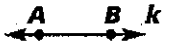
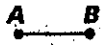
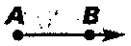
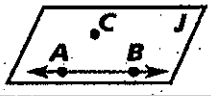
Name _____

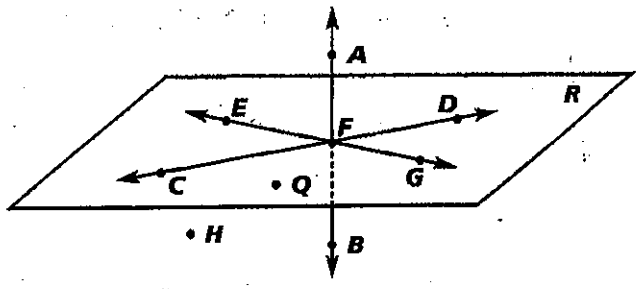
Geometry Basics

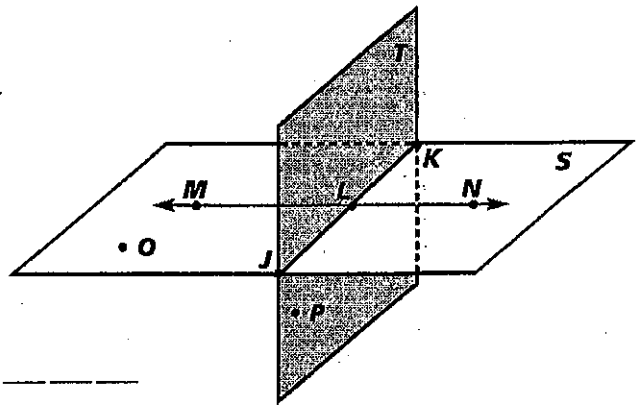
Remember

1. A *point* has position, but no dimension. • C **point C**
2. A *line* extends in one dimension. Points that lie on the same line are *collinear*.  $\overleftrightarrow{AB}$ **or line** k
3. A *line segment* is part of a line with two endpoints.  $\overline{AB}$
4. A *ray* is part of a line with one endpoint.  $\overrightarrow{AB}$
5. An *angle* is formed by two rays or segments with the same endpoint. The endpoint is the *vertex*.  $\angle CAB$ **or** $\angle BAC$ **or** $\angle A$
6. A *plane* extends in two dimensions. Points that lie in the same plane are *coplanar*.  **plane** ABC **or plane** J

Refer to the diagrams and decide if each statement is true or false. If it is true, shade in the circle and write the letter on the puzzle blank. The puzzle answer is the name of a Greek mathematician and his books about geometry, number theory, and geometric algebra.

1. $\overleftrightarrow{EG}$ lies in plane R. (E)
2. $\overleftrightarrow{AB}$ lies in plane R. (B)
3. $\overleftrightarrow{MN}$ lies in plane S. (U)
4. D lies in plane R. (C)
5. H lies in plane R. (A)
6. C and E are coplanar. (L)
7. C and E are collinear. (Y)
8. M and O are collinear. (G)
9. M and L are collinear. (I)
10. $\angle CFE$ lies in plane R. (D)
11. $\angle JLM$ lies in plane S. (S)
12. Plane S intersects plane T at $\overline{JK}$. (E)
13. $\overleftrightarrow{AB}$ intersects plane R at F. (L)
14. L and P are in plane S. (P)
15. L and P are in plane T. (E)
16. $\overline{JK}$ is in plane S and plane T. (M)
17. $\overrightarrow{LN}$ is in plane S and plane T. (H)
18. L is the vertex of $\angle KLM$. (E)
19. $\angle BFD$ lies in plane R. (R)
20. $\overrightarrow{FC}$ and $\overrightarrow{FG}$ are sides of $\angle CFG$. (N)
21. $\angle DFG$ and $\angle GFD$ are the same angle. (T)
22. $\overline{LK}$ and $\overline{LN}$ are sides of $\angle KLN$. (S)





Name _____

Angles Formed by Parallel, Perpendicular, and Intersecting Lines

Remember

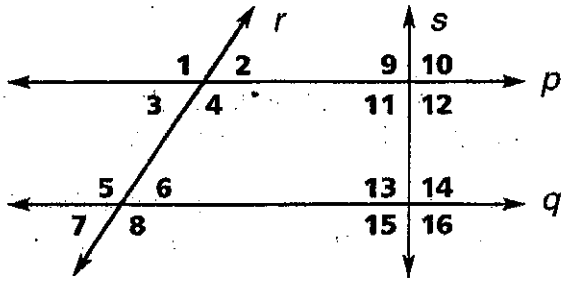
1. If two parallel lines are cut by a transversal, the resulting angles are either congruent or supplementary.

Congruent angles:	**Supplementary angles:**
Vertical angles ($\angle 2 \cong \angle 3$)	**Adjacent angles** ($m\angle 1 + m\angle 3 = 180°$)
Corresponding angles ($\angle 1 \cong \angle 5$)	**Same side interior angles** ($m\angle 3 + m\angle 5 = 180°$)
Alternate interior angles ($\angle 4 \cong \angle 5$)	**Same side exterior angles** ($m\angle 2 + m\angle 8 = 180°$)
Alternate exterior angles ($\angle 1 \cong \angle 8$)	

2. If the transversal is perpendicular, the angles formed are right angles. ($m\angle 9 = 90°$)

Refer to the diagram to complete each sentence. Fill in the missing angle measure and type of angle. When you finish, circle each answer in the box below.

Given: $p \parallel q$ $s \perp p$ $s \perp q$



1. If $m\angle 1 = 120°$, $m\angle 2 =$ _____ because they are _____ angles.
2. If $m\angle 5 = 130°$, $m\angle 8 =$ _____ because they are _____ angles.
3. If $m\angle 4 = 125°$, $m\angle 6 =$ _____ because they are same side _____ angles.
4. If $m\angle 4 = 125°$, $m\angle 8 =$ _____ because they are _____ angles.
5. If $m\angle 2 = 45°$, $m\angle 7 =$ _____ because they are alternate _____ angles.
6. If $m\angle 3 = 50°$, $m\angle 6 =$ _____ because they are _____ interior angles.
7. If $m\angle 7 = 42°$, $m\angle 1 =$ _____ because they are _____ exterior angles.
8. The measures of $\angle 9$ through $\angle 16 =$ _____ because they are all _____ angles.

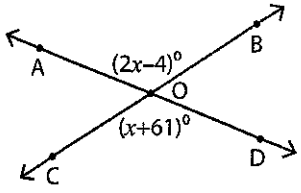
45°	50°	55°	60°	90°	125°	130°	138°
adjacent	alternate	corresponding	exterior	interior	right	same side	vertical

Name : _____ Score : _____

Intersecting Lines

Find the value of x and the unknown angles in each problem.

1)

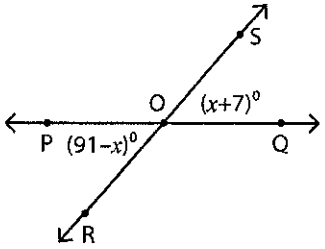


x = _____

∠BOD = _____

∠AOB = _____

2)

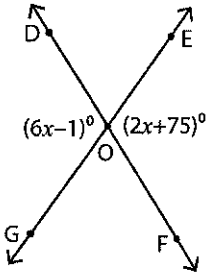


x = _____

∠SOQ = _____

∠QOR = _____

3)

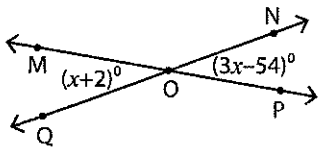


x = _____

∠GOF = _____

∠GOD = _____

4)

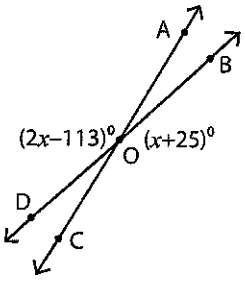


x = _____

∠QOP = _____

∠MOQ = _____

5)

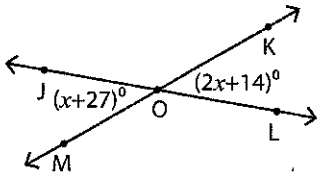


x = _____

∠DOC = _____

∠COB = _____

6)



x = _____

∠JOM = _____

∠MOL = _____