Warm Up - Use the given and the image to state a fact about each image.


What do we know about this figure?


Linear Pairs (are supplementary): $<1 \&<2,<1 \&<3,<4 \&<3,<4 \&<2$ Vertical Angles (are congruent): $<1 \&<4,<2 \&<3$


What if we translate line $n$ down so that we have a parallel line?


Corresponding angles are in the same place on different lines ( n and p above) cut by the same transversal. When the two different lines are parallel, the angles areal. congruent


Interior vs. Exterior:
The buns are the exterior. The cheesymeat is the interior.
State which angles are interior and exterior.


$$
e x+<1,<2,<7,<8
$$

$$
\text { int }<3,<4,<5,<6
$$

Also: $1,3,5$, and 7 are on the same side of the transversal (line k) as each other.
$2,4,6$, and 8 are also on the same side of the transversal.

We also have several other relationships. Given line $n / /$ line $p$, prove $<4 \cong<5$

$<4$ and $<5$ are called alternate interior angles. Do you see another pair? Theorem: Alternate interior angles are congruent. iff lines are parally **You just completed your first proof!**

We also have several other relationships. Given line $n / /$ line $p$, prove $<2 \cong<7$


Statement

## Justification

1) Line $n / /$ line $p$
2) $<2 \cong<3$
3) $<3 \cong<7$
4) Given
5) yertical angles are $\cong$
6) Corresponding angles are congruent
7) Transitive property of congruence
$<2$ and $<7$ are called alternate exterior angles. Do you see another pair? Theorem: Alternate exterior angles are congruent. iff lines are parallel **Remember: A theorem is a statement that has been proven. ${ }^{* *}$

Given line $a$ is parallel to line $b$, find the angle measures of each angle. Give justification for each.


## Is $<4 \cong<6 ?$


$<4$ and <6 are consecutive interior angles.
They are not congruent, but are supplementary (sum to $180^{\circ}$ ).
$<2$ and $<8$ are consecutive exterior angles. They are also supplementary.
p
What other pairs of consecutive interior and exterior angles do you see?

lines are parallel

Given line $a$ is parallel to line $b$, name all angles which are congruent to angle 5, and a select a statement why they are congruent.


When two parallel lines are cut by a transversal:
a) Corresponding angles are congruent.
b) Alternate interior angles are congruent.
c) Vertical angles are congruent.
d) Alternate exterior angles are congruent.

What if I give you something really crazy like this?


What if I give you something really crazy like this?



Like this.


Now it's clear to see that angles $x$ and $y$ have nothing to do with the ray, and they are corresponding angles.

What about this?


Again, we can assume segments $\overline{D E}$ and $\overline{B C}$ are parallel. You can also extend these segments and use the same theorems and postulates from before.

Actually, this is a special case we will look at again later. In this case, triangle $A B C$ has been dilated to form triangle ADE.

What do we know is true when comparing the pre-image and image of a dilation?
On Monday and Tuesday we will show this is true!

Your HW is 7-2.2.

元 $\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\square$ Your HW is $7-$位 $\square$ ,
(2)
$\qquad$
(

## 

