

Name Key

Date _____

Period _____

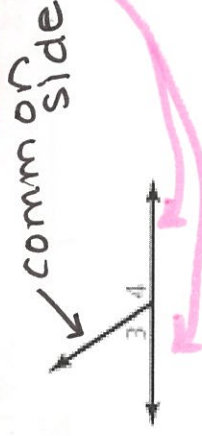
Describing Pairs of Angles (continued)

Lesson Objective:

WBAT Identify linear pair angles + ~~adjacent~~ ^{vertical} angles; identify what I can conclude from a given diagram.

Linear Pairs and Vertical Angles

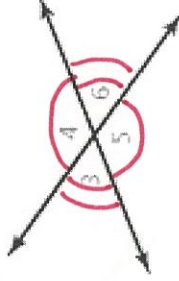
Linear Pair: Two adjacent angles are a linear pair when their noncommon sides are opposite rays.



Think About It... What can we conclude about the sum of $\angle 3$ and $\angle 4$? Briefly explain your group's reasoning.

$\angle 3$ and $\angle 4$ are also supplementary!
their sum is 180°

Vertical Angles: Two angles are vertical angles when their sides form two pairs of opposite rays



$\angle 3$ and $\angle 6$

$\angle 4$ and $\angle 5$

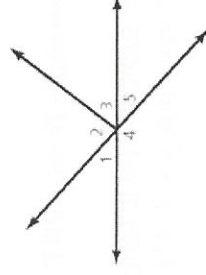
Examples:

1. Name all the linear pairs in the diagram.

$\angle 1 + \angle 4$; $\angle 4 + \angle 5$

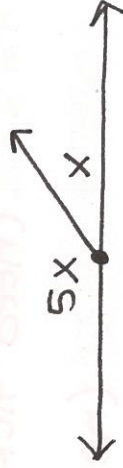
2. Name all the vertical angles in the diagram.

$\angle 1 + \angle 5$



Examples:

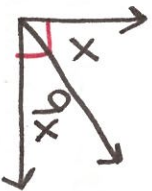
3. Two angles form a linear pair. The measure of one angle is five times the measure of the other angle. Find the measure of each angle. Draw a diagram.



$$\begin{aligned}x + 5x &= 180^\circ \\ 6x &= 180^\circ \\ x &= 30\end{aligned}$$

one angle
is 30° + the
other is 150°

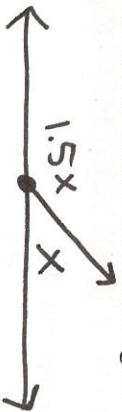
4. The measure of an angle is 9 times the measure of its complement. Find the measure of each angle. Draw a diagram.



$$\begin{aligned} x + 9x &= 90 \\ 10x &= 90 \\ x &= 9 \end{aligned}$$

one angle is 9° + the other is 81°

5. Two angles form a linear pair. The measure of one angle is 1.5 times the measure of the other angle. Find the measure of each angle.



$$\begin{aligned} x + 1.5x &= 180 \\ 2.5x &= 180 \\ x &= 72 \end{aligned}$$

one angle is 72° + the other is 108°

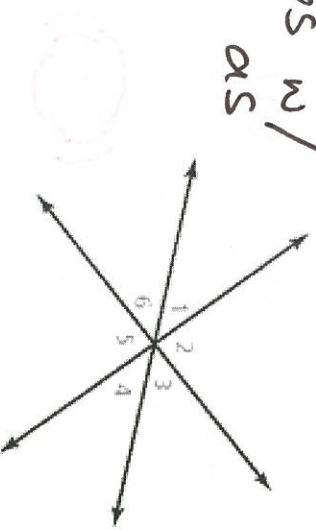
Examples:

6. Do any of the numbered angles form a linear pair? Briefly explain your reasoning.

No, no adjacent angles w/ noncommon sides as opposite rays.

7. Which angles are vertical angles?

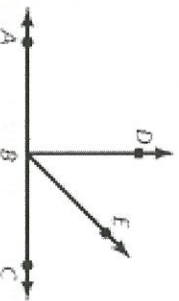
$$\begin{aligned} \angle 2 &\neq \angle 5 \\ \angle 1 &\neq \angle 4 \\ \angle 6 &\neq \angle 3 \end{aligned}$$



What can we conclude from JUST the diagram?

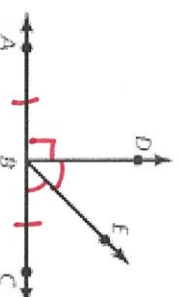
For any diagram, there are some things you can conclude, and some that you cannot. Quickly brainstorm with your group what you think you CAN conclude about the diagram below:

What we CAN conclude:



- ① All points are coplanar
- ② A, B, C are collinear
- ③ $\overleftrightarrow{AC}$, $\overleftrightarrow{BD}$ and $\overrightarrow{BE}$ intersect at B.
- ④ $\angle ABC$ is a straight angle

What we CANNOT conclude:



- ① $\overline{AB} \cong \overline{BC}$ (need tick marks)
- ② $\angle DBE \cong \angle EBC$ (need arcs)
- ③ $\angle ABD$ is a right angle (need " 90° " inside angle)