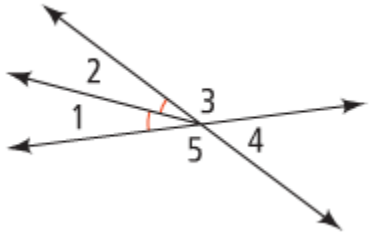
Write your questions here!

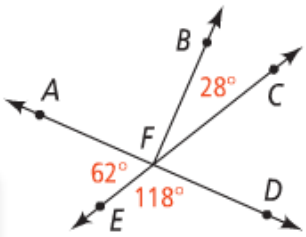
1.5 Angle Pairs

NOTES:

TERM	Example	Picture
Adjacent Angles are two coplanar angles with a common side, a common vertex, and no common		
Vertical Angles are two angles whose sides are **Vertical Angles are**		
Complementary Angles are two angles whose measures have a sum of 90°. Each angle is called the		
Supplementary Angles are two angles whose measures have a sum of 180°. Each angle is called the		

Identify Angle Pairs





ANGLES

Adjacent:

Vertical:

Complementary:

Supplementary:

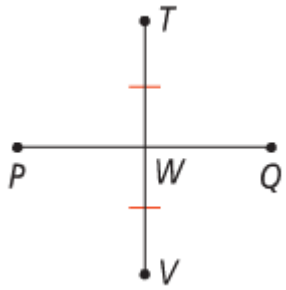
$\angle AFE$ and $\angle EFD$ are

$\angle AFE$ and $\angle BFC$ are

$\angle BFC$ and $\angle CFD$ are

$\angle AFE$ and $\angle CFD$ are

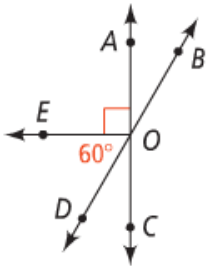
Diagrams

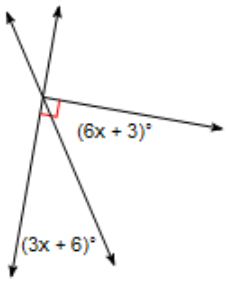
OK to assume true!		Do **NOT** assume true!!!

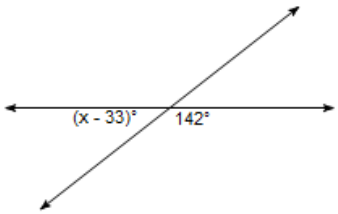
TERM	Example	Picture
A **linear pair** is a pair of adjacent angles whose noncommon sides are		

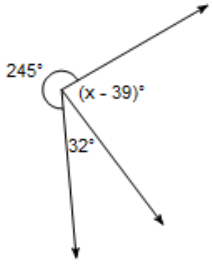
#	Linear Pair Postulate	
1-7	If two angles form a linear pair, then they are	

Find the measure of all angles.





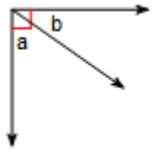


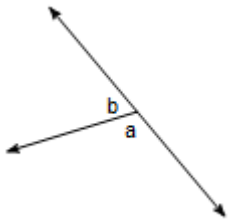


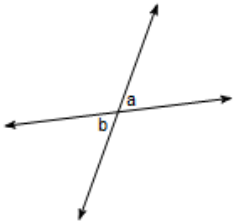
Summarize your notes:

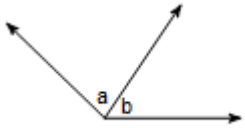
1.5 PRACTICE

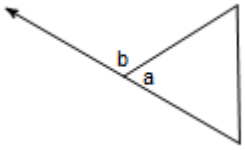
Name the relationship: Complementary, Linear Pair (Supplementary), Vertical, or Adjacent

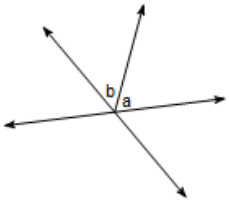
1. 

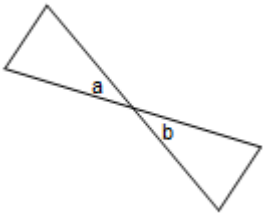
2. 

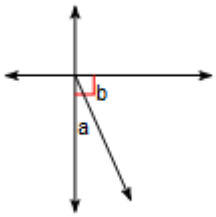
3. 

4. 

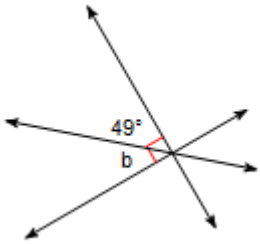
5. 

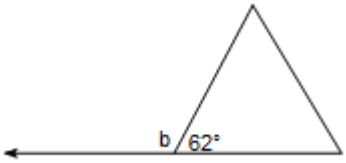
6. 

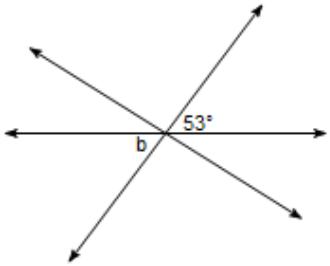
7. 

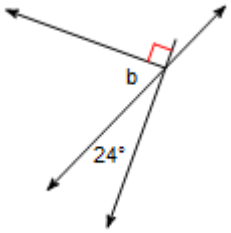
8. 

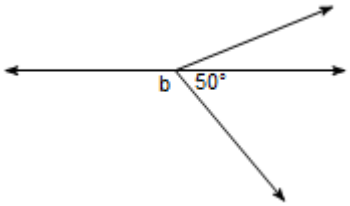
Find the measure of angle b.

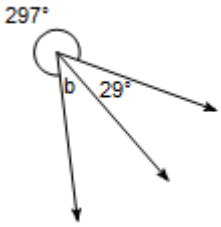
9. 

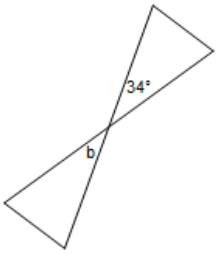
10. 

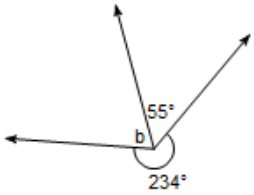
11. 

12. 

13. 

14. 

15. 

16. 

For 17-26, use the picture to determine if you can make the following conclusions from the information shown. YES or NO

17. $\angle J \cong \angle D$

18. $\angle JAC \cong \angle DAC$

19. $m\angle JCA = m\angle DCA$

20. $m\angle JCA + m\angle ACD = 180$

21. $\angle JCA$ is a right angle.

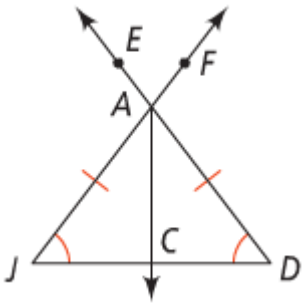
22. $\overline{AJ} \cong \overline{AD}$

23. $\angle JAE$ and $\angle EAF$ are supplementary.

24. $\angle EAF$ and $\angle JAD$ are vertical angles.

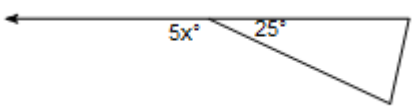
25. $\overrightarrow{AC}$ is the angle bisector of $\angle JAD$.

26. C is the midpoint of $\overline{JD}$.

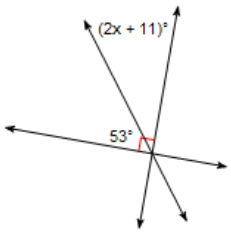


Find the value of *x*.

27.



28.



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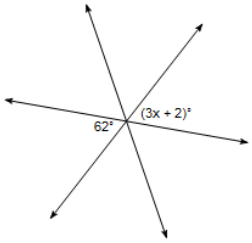

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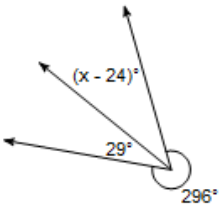
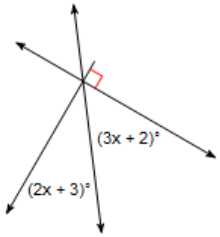
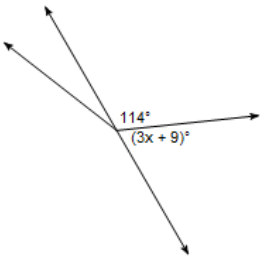


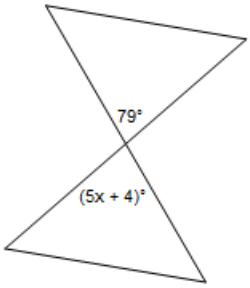
31.



32.



33.



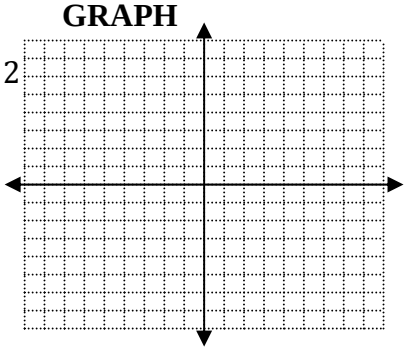
ALGEBRA REVIEW

SOLVE

$-8 = 12 - 4x$

GRAPH

$y = -\frac{3}{4}x - 2$



MULTIPLY (distribute)

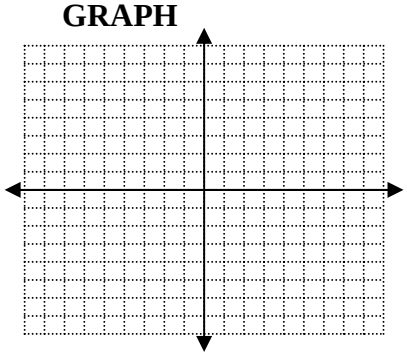
$2x(5x - 3)$

SOLVE

$13 - 4y = -9y + 3$

GRAPH

$y = 2$



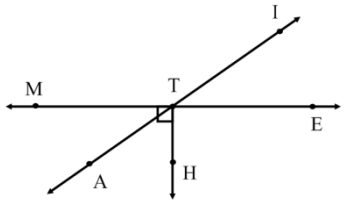
FACTOR

Factor out the greatest common factor (undistribute)

$21x^2 + 33x$

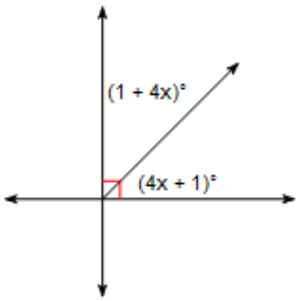
1.5 APPLICATION

1. Label the angle pairs as complementary, linear (supplementary), vertical, or adjacent.



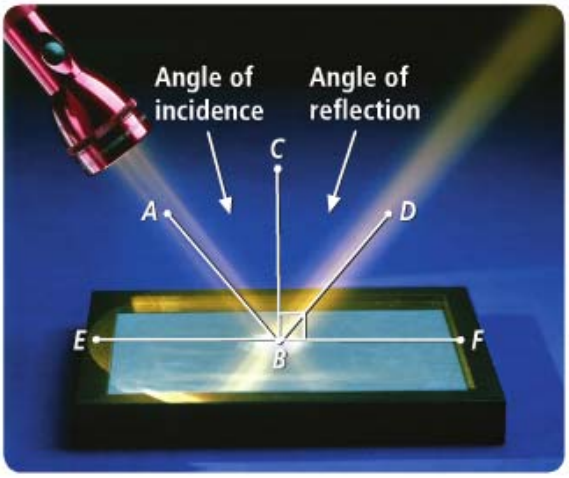
Angle Pair	Name
$\angle MTI$ and $\angle ITE$	
$\angle MTA$ and $\angle ITE$	
$\angle MTA$ and $\angle ATH$	

2. Find the value of x.



Watch the application walk through video if you need extra help getting started!

3. A beam of light and a mirror can be used to study the behavior of light. Light that strikes the mirror is reflected so that the angle of reflection and the angle of incidence are congruent. In the diagram, $\angle ABC$ has a measure of 41.



a. Name the angle of reflection and find its measure.

b. Find $m\angle ABD$

c. Find $m\angle ABE$

d. Find $m\angle DBF$

e. What type of angles are $\angle CBD$ and $\angle DBF$?

---

4. Coordinate Geometry

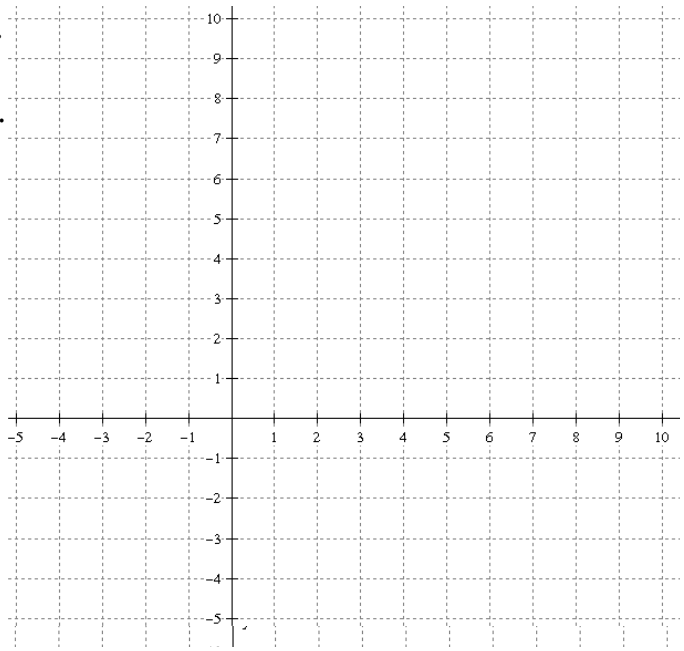
a. Draw the line segment with endpoints A (-3, 2) and B (8, 6).

b. Draw the line segment with endpoints C (-4, 7) and D (9,-4).

c. Label the point of intersection of $\overline{AB}$ and $\overline{CD}$ as point E.

d. Label each pair of angles as:
Complementary, Linear (supplementary), Vertical, or Adjacent

Angle Pair	Name
$\angle AEC$ and $\angle CEB$	
$\angle AEC$ and $\angle BED$	
$\angle CEB$ and $\angle AED$	



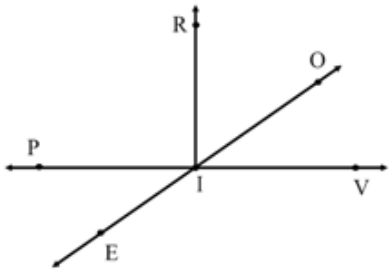
e. Is point E the midpoint of $\overline{CD}$?

5. Proof

Label the picture and fill in the missing reasons in the two column proof.

Given: $\angle RIV$ is a right angle
$m\angle PIE = 40$
$\angle RIO = 3x + 14$

Prove: $x = 12$



STATEMENT	REASON
1. $\angle RIV$ is a right angle $m\angle PIE = 40$ $\angle RIO = 3x + 14$	1.
2. $m\angle PIE = m\angle OIV$	2.
3. $m\angle RIV = 90$	3.
4. $m\angle OIV + m\angle RIO = m\angle RIV$	4.
5. $40 + 3x + 14 = 90$	5.
6. $3x + 54 = 90$	6.
7. $3x = 36$	7.
8. $x = 12$	8.

Some possible reasons:

- Given
- Addition Property of Equality
- Subtraction Property of Equality
- Multiplication Property of Equality
- Division Property of Equality
- Substitution
- Distributive Property
- Combine like terms
- Definition of _____
- _____ Postulate
- _____ Theorem

6. Geometric Shape

As we all know Mr. Kelly loves Justin Bieber. His second favorite thing is Scholastic's *Math* magazine. Mr. Kelly's two favorite things came together in a special edition just for him. In this limited Bieber edition, Mr. Kelly found this puzzle. Help him solve the puzzle by filling in the measure of every angle on the picture!

GIVEN:

$m\angle FBC = 140$

$m\angle DAI = 40$

$m\angle ABC + m\angle BCA + m\angle CAB = 180$

$\overrightarrow{AP}$ is the angle bisector of $\angle DAI$