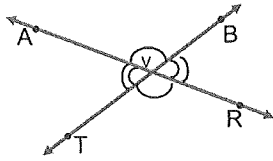# Angle Relationships: Notes
Justifications

Justification: *Vertical angles are congruent!*
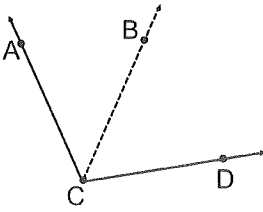
1. Name the vertical angles which are congruent.

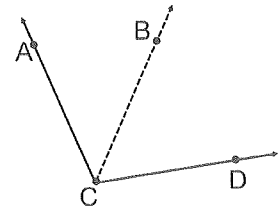**2.** What is an angle bisector? _____

If $\overrightarrow{CB}$ is an angle bisector, state what is true about the figure.
Justification: *Definition of Angle Bisector*

3. Use the same figure, but DO NOT assume Ray CB is an angle bisector.
Justification: *Angle Addition*

4. Adjacent angles are angles which share a common vertex and a common side, we commonly say angles next to each other. Draw an adjacent angle to <ABC, which shares vertex B and side $\overline{BC}$.
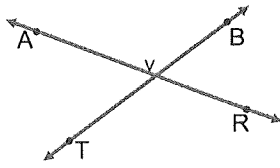
5. Straight Angle measures _____. Draw an example of straight angle <NJB.
Justification: *Definition of straight angle.*

6. ### Justification: *Definition of Supplementary*

7. Linear Pairs
Justification: *Linear Pairs are Supplementary*

8. ***Justification:*** *Angle Addition (Straight angle)*

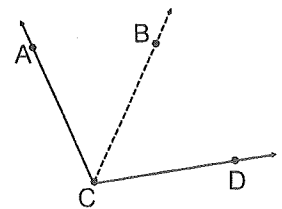**9.** Draw $\overleftrightarrow{FR} \perp \overleftrightarrow{EB}$ which intersect at X.
Justification: *Definition of Perpendicular*

10. Draw $< HGT$ as a right angle.
Justification: *Definition of Right Angle*

11. Draw $< ACD$ as a right angle.
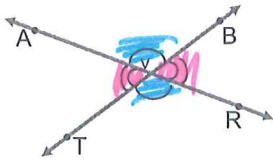***Justification:*** *Definition of complementary*

Angle Relationships: Notes
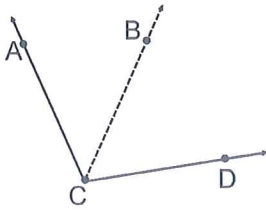## Justifications

Key

Justification: Vertical angles are congruent!

1. Name the vertical angles which are congruent.

$\angle AYB \cong \angle RYT$ vertical $\angle$s are $\cong$

$\angle AYT \cong \angle BYR$ vertical $\angle$s are $\cong$

2. What is an angle bisector? _Cuts an angle into 2 $\cong$ parts!_

If $\overrightarrow{CB}$ is an angle bisector, state what is true about the figure.

Justification: Definition of Angle Bisector

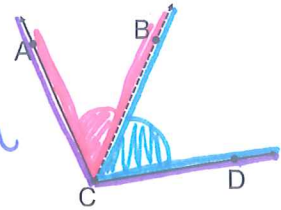$\angle ACB \cong \angle BCD$ def of $\angle$ bisector.

$\angle ACD = 2 \angle ACB$ def of $\angle$ bisector.

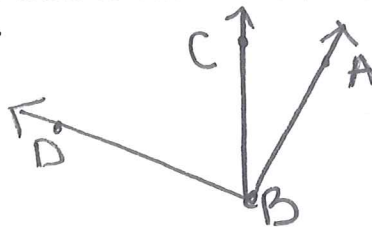$\angle ACD = 2 \angle BCD$ def of $\angle$ bisector.

3. Use the same figure, but DO NOT assume Ray CB is an angle bisector: If $m\angle ACB=64°$ and $m\angle BCD=33°$ find the $m\angle ACD$.

Justification: Angle Addition

$\angle ACD = \angle ACB + \angle BCD$ angle addition

4. Adjacent angles are angles which share a common vertex and a common side, we commonly say angles next to each other. Draw an adjacent angle to $\angle ABC$, which shares vertex B and side $\overline{BC}$.

5. Straight Angle measures ___180°___. Draw an example of straight angle $\angle NJB$.

Justification: Definition of straight angle.
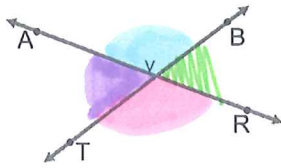
$\angle NJB = 180°$

6. *Justification: Definition of Supplementary*

only use this when you are told you have suppl. <u>IN WORDS</u> Never for linear pairs.

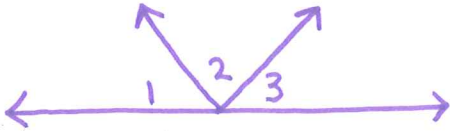**7.** Linear Pairs

Justification: Linear Pairs are Supplementary

$\angle BYR + \angle TYR = 180$ $\angle AYT + \angle AYB = 180$

$\angle BYR + \angle AYB = 180°$ $\angle AYT + \angle TYR = 180$
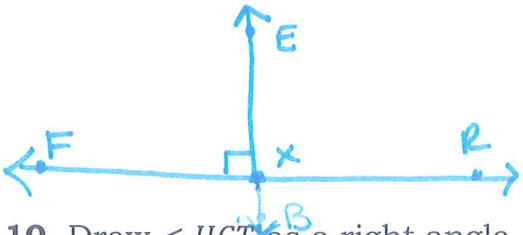
8. *Justification: Angle Addition (Straight angle)*

$\angle 1 + \angle 2 + \angle 3 = 180$ angle addition (straight $\angle$)

9. Draw $\overleftrightarrow{FR} \perp \overleftrightarrow{EB}$ which intersect at X.
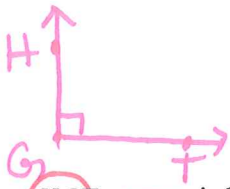
Justification: Definition of Perpendicular

$\angle EXF = 90°$ def of $\perp$

$\angle EXR = 90°$ def of $\perp$

$\angle FXB = 90°$ def of $\perp$

$\angle RXB = 90$ def of $\perp$

use def of $\perp$ when GIVEN $\perp$ and change to 90. $\perp$ to 90.

10. Draw $\angle HGT$ as a right angle.

Justification: Definition of Right Angle

$\angle HGT = 90°$ by def of Right Angle

(only use this if you are told or Given "Right Angle")

11. Draw $\angle HGT$ as a right angle.

Justification: Definition of complementary
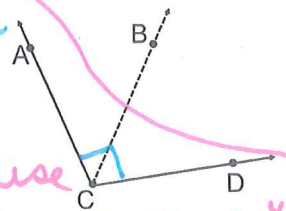
$\angle ACB + \angle BCD = \angle ACD$ angle addition

$\angle ACD = 90°$

$\downarrow$ plug in

$\angle ACB + \angle BCD = 90$

def of Right Angle because it says "Right Angle"

Substitution.

OR $\angle ACB + \angle BCD = 90°$ def of compl.