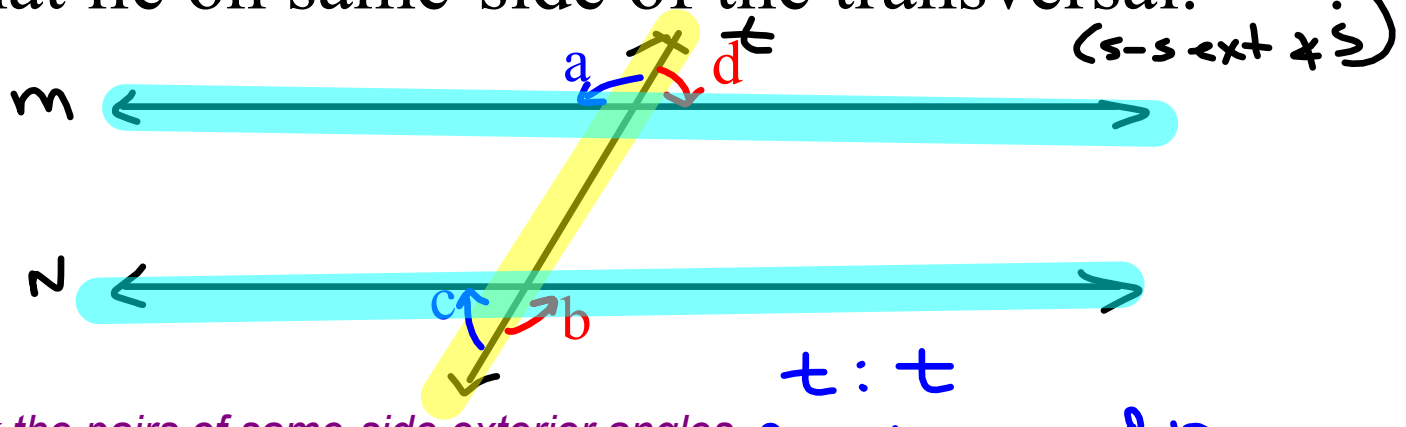


Mark the pairs of same-side interior angles

trans. : t
lines : m and n

Same-Side ExteriorAngles

Same-side exterior anglesare exterior angles that lie on same-side of the transversal.



(s-s ext ∠s)

t : t

lines: m and n

Mark the pairs of same-side exterior angles

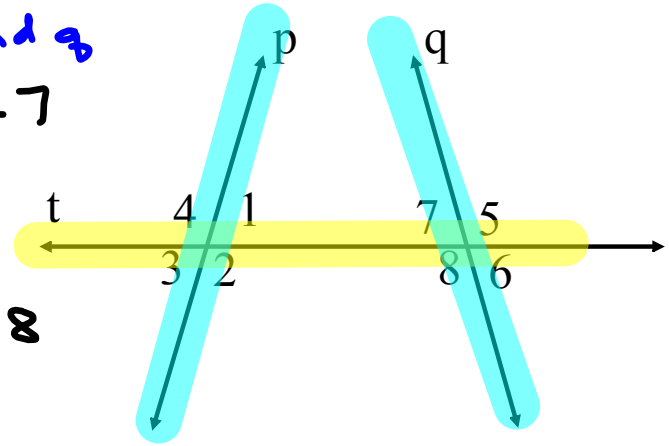
Use the diagram to identify which angle forms a pair of same-side interior angles with angle 1. Identify which angle forms a pair of corresponding angles with angle 1. Identify which angles form a pair of alternate interior angles with angle 1.

transversal : t lines : p and q

same-side interior angles: ∠1 and ∠7
∠2 and ∠8

corresponding angles:
∠4 and ∠7 ; ∠2 and ∠6
∠1 and ∠5 ; ∠3 and ∠8

alternate interior angles:
∠1 and ∠8
∠2 and ∠7



Use the diagram to identify which angle forms a pair of alternate exterior with angle 4. Identify which angle forms a pair of same-side exterior with angle 4. Identify which angle forms a pair of corresponding angles with angle 4.

transversal: t lines: p and q

alternate exterior angles:

∠4 and ∠6

∠3 and ∠5

same-side interior angles:

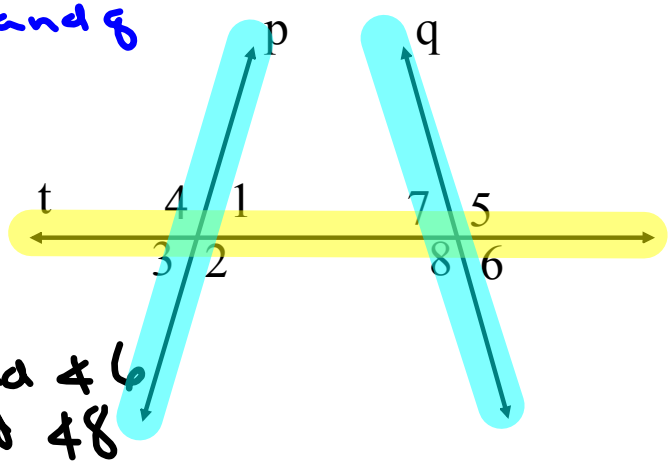
∠1 and ∠7

∠2 and ∠8

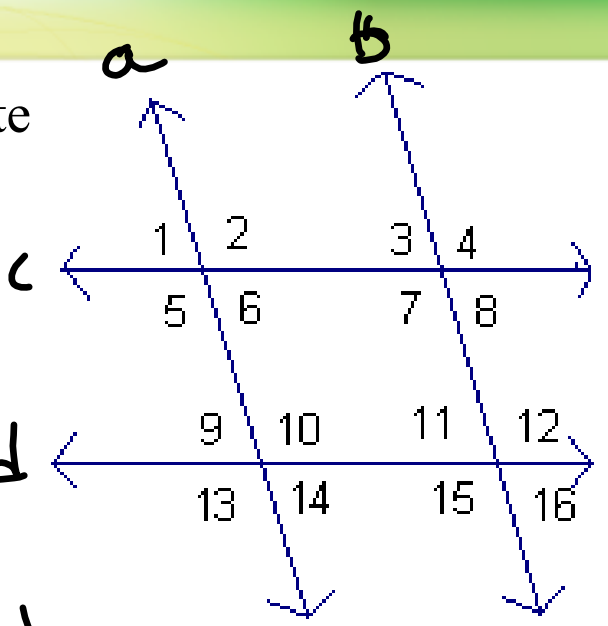
corresponding angles:

∠4 and ∠7 ; ∠2 and ∠6

∠1 and ∠5 ; ∠3 and ∠8



Classify each pair of angles as alternate interior angles, same-side interior angles, corresponding angles, or none of these.



a. $\angle 7$ and $\angle 11$

t : b
lines: c and d
s. s int $\angle$s

b. $\angle 14$ and $\angle 16$

t : d
lines: a and b
corrs. $\angle$s

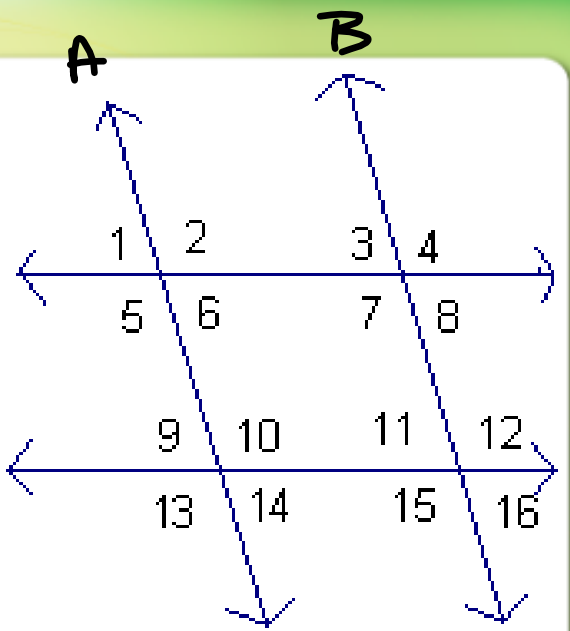
c. $\angle 4$ and $\angle 10$

none of these

d. $\angle 3$ and $\angle 6$

t: c
lines: a and b
alt. int $\angle$s

Classify each pair of angles as alternate interior angles, same-side interior angles, corresponding angles, or none of these.



e. $\angle$ 6 and $\angle$ 11
none of these

f. $\angle$ 2 and $\angle$ 10
t: a corrs. $\angle$s
lines: c and d

g. $\angle$ 2 and $\angle$ 3
t: c s-s int $\angle$s
lines: a and b

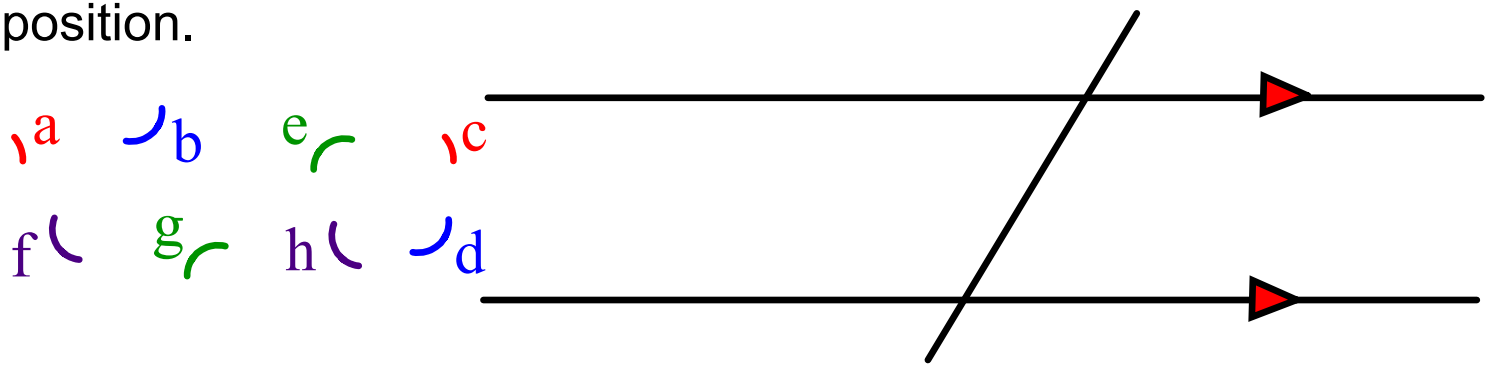
h. $\angle$ 7 and $\angle$ 12
t: B
lines: c and d
alt. int $\angle$s

Assignment:

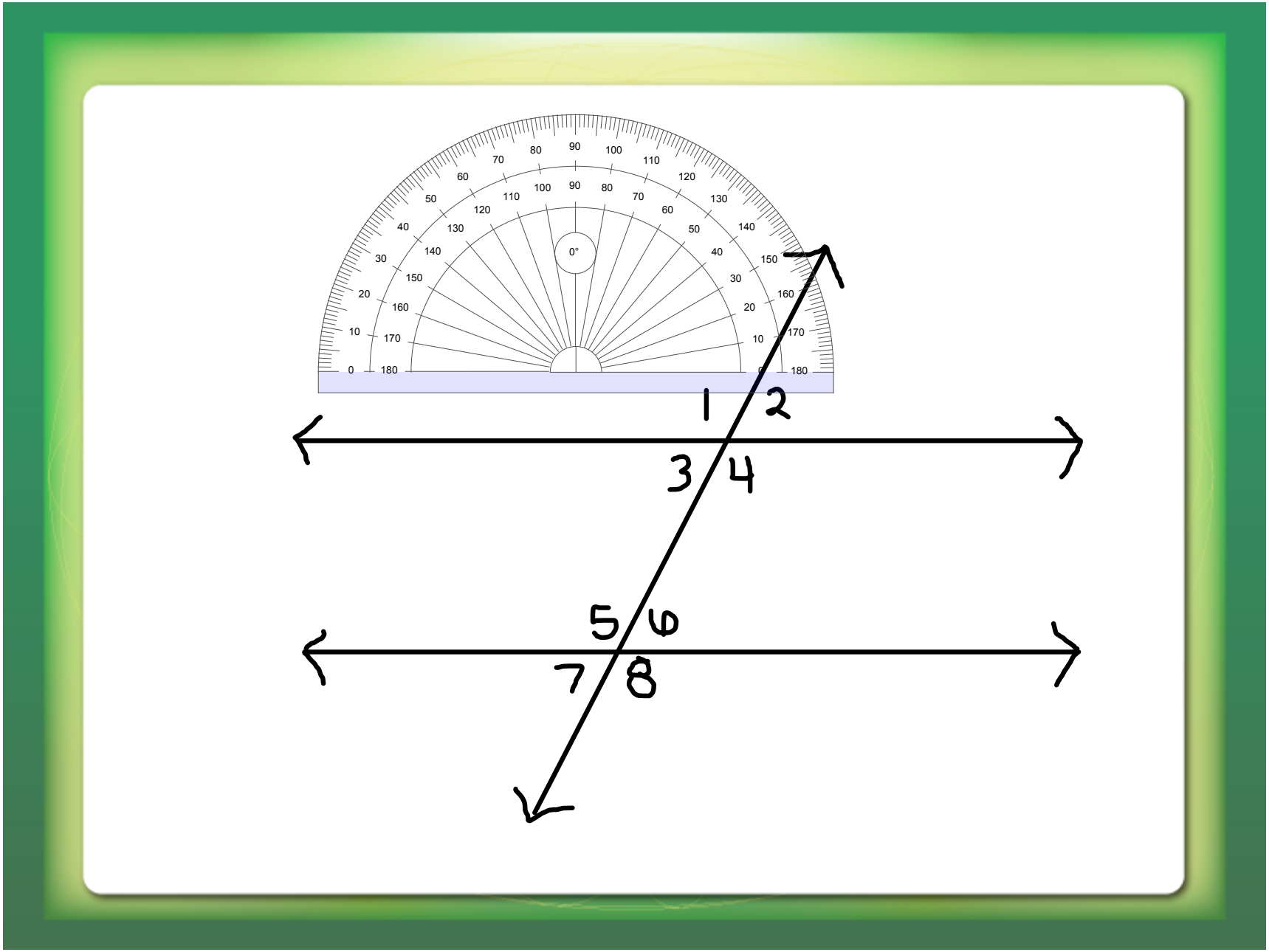
Pg 131 (1-8, 19-22)

Corresponding Angles

Corresponding anglesare pairs of angles that occupy the same position.



Pull


1
2
3
4
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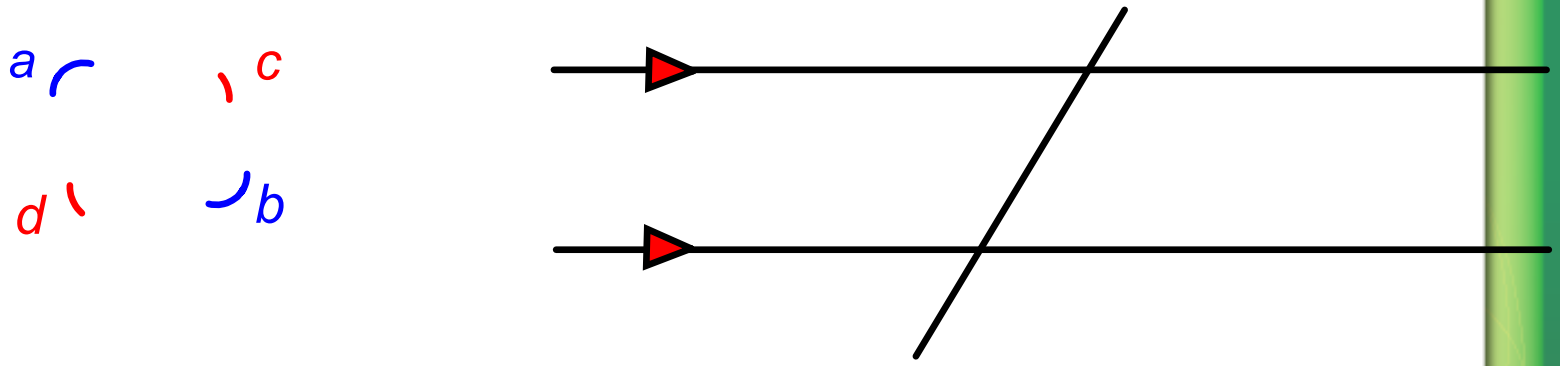
6
7
8

Alternate Interior Angles

Alternate interior angles are nonadjacent interior angles that lie on opposite sides of the transversal.



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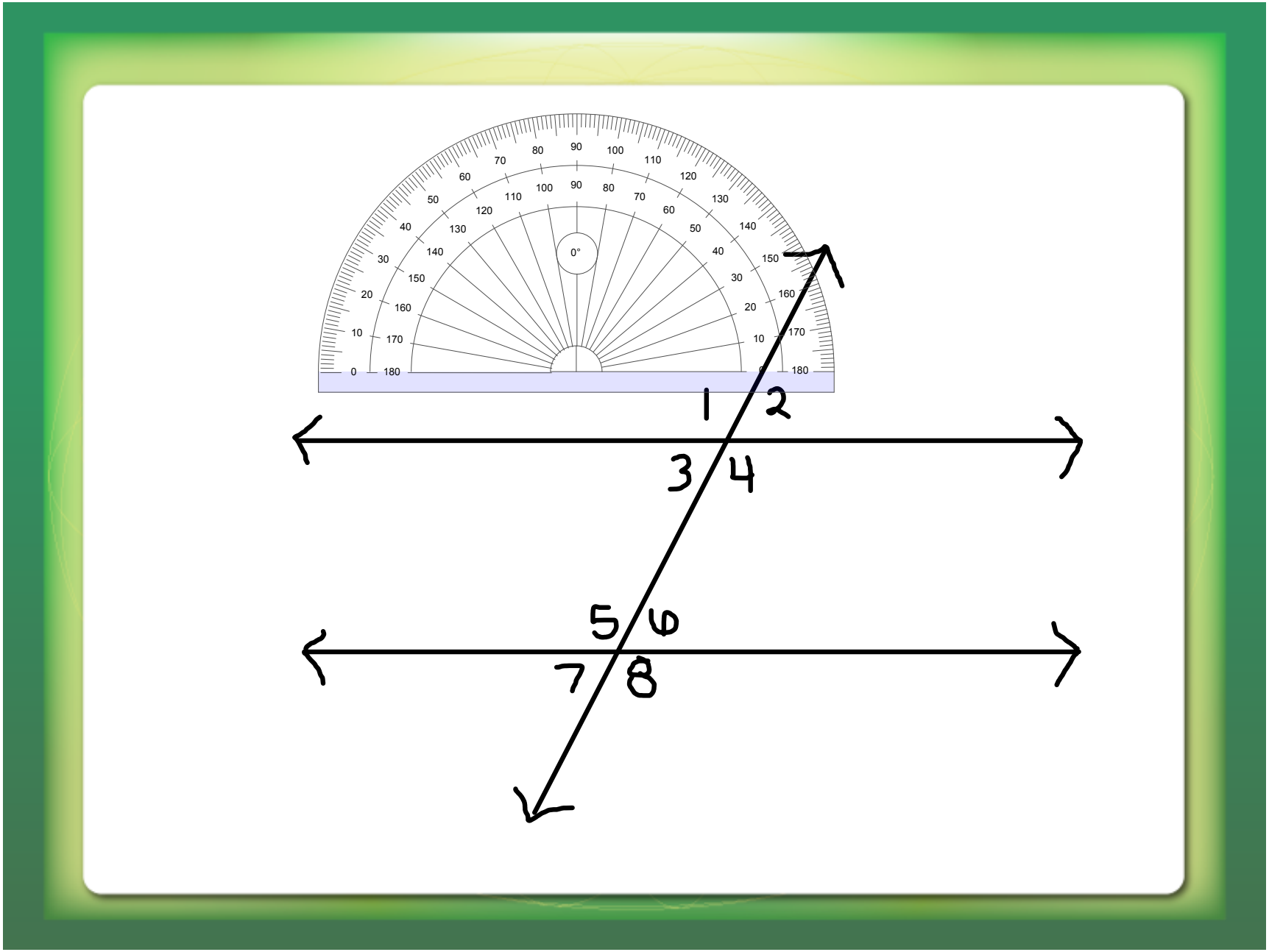
1
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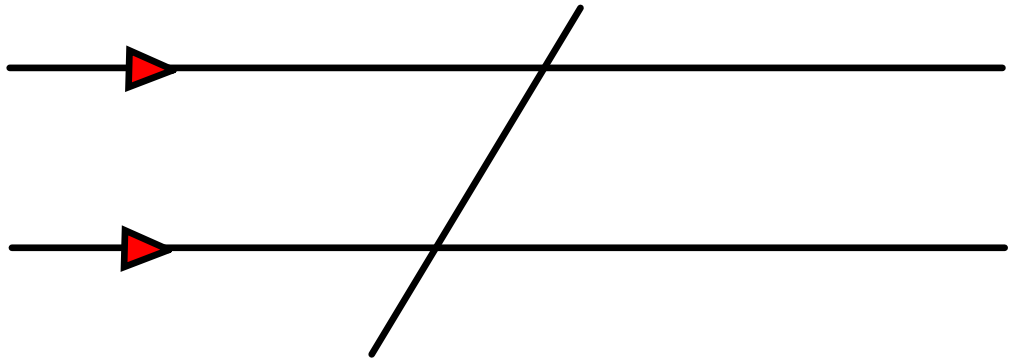
8

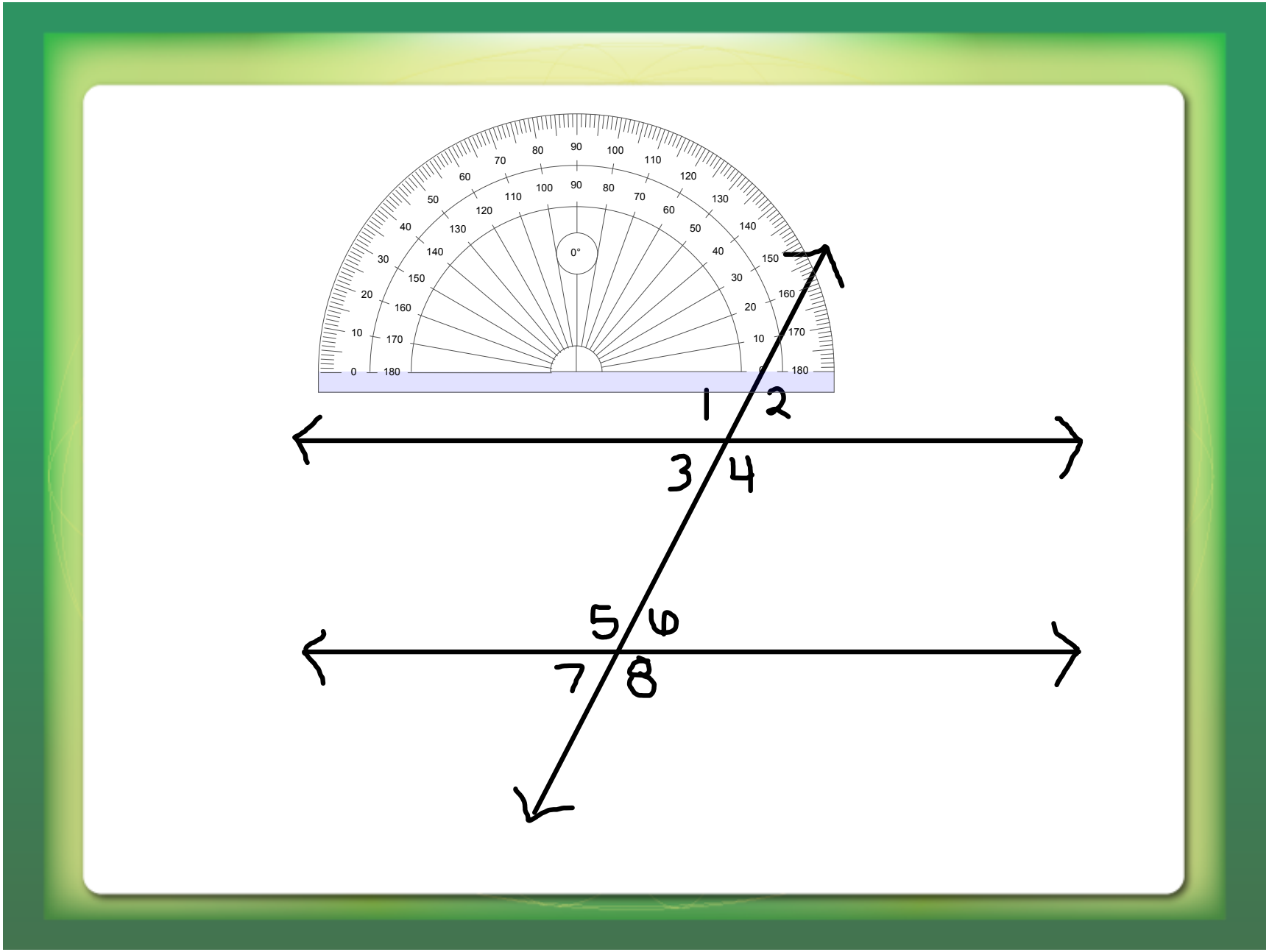
Alternate Exterior Angles

Alternate exterior angles are nonadjacent exterior angles that lie on opposite sides of the transversal.

f g h j



Pull


1
2
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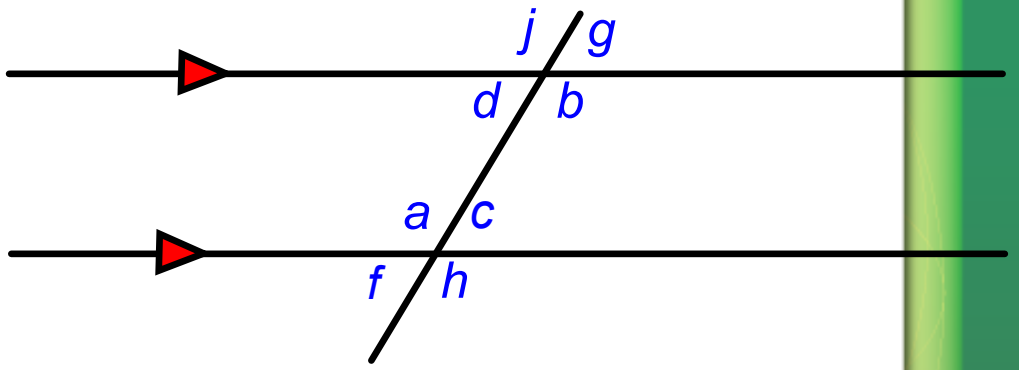
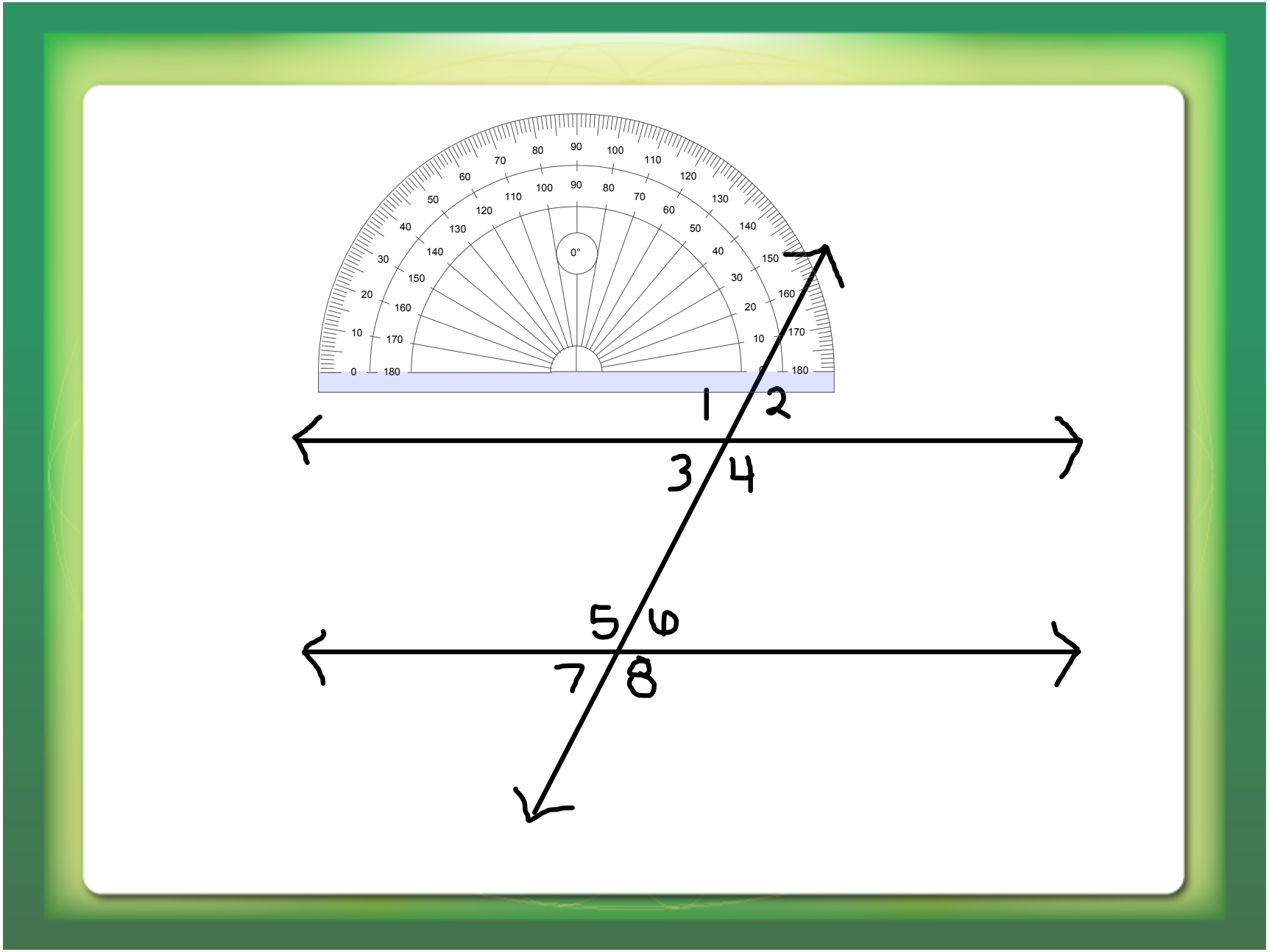
Same-Side Interior Angles

Same-side interior anglesare interior angles that lie on same-side of the transversal.



Pull


1
2
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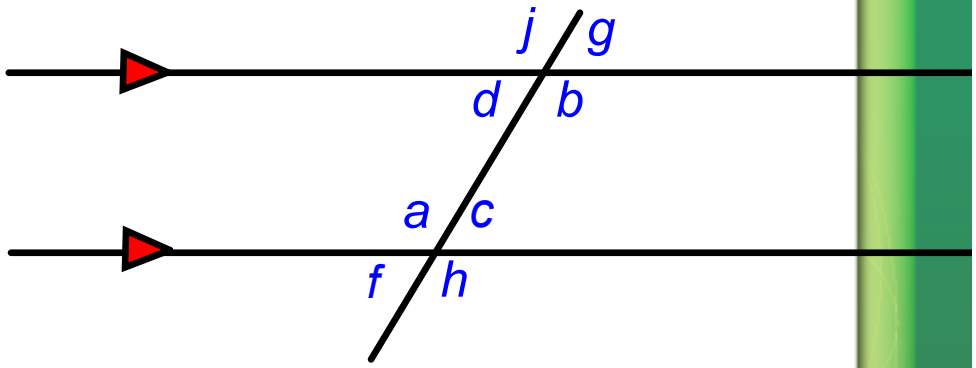
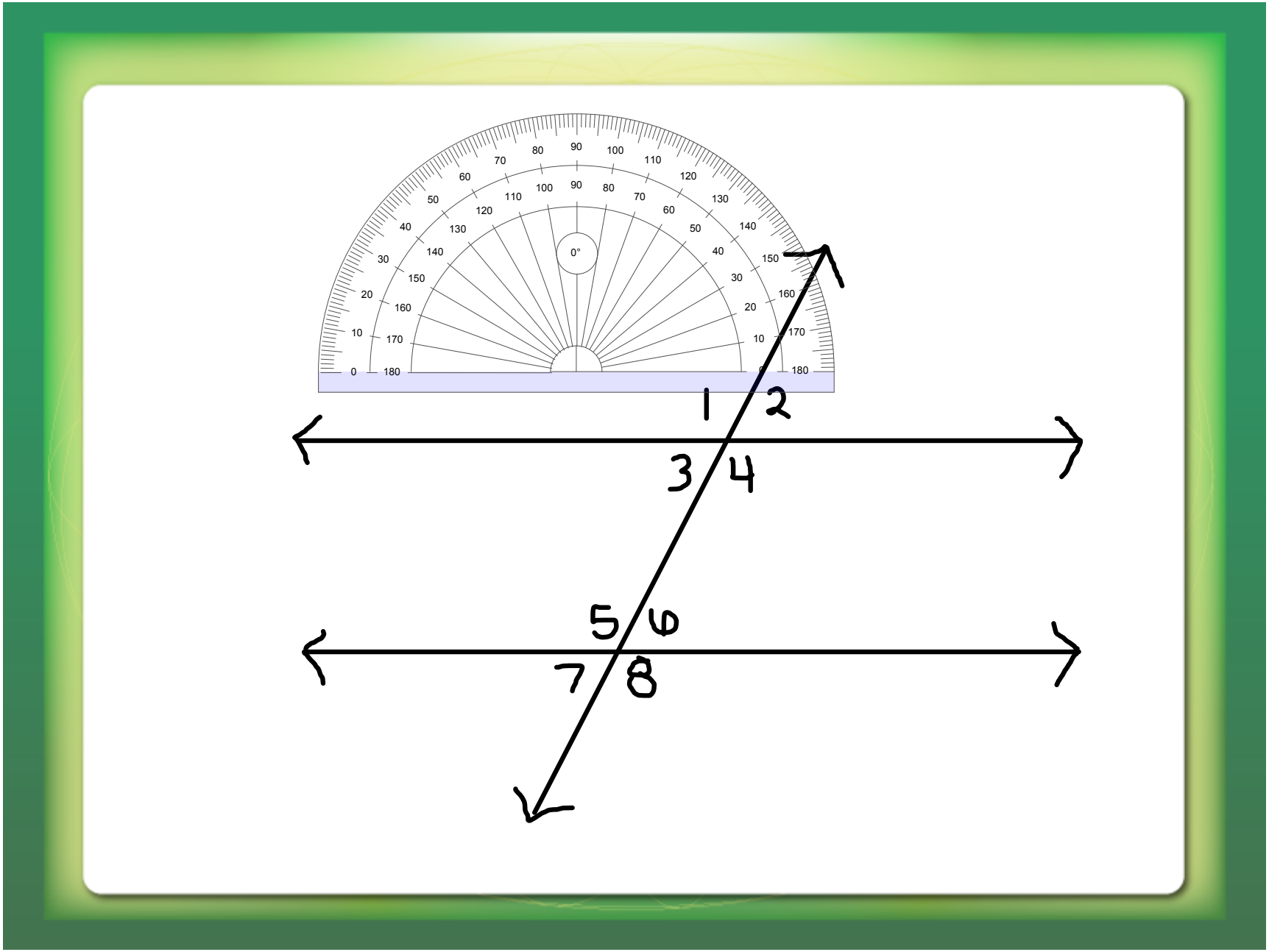
7
8

Same-Side Exterior Angles

Pull

Same-side exterior angles are exterior angles that lie on same-side of the transversal.




1
2
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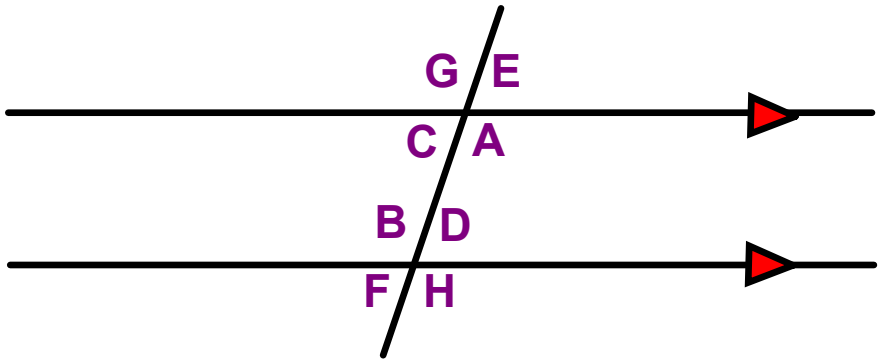
Practice

Roll the blue cube below. Then, circle an angle that is **congruent** to the angle shown on the cube.

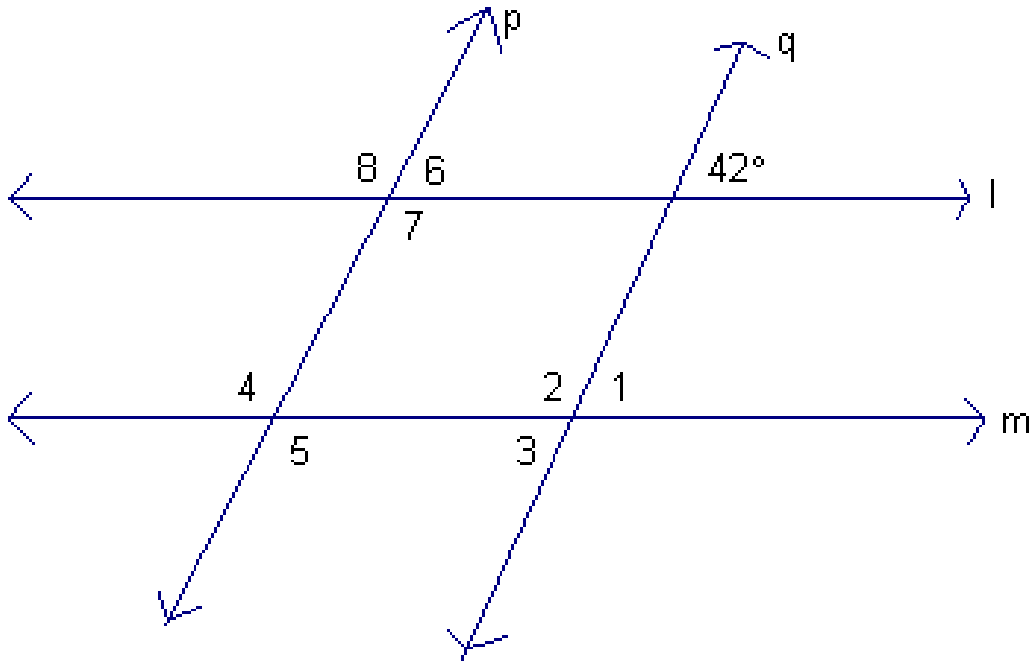


Pull

Pull for Answer

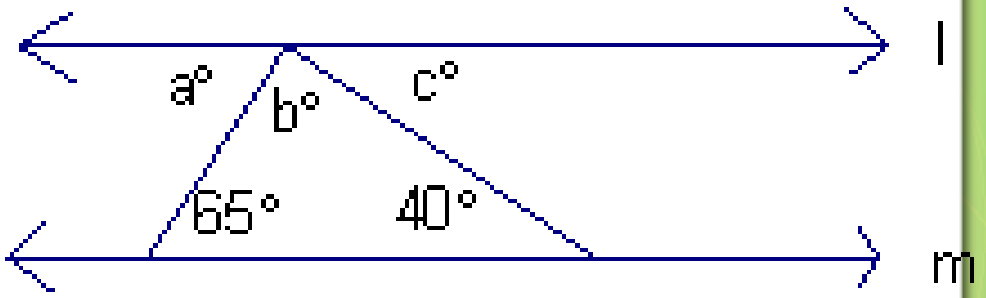
3. In the diagram at the right, $l \parallel m$ and $p \parallel q$.

Find the measure of each angle.



4. In the diagram at the right, $l \parallel m$.

Find the values of a, b, and c.



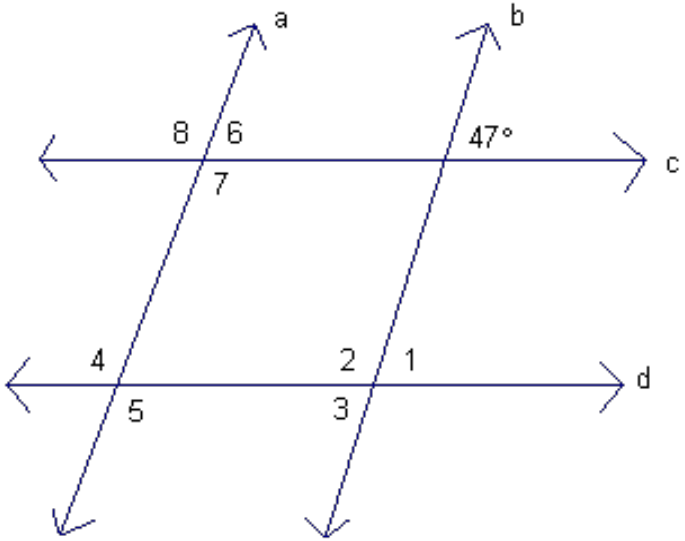
5. $a \parallel b$ and $c \parallel d$.

Using the diagram find the measure of each angle. Justify each answer.

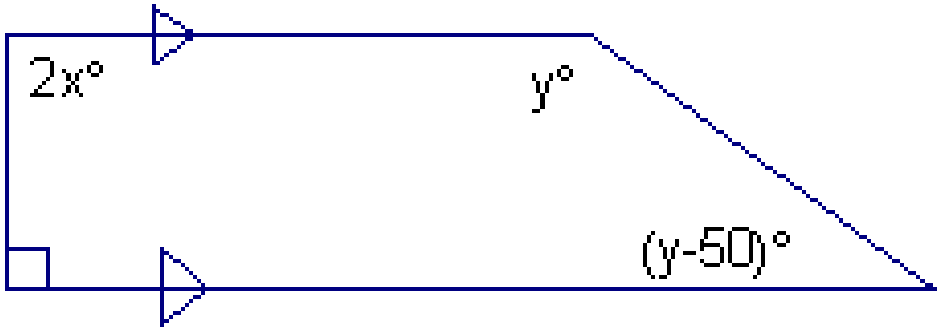
a) $\angle 3$ b) $\angle 4$

c) $\angle 5$ d) $\angle 6$

e) $\angle 7$ f) $\angle 8$

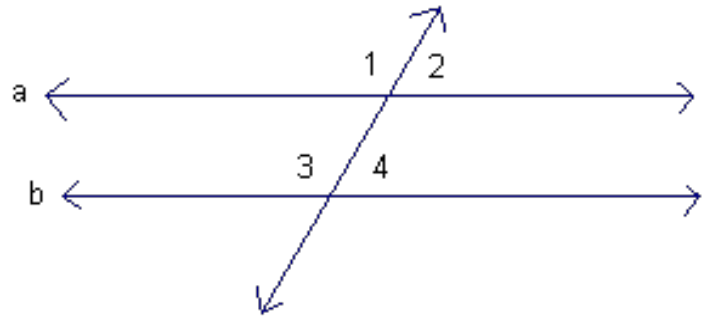


6. Find the values of x and y. Then find the measures of the four angles in the trapezoid.



7. Given: $a \parallel b$

Prove: $\angle 1$ and $\angle 4$ are supplementary

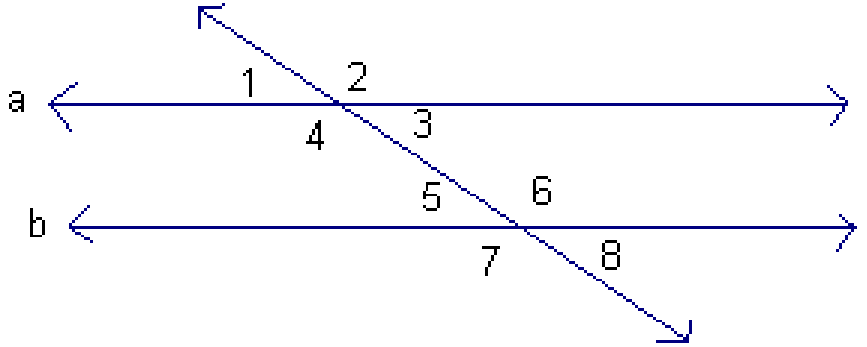


Statements	Reasons

8. In the diagram, $a \parallel b$. Find x.

$m\angle 1 = x + 12$

$m\angle 5 = 3x - 36$



Assignment:

Day 3 pg 131 (11-17 odds, 23, 25, 30, 37-40)