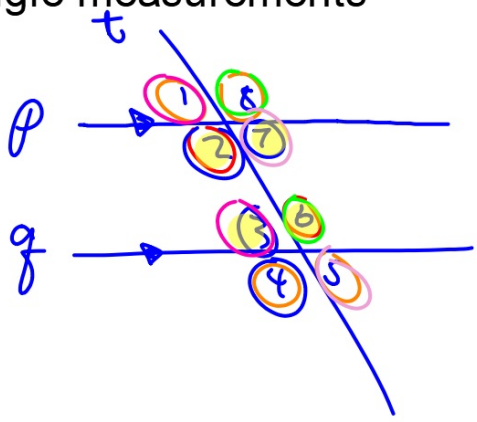
Geometry 3.2

Use theorems to determine the relationships between specific pairs of angles

Use algebra to find angle measurements

transversal
interior angles
exterior angles
corresponding angles
parallel
perpendicular
activity: tracing paper



Angle chase:
handout

In the figure at the right, $r \parallel s$, $m\angle 2 = 40°$, and $m\angle 4 = 60°$. Find the indicated measures.

6. $m\angle 1$ _____ 7. $m\angle 3$ _____

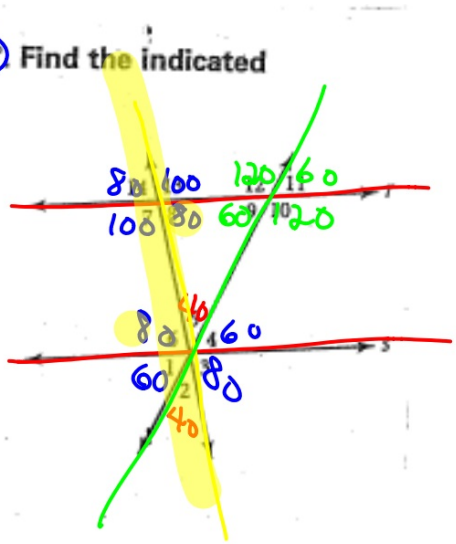
8. $m\angle 5$ _____ 9. $m\angle 6$ _____

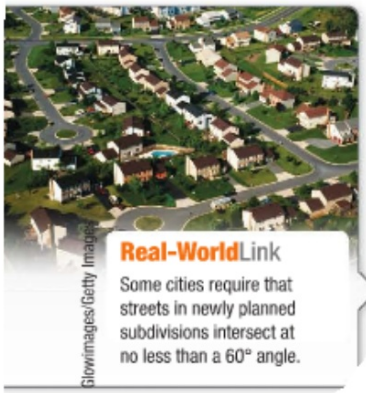
10. $m\angle 7$ _____ 11. $m\angle 8$ _____

12. $m\angle 9$ _____ 13. $m\angle 10$ _____

14. $m\angle 11$ _____ 15. $m\angle 12$ _____

16. $m\angle 13$ _____ 17. $m\angle 14$ _____





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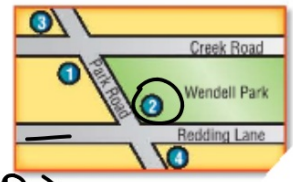
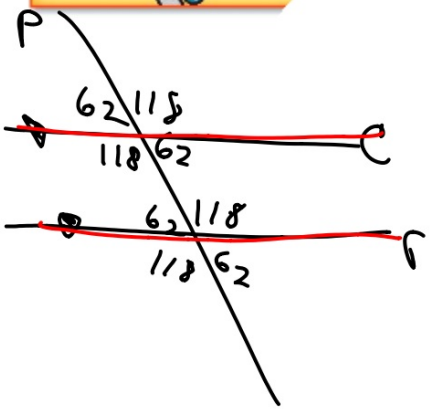
Real-World Link

Some cities require that streets in newly planned subdivisions intersect at no less than a 60° angle.

Real-World Example 2 Use Theorems about Parallel Lines

COMMUNITY PLANNING Redding Lane and Creek Road are parallel streets that intersect Park Road along the west side of Wendell Park. If $m\angle 1 = 118$, find $m\angle 2$.



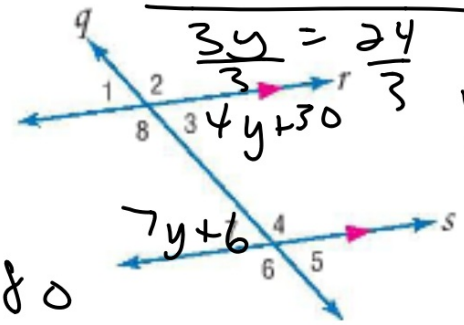


What is the angle relationship???? (decide that first!)

Example 3 Find Values of Variables

ALGEBRA Use the figure at the right to find the indicated variable. Explain your reasoning.

a. If $m\angle 4 = 2x - 17$ and $m\angle 1 = 85$, find x.



$7y + 6 = 4y + 30$

$-4y - 6 \quad -4y \quad -6$

$\frac{3y}{3} = \frac{24}{3}$

$y = 8$

$2x - 17 + 85 = 180$

$2x + 68 = 180$

$-68 \quad -68$

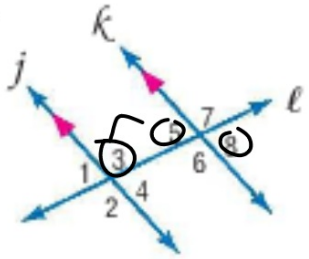
$2x = 112$

$x = 56$

b. Find y if $m\angle 3 = 4y + 30$ and $m\angle 7 = 7y + 6$.

3A. If $m\angle 2 = 4x + 7$ and $m\angle 7 = 5x - 13$, find x.

3B. Find y if $m\angle 5 = 68$ and $m\angle 3 = 3y - 2$.



$5x - 13 = 4x + 7$

$-4x + 13 \quad -4x + 13$

$x = 20$

$3y - 2 + 68 = 180$

$3y + 66 = 180$

$-66 \quad -66$

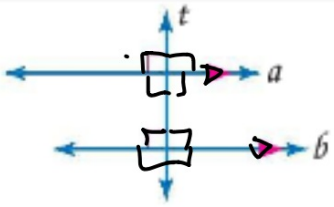
$3y = 114$

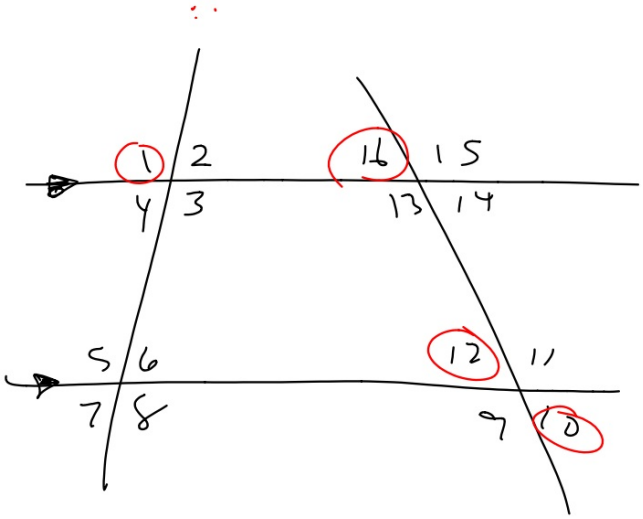
$y = 38$

Theorem 3.4 Perpendicular Transversal Theorem

In a plane, if a line is perpendicular to one of two parallel lines, then it is perpendicular to the other.

Examples If line a || line b and line $a \perp$ line t, then line $b \perp$ line t.





WB 3.2
SK. 1-22
PR 1-8