Geometry Terms

Transversal: a line that intersects 2 or more lines

Complementary Angles: 2 angles whose sum is 90°

Supplementary Angles: 2 angles whose sum is 180°

Midpoint: A point that divides a segment into 2 congruent seg.

Vertical Angles 2 angles that is created by 2 pairs of opposite rays intersecting. Vertical angles are congruent.

Postulate A statement accepted without proof.

Answers vary

Alternate Interior Angles 2 angles on alternate sides of the transversal & inside the other 2 lines

Alternate Exterior Angles 2 angles on alternate sides of the transversal & outside the other 2 lines

Corresponding Angles 2 angles in the same position as each other but in diff. locations

Consecutive Interior (Same-Side Interior) Angles 2 angles on the same side as the transversal & inside the other 2 lines

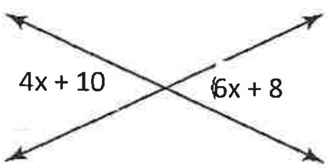
Skew lines 2 lines on different planes & not parallel & not intersecting

Parallel Planes 2 planes going in the same direction

Know how to do the following:

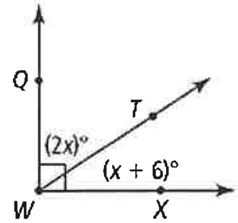
1. Constructing a Congruent Angle ① ② ③ ④ ⑤
2. Constructing an Angle Bisector ① ② ③
3. Find the distance from a midpoint to an endpoint ① $d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$ ② $d \div 2$

4. Find the value of x.



$$4x+10=6x+8$$
$$-4x \qquad -4x$$
$$10=2x+8$$
$$-8 \qquad -8$$
$$2=2x$$
$$1=x$$

5.



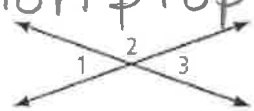
Given: $\angle QWT$ and $\angle TWX$ are complementary.

Prove: x = 28

Statements	Reasons
① $\angle QWT$ & $\angle TWX$ are complementary	① Given
② $m\angle QWT + m\angle TWX = 90$	② Definition of Complementary angles
③ $2x + x + 6 = 90$	③ Substitution
④ $3x + 6 = 90$	④ Simplify
⑤ $3x = 84$	⑤ Subtraction prop of equality
⑥ $x = 28$	⑥ Division prop of equality

Given: $\angle 1$ and $\angle 3$ are vertical angles.

Prove: $\angle 1 \cong \angle 3$

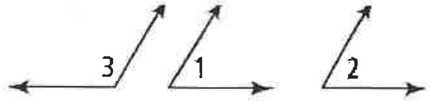


(I am doing this similar to test)

6.

Statements	Reasons
① $\angle 1$ & $\angle 3$ are vertical $\angle$'s	① Given
② $\angle 1$ & $\angle 2$ are supplementary $\angle 2$ & $\angle 3$ are supplementary	② Linear Pair Postulate
③ $m\angle 1 + m\angle 2 = 180$ $m\angle 2 + m\angle 3 = 180$	③ Definition of Supplementary $\angle$'s
④ $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$	④ Transitive prop of equality
⑤ $m\angle 1 = m\angle 3$	⑤ Subtraction
⑥ $\angle 1 \cong \angle 3$	⑥ Def of congruency

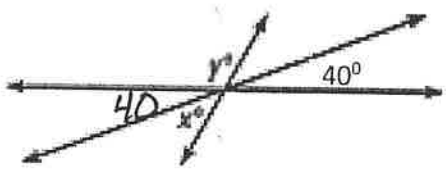
Given: $\angle 1$ and $\angle 3$ are supplementary.
$\angle 2$ and $\angle 3$ are supplementary.



7. **Prove:** $\angle 1 \cong \angle 2$

Statements	Reasons
① $\angle 1$ & $\angle 3$ are supplementary $\angle 2$ & $\angle 3$ are supplementary	① Given
② $m\angle 1 + m\angle 3 = 180$ $m\angle 2 + m\angle 3 = 180$	② Definition of Supplementary ∠'s
③ $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$	③ Transitive prop of equality
④ $m\angle 1 = m\angle 2$	④ Subtraction
⑤ $\angle 1 \cong \angle 2$	⑤ Definition of congruency

8. Three lines intersect in the figure shown.

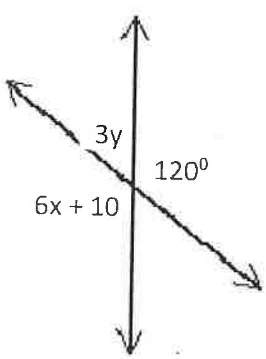


$$x + 40 + y = 180$$
$$-40 \qquad -40$$
$$x + y = 140$$

What is the value of $x + y$?

$140°$

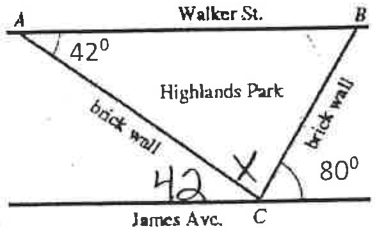
9. Find the values of x and y.



Drawing not to scale

$$6x + 10 = 120$$
$$-10 \quad -10$$
$$6x = 110$$
$$x = 18.3$$
$$3y + 120 = 180$$
$$-120 \quad -120$$
$$3y = 60$$
$$y = 20$$

10.



$42 + x + 80 = 180$

$\cancel{122} + x = 180$

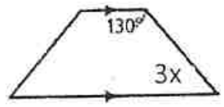
$-\cancel{122} \quad -122$

$x = 58$

What is the measure of $\angle ACB$?

$m\angle ACB = 58$

11. What is the value of x in the figure?



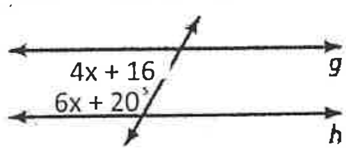
$\cancel{130} + 3x = 180$

$-\cancel{130} \quad -130$

$3x = 50$

$x = 16.7$

12. For which value of x are lines g and h parallel?



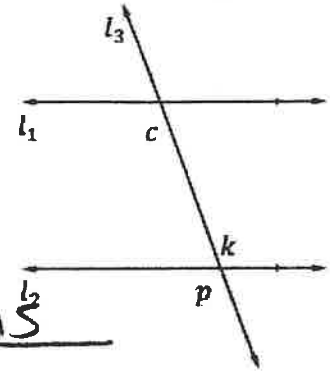
$4x + 16 + 6x + 20 = 180$

$10x + \cancel{36} = 180$

$-\cancel{36} \quad -36$

$10x = 144 \quad x = 14.4$

13. 3. Consider the lines l_1, l_2 and l_3 in the diagram to the right.



Given: $l_1 \parallel l_2$
Prove: $\angle c \cong \angle k$

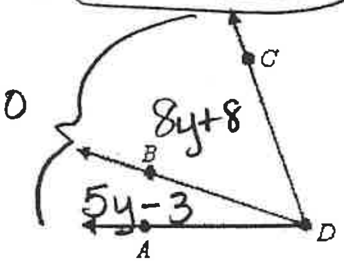
Complete the following proof.

Statements	Reasons
1 $l_1 \parallel l_2$	1 Given
2 $\angle c \cong \angle p$	2 Corresponding angle Theorem
3 $\angle p \cong \angle k$	3 Vertical angle Theorem
4 $\angle c \cong \angle k$	4 transitive prop. of equality

14.

$m\angle CDB = (8y+8)°$ and $m\angle BDA = (5y-3)°$ and $m\angle ADC = 70°$.

Find $m\angle CDB$ and $m\angle BDA$



$5y-3+8y+8=70$

$13y+\cancel{5}=70$

$\quad\ \ \cancel{-5}\ \ -5$

$13y=65$

$y=5$

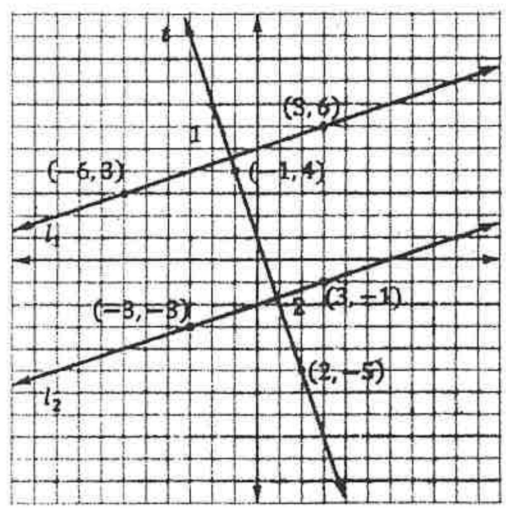
$m\angle CDB = 8(5)+8$

$= 48°$

$m\angle BDA = 5(5)-3$

$= 22°$

15. Prove that $\angle 1 \cong \angle 2$.

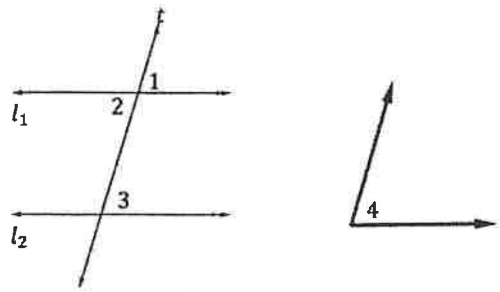


$l_1 m = \frac{6-3}{3-(-6)} = \frac{3}{9} = \frac{1}{3}$

$l_2 m = \frac{-1-(-3)}{3-(-3)} = \frac{2}{6} = \frac{1}{3}$

Since $l_1 \parallel l_2$ and $\angle 1$ & $\angle 2$ are alternate interior angles, then $\angle 1 \cong \angle 2$ by Alternate interior angle theorem.

13.



(I am doing similar to test)

Given: $l_1 \parallel l_2$; $\angle 2 \cong \angle 4$

Prove: $\angle 1 \cong \angle 4$ and $\angle 4 \cong \angle 3$

Statements	Reasons
1 $l_1 \parallel l_2$; $\angle 2 \cong \angle 4$	1 Given
2 $\angle 1 \cong \angle 2$	2 Vertical angle Theorem
3 $\angle 1 \cong \angle 4$	3 Transitive prop. of equality
4 $\angle 1 \cong \angle 3$	4 Corresponding Angle Theorem
5 $\angle 4 \cong \angle 3$	5 Transitive prop. of equality

17. $\angle X$ *and* $\angle Y$ are supplementary. One angle measure 6 times the other angle. What is the **complement** of the smaller angle?

$m\angle X + m\angle Y = 180$ Let $m\angle X = x$, $m\angle Y = 6x$

$x + 6x = 180$

$7x = 180$

$x = 25.7$

$90 - 25.7 = 64.3°$