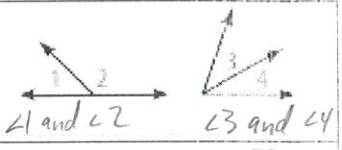
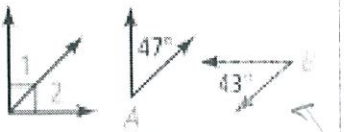
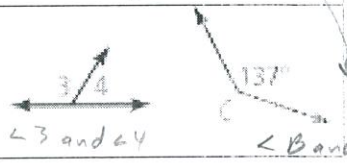
**Guided Notes** Name:_____
Geometry Section 1.5

## Section 1.5 – Exploring Angle Pairs

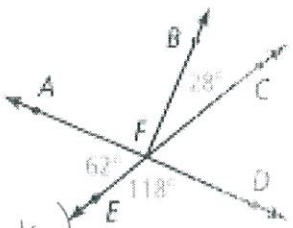
**Types of Angle Pairs** → "next to"

| | |
|---|---|
| **Adjacent** – 2 coplanar ∠'s w/ a common side, common vertex, but NO common interior points |   ∠1 and ∠2 ∠3 and ∠4 |
| **Vertical** – 2 angles whose sides are opposite rays |   ∠1 and ∠2, ∠3 and ∠4 |
| **Complementary** – 2 ∠'s whose measures have a sum of 90° |   |
| **Supplementary** – 2 ∠'s whose measures have a sum of 180° |   ∠3 and ∠4 ∠B and ∠C |

C→9

S→8

**Example 1:** Use the diagram at the right. Is the statement true? Explain.




1. ∠*BFD* and ∠*CFD* are adjacent angles.

   NO. They have common interior pts.

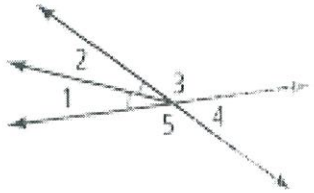
2. ∠*AFB* and ∠*EFD* are vertical angles.

   NO. $\overrightarrow{FE}$ and $\overrightarrow{FB}$ are not opp. rays. (They don't form a line)

3. ∠*AFE* and ∠*BFC* are complementary.

   Yes. They add up to 90°

**Example 2:** What can you conclude from the information in the diagram?




∠1 ≅ ∠2

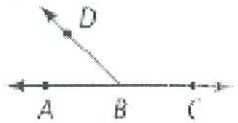
∠3 and ∠4 Supp.

∠4 and ∠5 Supp

∠3 and ∠5 vertical

∠1, ∠2; ∠2, ∠3; ∠3, ∠4; ∠4, ∠5; ∠5, ∠1 adjacent

**Linear Pairs**

| | |
|---|---|
| **Linear Pair** – A pair of adjacent ∠s whose noncommon sides are opp. rays. The ∠s of a linear pair form a straight angle |   |
| **Linear Pair Postulate** – If 2 ∠s form a linear pair, then they are supplementary | $m\angle ABD + m\angle DBC = 180°$ |

**Example 3:** $\angle KPL$ and $\angle JPL$ are a linear pair, $m\angle KPL = (2x+24)°$ and $m\angle JPL = (4x+36)°$. What are the measures of $\angle KPL$ and $\angle JPL$?

Find x 1st:

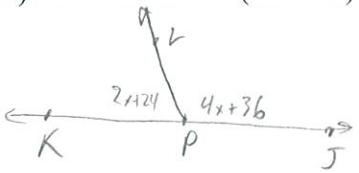
$m\angle KPL + m\angle JPL = 180$

$2x+24 + 4x+36 = 180$

$6x + 60 = 180$

$6x = 120$

$x = 20$




$m\angle KPL = 2(20)+24$

$= 40+24$

$= 64$

$m\angle JPL = 180 - 64$

$= 116$

or plug x in

**Example 4:** ∠ADB and ∠BDC are a linear pair. $m\angle ADB = (3x + 14)°$ and $m\angle BDC = (5x - 2)°$. What are the measures of $m\angle ADB$ and $m\angle BDC$?

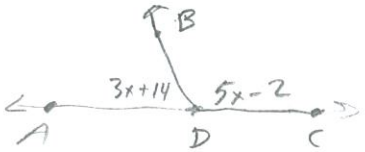
$m\angle ADB + m\angle BDC = 180$

$3x+14 + 5x-2 = 180$

$8x + 12 = 180$

$8x = 168$

$x = 21$




$m\angle ADB = 3(21)+14$

$= 63+14$

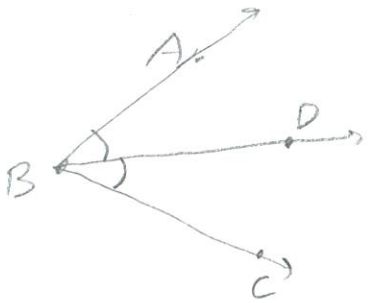
$= 77°$

$m\angle BDC = 180 - 77$

$= 103°$

**Angle Bisector**

| | |
|---|---|
| **Angle Bisector** – | a ray that divides an ∠ into 2 congruent ∠s |




$\overrightarrow{BD}$ is ∠ bisector

$\angle ABD \cong \angle CBD$

**Example 5:** $\overrightarrow{BD}$ bisects ∠ABC. $m\angle ABD = (6x + 3)°$ and $m\angle DBC = (8x - 7)°$. Find $m\angle ABD$.

$m\angle ABD = m\angle DBC$

$6x+3 = 8x-7$

$3 = 2x-7$

$10 = 2x$

$5 = x$

$m\angle ABD = 6(5)+3$

$= 30+3$

$= 33°$