

Florida Geometry
Lesson 2-6 - Practice and Problem-Solving Exercises Solutions

6. Since vert. angles are congruent, $3x = 80 - x$. By the Add. Prop. of Eq., $4x = 80$. By the Div. Prop. of Eq., $x = 20$.
7. Since vert. angles are congruent,... By the Div. Prop. of Eq., $x = 38$. Also, $y + 76 = 180$ because the angles are suppl. By the Subtr. Prop. of Eq., $y = 104$.
8. Since vert. angles are congruent,... By the Subtr. Prop. of Eq., $90 = 3x$. By the Div. Prop. of Eq., $30 = x$. By the Symmetric Prop., $x = 30$.
9. $3x = 2(20) = 60$
 $80 - x = 80 - 20 = 60$
10. 76
 $y = 104$
 $2x = 2(38) = 76$
- 12a. Vert. Angles Thm.: it states that vert. angles are congruent.
- 12b. $\angle 1 \cong \angle 6$: both angles are congruent to $\angle 3$, so they are congruent to each other.
- 12c. Vert. Angles Thm.: it states that vert. angles are congruent.
- 12d. Trans. Prop. of congruency: $\angle 6$ and $\angle 4$ are both congruent to $\angle 1$, so they are congruent to each other.
- 13a. By the def. of compl. angles, $m\angle 1 + m\angle 2 = 90$.
- 13b. By the def. of compl. angles, $m\angle 3 + m\angle 2 = 90$
- 13c. Subtr. $m\angle 3$ from both sides and $m\angle 1 = m\angle 3$.
- 13d. By the definition angle of congruence, angles with the same measure are congruent.
14. Angles that form a rt. angle are compl. and their measures add to 90. The angle formed by 116th St. and Main St. is vert. to the angle with measure 35, so its measure is 35. It is compl. to the angle formed by 116th and Park, so they add to 90. The angle formed by 116th and Park is $90 - 35 = 55$.
16. Since vert. angles are congruent, $x + 10 = 4x - 35$. By the Subtr. Prop. of Eq., $-3x + 10 = -35$ and $-3x = -45$. By the Div. Prop. of Eq., $x = 15$. So $x + 10 = 15 + 10 = 25$ and $4x - 35 = 4(15) - 35 = 60 - 35 = 25$.
- 18a. $\angle Y$
- 18b. rt. angle: a rt. angle measures 90.
- 18c. $m\angle Y$: both $\angle X$ and $\angle Y$ are equal to 90, so they are equal to each other.
- 18d. $\angle X \cong \angle Y$ because they have the same measure, 90.
24. By Theorem 2-5, if two angles are congruent and suppl., then each is a rt. angle.
 $m\angle ABC + m\angle XYZ = 180$ (Given)
 $\angle ABC \cong \angle XYZ$ (Given)
 $m\angle ABC = m\angle XYZ$ (Def. of \cong)
 $m\angle ABC + m\angle ABC = 180$ (Subst.)
 $2m\angle ABC = 180$ (Dist.)
 $m\angle ABC = 90$ (Div. Prop. of Eq.)
 $m\angle ABC + m\angle XYZ = 180$ (Given)
 $90 + m\angle XYZ = 180$ (Subst.)
 $m\angle XYZ = 90$ (Subtr. Prop. of Eq.)
 By the def. of rt. angle, $\angle ABC$ and $\angle XYZ$ are rt. angles.
32. Subtr. Prop. of Eq.; Subtr. 7 from each side.
35. Points F, I, H, B all lie on line t .
36. No, they do not all lie on the same line.