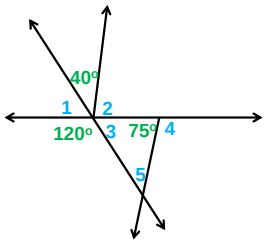
Created by Stephen Ackerman

Warmup $2/\left(tan\left(\frac{\pi}{4}\right)\cdot 7\right)$

1. Find the measures of all marked angles in the diagram.



$m\angle 1 =$ ___
$m\angle 2 =$ ___
$m\angle 3 =$ ___
$m\angle 4 =$ ___
$m\angle 5 =$ ___

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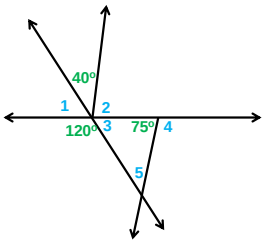
Warmup $2/\left(tan\left(\frac{\pi}{4}\right)\cdot 7\right)$

1. Find the measures of all marked angles in the diagram.



$m\angle 1 = 60^o$
$m\angle 2 = 80^o$
$m\angle 3 = 60^o$
$m\angle 4 = 105^o$
$m\angle 5 = 45^o$

Check HW

Table of Contents (2nd Semester)

p. 1 Exponent Basics (1.2)
p. 2 Multiplying and Dividing Powers (1.3)
p. 3 Power to a Power (1.4)
p. 4 Zero & Negative Exponents (1.5)
p. 5 Scientific Notation (1.6)
p. 6 Calcluating with Scientific Notation (1.7)
p. 7 Angle Basics
p. 8 Angles formed by Parallel Lines (5.1)

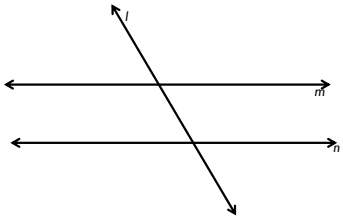
Angles formed by Parallel Lines

7

Objectives:

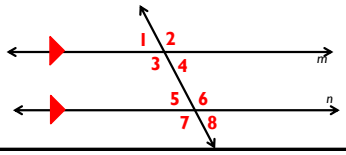
- Given one angle measure, find ALL angles formed by 2 parallel lines
- Identify special angle pairs
- Use special angle pair rules to find angle measures

- How many angles are there?

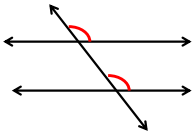


DISCUSS WITH YOUR GROUP:

- The red arrows mean that lines *m* and *n* are parallel. In your group, take turns discussing which PAIRS of angles you think are congruent. (For example: "I think that angles 1 and 3 are congruent because _____)
- I will **randomly** pick a representative from a few groups to share what your group discussed:
  - Which angles did you think were congruent?
  - Why do you think they are congruent?
  - Did your group all agree or not?



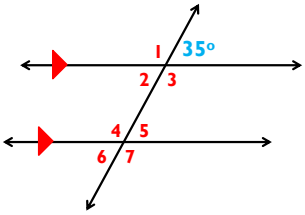
- Two angles that are in the same "position" but on different lines are called **corresponding**.



- If the lines are parallel, these angles will be congruent!!!

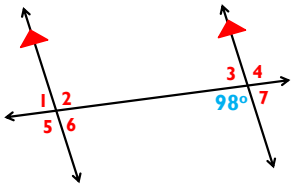
COPY the diagram!!!!

- One angle measure is given. Find the measures of **ALL** other angles.



$m\angle 1 = 145^o$
$m\angle 2 = 35^o$
$m\angle 3 = 145^o$
$m\angle 4 = 145^o$
$m\angle 5 = 35^o$
$m\angle 6 = 35^o$
$m\angle 7 = 145^o$

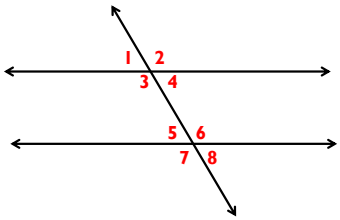
- One angle measure is given. On your whiteboard, find the measures of **ALL** other angles.



$m\angle 1 = 82^o$
$m\angle 2 = 98^o$
$m\angle 3 = 82^o$
$m\angle 4 = 98^o$
$m\angle 5 = 98^o$
$m\angle 6 = 82^o$
$m\angle 7 = 82^o$

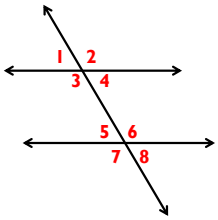
New terminology

- Which angles would you say are **interior** angles?
- Which angles would you say are **exterior** angles?



New terminology

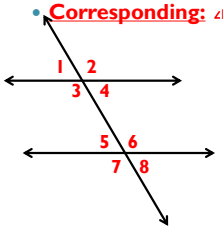
- **Interior: between the parallel lines**
- **Exterior: outside the parallel lines**
- **Alternate: opposite sides of the transversal**
- **Same-side: same side of the transversal**



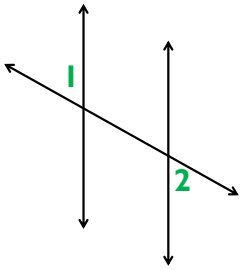
Give me an example of:
A pair of **alternate interior** angles
A pair of **same-side interior** angles
A pair of **alternate exterior** angles

Copy into binder:

- **Alternate Interior:** ∠4 and ∠5, ∠3 and ∠6
- **Same-side Interior:** ∠3 and ∠5, ∠4 and ∠6
- **Alternate Exterior:** ∠1 and ∠8, ∠2 and ∠7
- **Corresponding:** ∠1 and ∠5, ∠2 and ∠6, ∠3 and ∠7, ∠4 and ∠8

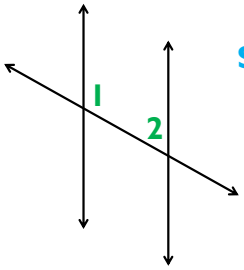


Which type of angle?



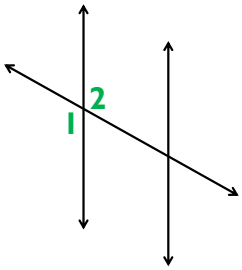
Alternate Exterior

Which type of angle?



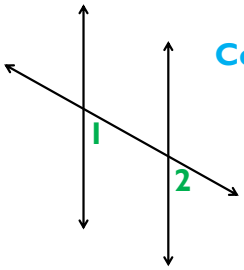
Same-side Interior

Which type of angle?



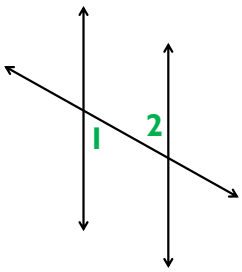
Vertical

Which type of angle?



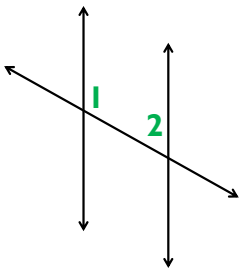
Corresponding

Which type of angle?



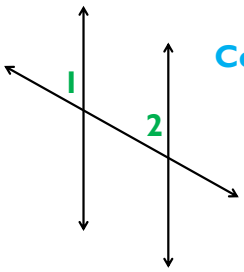
Alternate Interior

Which type of angle?



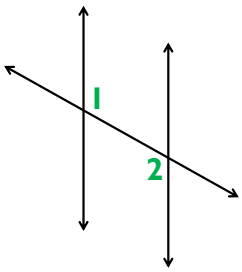
Same-side interior

Which type of angle?



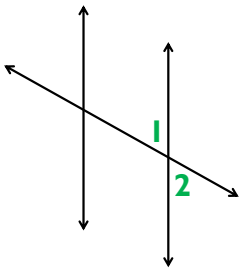
Corresponding

Which type of angle?



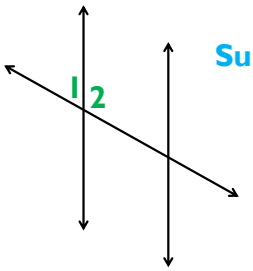
Alternate Interior

Which type of angle?



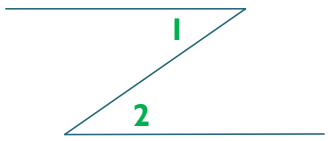
Vertical

Which type of angle?



Supplementary

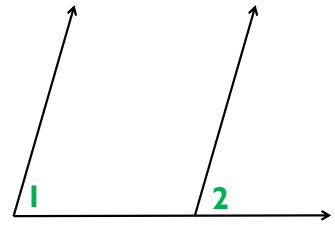
Which type of angle?



Alternate Interior

Which type of angle?

Corresponding

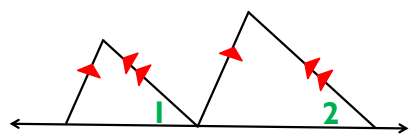


Which type of angle?

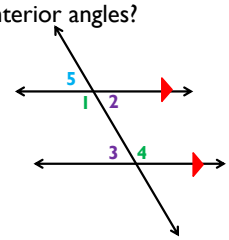
Same-side interior

Which type of angle?

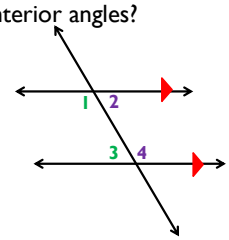
Corresponding



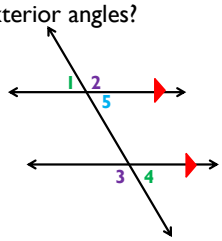
- What is **ALWAYS** true about alternate interior angles?



- What is **ALWAYS** true about same-side interior angles?



- What is **ALWAYS** true about alternate exterior angles?

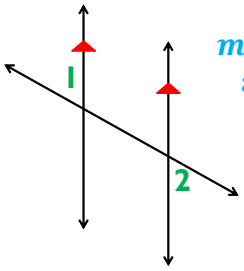


IN YOUR BINDER

- **ONLY WHEN THE LINES ARE PARALLEL:**
  - Alternate Interior: congruent
  - Alternate Exterior: congruent
  - Same-side Interior: supplementary

Whiteboards

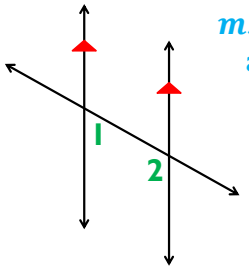
If the measure of angle 1 is 30 degrees, what is the measure of angle 2? **HOW DO YOU KNOW?**



$m\angle 2 = 30^o$; they are alternate exterior

Whiteboards

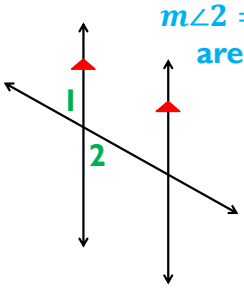
If the measure of angle 1 is 45 degrees, what is the measure of angle 2? **HOW DO YOU KNOW?**



$m\angle 2 = 135^o$; they are same-side interior

Whiteboards

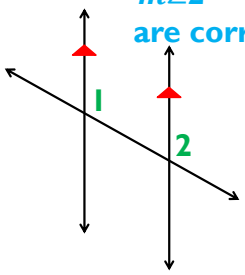
If the measure of angle 1 is 25 degrees, what is the measure of angle 2? **HOW DO YOU KNOW?**



$m\angle 2 = 25^o$; they are vertical

Whiteboards

If the measure of angle 1 is 115 degrees, what is the measure of angle 2? **HOW DO YOU KNOW?**

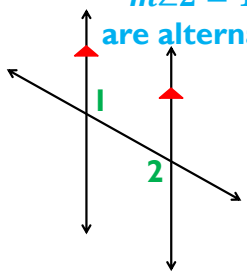


$m\angle 2 = 115^o$; they are corresponding

Whiteboards

If the measure of angle 1 is 107 degrees, what is the measure of angle 2? **HOW DO YOU KNOW?**

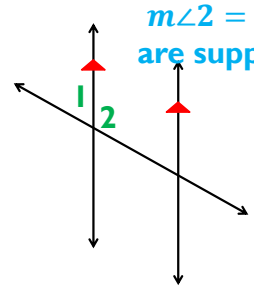
$m\angle 2 = 107^o$; they are alternate interior



Whiteboards

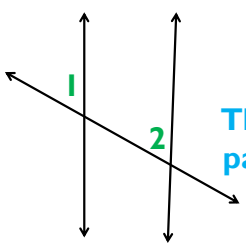
If the measure of angle 1 is 41 degrees, what is the measure of angle 2? **HOW DO YOU KNOW?**

$m\angle 2 = 139^o$; they are supplementary



Whiteboards

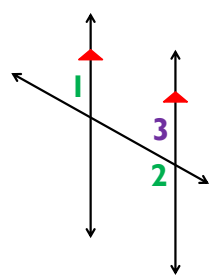
If the measure of angle 1 is 41 degrees, what is the measure of angle 2? **HOW DO YOU KNOW?**



TRICK QUESTION: These lines aren't parallel. We don't know!

Extra one…

If the measure of angle 1 is 40 degrees, what is the measure of angle 2? **HOW DO YOU KNOW?**



$m\angle 2 = 140^o$; angle 3 is 40 degrees because it corresponds to angle 1; angle 2 is supplementary with angle 3

HOMEWORK

- p.375 (1 – 8, 10)