

Exploring Angle Pairs

UNIT 1 LESSON 5

Section 1.5 – Exploring Angle Pairs

STUDENTS WILL BE ABLE TO:

- IDENTIFY SPECIAL ANGLE PAIRS AND USE THEIR RELATIONSHIPS TO FIND ANGLE MEASURES

KEY VOCABULARY

ADJACENT ANGLES

VERTICAL ANGLES

COMPLEMENTARY ANGLES

SUPPLEMENTARY ANGLES

LINEAR PAIR

ANGLE BISECTOR

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SPECIAL ANGLE PAIRS CAN HELP YOU IDENTIFY GEOMETRIC RELATIONSHIPS. YOU CAN USE THESE ANGLE PAIRS TO FIND ANGLE MEASURES.

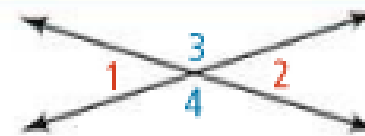
Adjacent angles are two coplanar angles with a common side, a common vertex, and no common interior points.

$\angle 1$ and $\angle 2$, $\angle 3$ and $\angle 4$



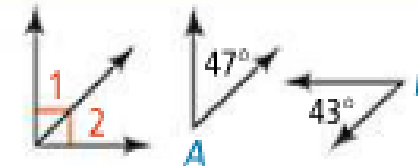
Vertical angles are two angles whose sides are opposite rays.

$\angle 1$ and $\angle 2$, $\angle 3$ and $\angle 4$



Complementary angles are two angles whose measures have a sum of 90. Each angle is called the *complement* of the other.

$\angle 1$ and $\angle 2$, $\angle A$ and $\angle B$



Supplementary angles are two angles whose measures have a sum of 180. Each angle is called the *supplement* of the other.

$\angle 3$ and $\angle 4$, $\angle B$ and $\angle C$



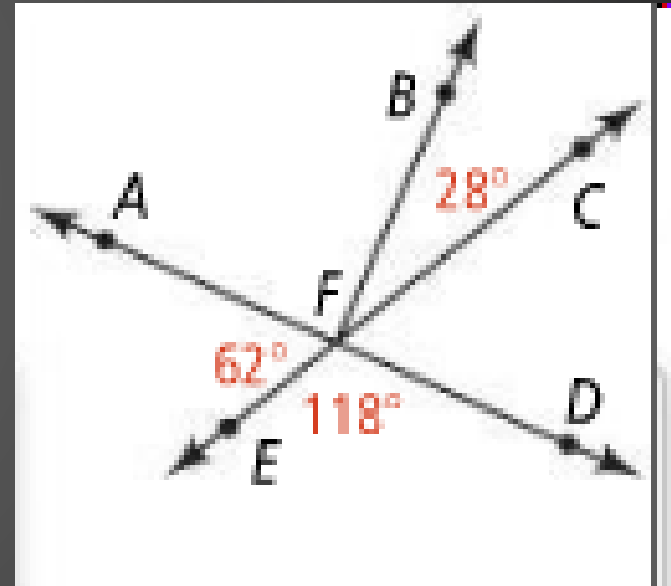
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PROBLEM 1:

USE THE DIAGRAM AT THE RIGHT.

IS THE STATEMENT TRUE? EXPLAIN

- a. $\angle BFD$ AND $\angle CFD$ ARE ADJACENT ANGLES.
- b. $\angle AFB$ AND $\angle EFD$ ARE VERTICAL ANGLES
- c. $\angle AFE$ AND $\angle BFC$ ARE COMPLEMENTARY.

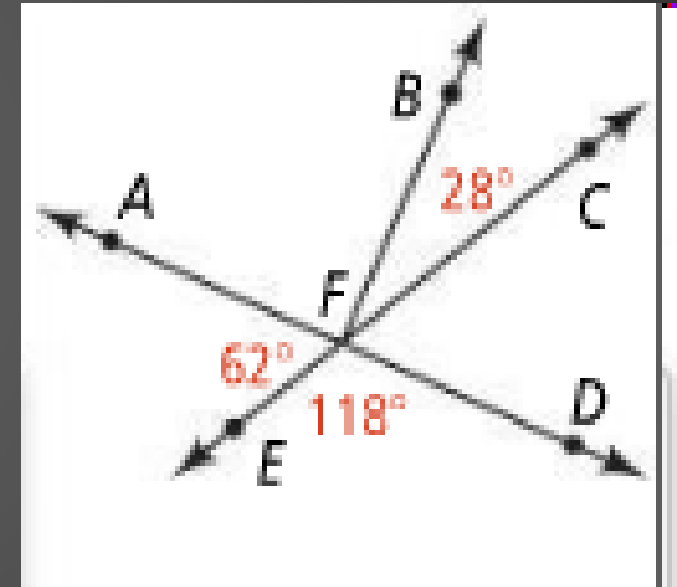


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PROBLEM 1B:

USE THE DIAGRAM AT THE RIGHT.
IS THE STATEMENT TRUE? EXPLAIN

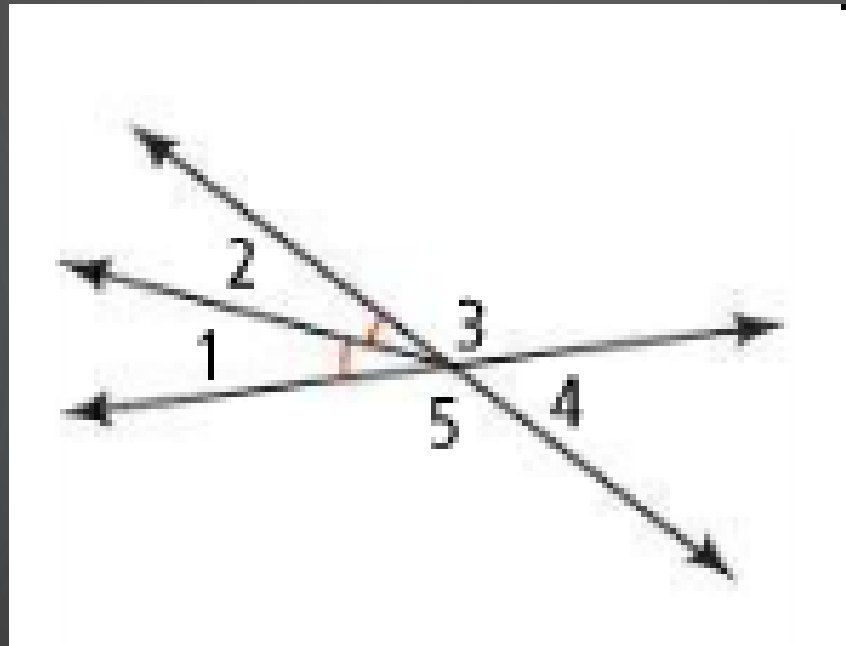
- a. $\angle AFE$ AND $\angle CFD$ ARE VERTICAL ANGLES.
- B. $\angle BFC$ AND $\angle DFE$ ARE SUPPLEMENTARY.
- C. $\angle BFD$ AND $\angle AFB$ ARE ADJACENT ANGLES.



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PROBLEM 2:

WHAT CAN YOU CONCLUDE FROM THE INFORMATION IN THE DIAGRAM?

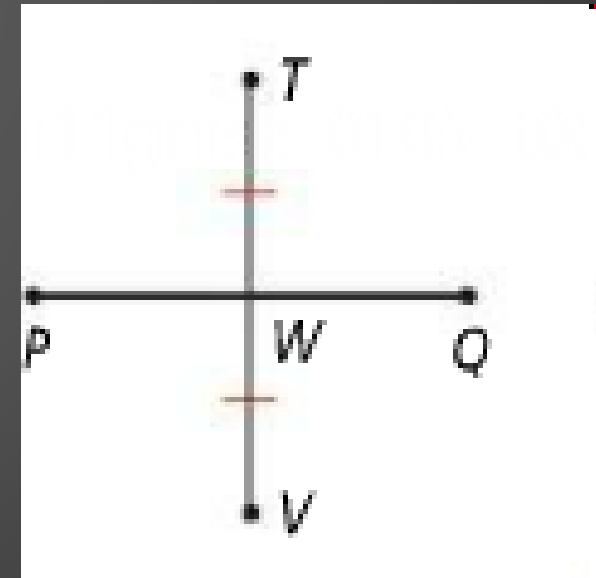


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PROBLEM 2B:

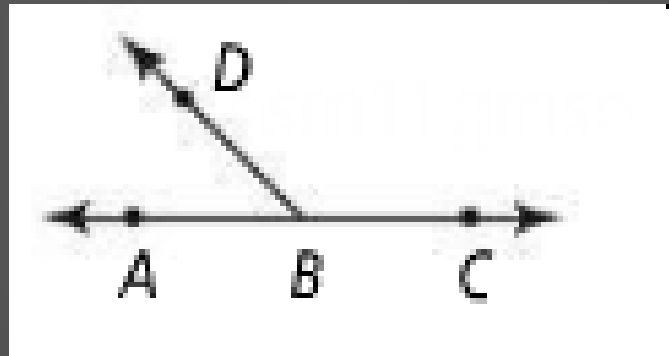
CAN YOU MAKE EACH CONCLUSION FROM THE INFORMATION IN THE DIAGRAM? EXPLAIN.

- a. SEGMENT TW IS CONGRUENT TO SEGMENT WV
- b. SEGMENT PW IS CONGRUENT TO SEGMENT WQ
- c. $\angle TWQ$ IS A RIGHT ANGLE
- d. SEGMENT TV BISECTS SEGMENT PQ



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A **LINEAR PAIR** IS A PAIR OF ADJACENT ANGLES WHOSE NONCOMMON SIDES ARE OPPOSITE RAYS. THE ANGLES OF A LINEAR PAIR FORM A STRAIGHT ANGLE.



***IF TWO ANGLES FORM A LINEAR PAIR, THEN THEY ARE SUPPLEMENTARY.**

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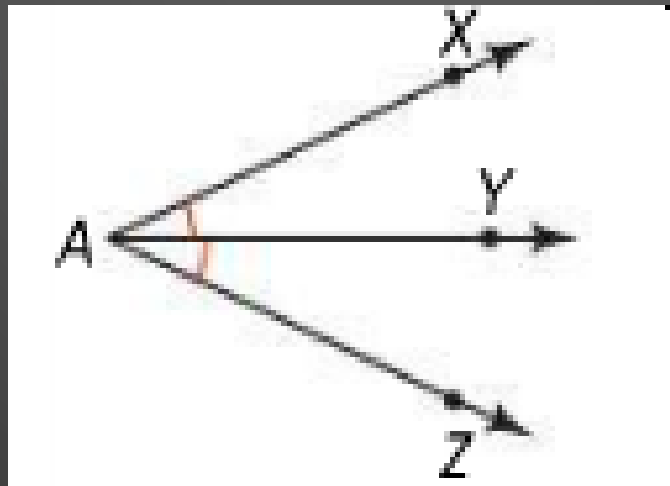
PROBLEM 3:

$\angle KPL$ 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
 $\angle JPL$?

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AN **ANGLE BISECTOR** IS A RAY THAT DIVIDES AN ANGLE INTO TWO CONGRUENT ANGLES. ITS ENDPOINT IS AT THE ANGLE VERTEX. WITHIN THE RAY, A SEGMENT WITH THE SAME ENDPOINT IS ALSO AN ANGLE BISECTOR. THE RAY OR SEGMENT BISECTS THE ANGLE. IN THE DIAGRAM, RAY AY IS THE ANGLE BISECTOR OF $\angle XAZ$, SO $m\angle XAY = m\angle YAZ$.



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PROBLEM 4:

RAY AC BISECTS $\angle DAB$. IF $m\angle DAC = 58$, WHAT IS $m\angle DAB$?