Name KEY Hour _____

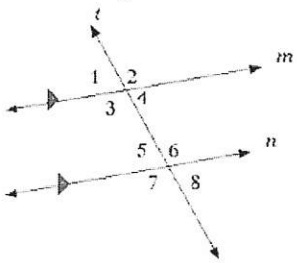
Standard 6A Proofs about Lines & Angles and Standard 6B Proofs about Parallel Lines & Transversals Review

- A. Complementary Angles
- B. Congruent
- C. Midpoint
- D. Supplementary Angles
- E. Angle Bisector
- F. Linear Pair
- G. Segment Addition Postulate
- H. Transitive Property
- I. Symmetric Property
- J. Reflexive Property
- K. Same Side Interior Angles
- L. Vertical Angles
- M. Angle Addition Postulate
- N. Alternate Interior Angles
- O. Alternate Exterior Angles
- P. Corresponding Angles

1-14. Fill in the blank with the correct vocab word.

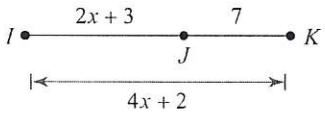
1. A point that divides a segment into to two congruent pieces: C
2. Two angles that are adjacent and supplementary: F
3. If a = b and b = c, then a = c H
4. A ray that divides an angle into two congruent angles: E
5. The larger segment is equal to the sum of the segments that comprise it. G
6. A pair of angles that sum to 90 degrees: A

Figure 1



7. Using **Figure 1**, $\angle 3 \cong \angle 7$ because they are P
8. Using **Figure 1**, $\angle 1 \cong \angle 8$ because they are O
9. Using **Figure 1**, $\angle 4 \cong \angle 5$ because they are N
10. Using **Figure 1**, $\angle 4 \cong \angle 1$ because they are L
11. Using **Figure 1**, $\angle 4 + \angle 6 = 180^\circ$ because they are K
12. Using **Figure 1**, $\angle 4 + \angle 2 = 180^\circ$ because they are F
13. If a transversal intersects two parallel lines, the same side interior angles are D
14. Vertical angles are B

15. Solve for x

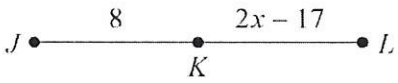


$2x+3+7=4x+2$

$2x=8$

$x=4$

16. Given K is a midpoint Solve for x

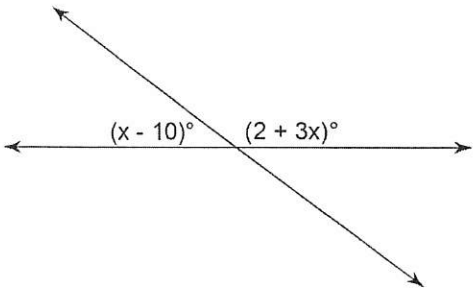


$8=2x-17$

$25=2x$

$x=12.5$

17. Solve for x

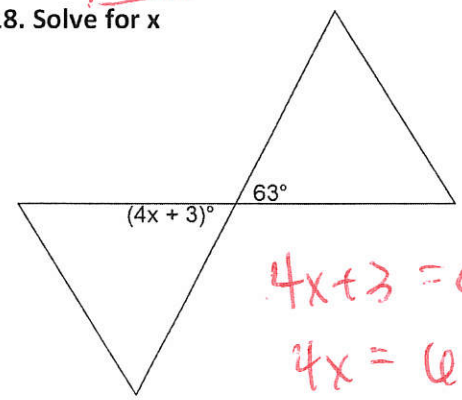


$x-10+2+3x=180$

$4x=188$

$x=47$

18. Solve for x



$4x+3=63$

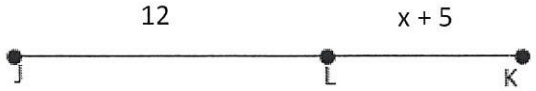
$4x=60$

$x=15$

19-27. Prove the following using the given statements and reasons.

Given: JK = 5x + 1

Prove: x = 4



Statements	Reasons
19. $JK = 5x + 1$	Given
20. $JL + LK = JK$	Segment Addition Postulate
$12 + x + 5 = 5x + 1$	**21.** Substitution P.
22. $17 + x = 5x + 1$	Substitution Property
$17 = 4x + 1$	**23.** Subtraction P.
24. $16 = 4x$	Subtraction Property of Equality
25. $4 = x$	**26.** Division P.
$x = 4$	**27.** Symmetric P.

Possible Statements:

$16 = 4x$
$17 + x = 5x + 1$
$JL + LK = JK$
$JL + JK = LK$
$7 + x = 5x + 1$
$JK = 5x + 1$

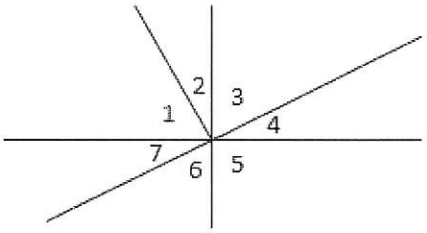
Possible Reasons:

Substitution Property
Segment Addition Postulate
Symmetric Property of Equality
Subtraction Property of Equality
Division Property of Equality
Addition Property of Equality
Given

28-31. Prove the following using the given statements and reasons

Given: $\angle 2 \cong 28°$ and $\angle 2 \cong \angle 4$

Prove: $\angle 7 \cong 28°$



Statements	Reasons
28. $\angle 2 \cong 28°$ & $\angle 2 \cong \angle 4$	Given
$\angle 7 \cong \angle 4$	**29.** Vertical Angles are Congruent
30. $\angle 7 \cong \angle 2$	Transitive Property of Congruence
$\angle 7 \cong 28°$	**31.** Substitution P.

Possible Statements:

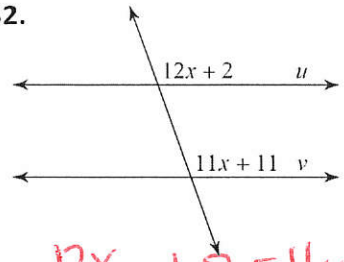
$\angle 7 \cong \angle 2$
$\angle 3 \cong \angle 6$
$\angle 2 \cong 28°$ and $\angle 2 \cong 4$
$\angle 7 + \angle 6 + \angle 5 \cong 180°$
$\angle 4 \cong \angle 7$

Possible Reasons:

Angle Addition Postulate
Definition of a linear pair
Substitution Property
Vertical Angles are Congruent
Transitive Property of Congruence

What value of x makes u || v?

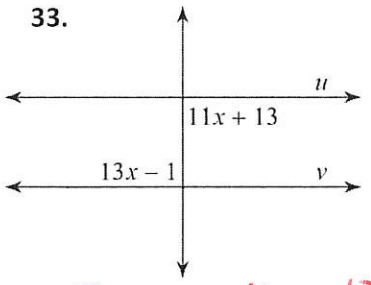
32.



$12x + 2 = 11x + 11$

$x = 9$

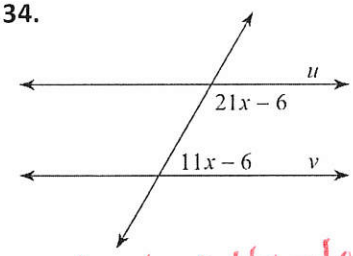
33.



$13x - 1 = 11x + 13$

$2x = 12$ $\quad x = 6$

34.



$21x - 6 + 11x - 6 = 180$

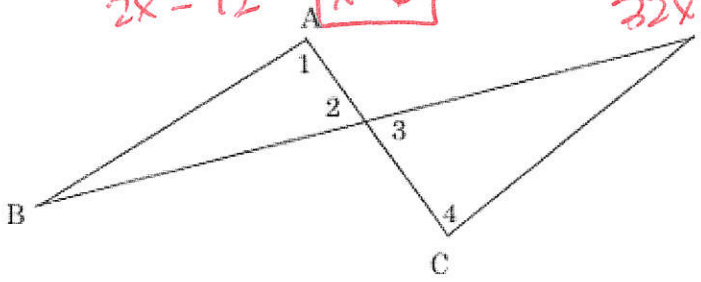
$32x - 12 = 180$

$32x = 192$ $\quad x = 6$

Complete the proof below for 22-27.

Given: $\angle 1 \cong \angle 2$

Prove: $\angle 3 \cong \angle 4$
$\overline{AB} \parallel \overline{CD}$



Statement	Reason
35. $\angle 1 \cong \angle 2$	Given
$\angle 2 \cong \angle 3$	**36.** Vertical Angles are Congruent
37. $\angle 1 \cong \angle 3$	Transitive Property
$\angle 3 \cong \angle 4$	**38.** Given
39. $\angle 1 \cong \angle 4$	Transitive Property
$\overline{AB} \parallel \overline{CD}$	**40.** Converse of Alternate Interior Angles

Possible Statements:

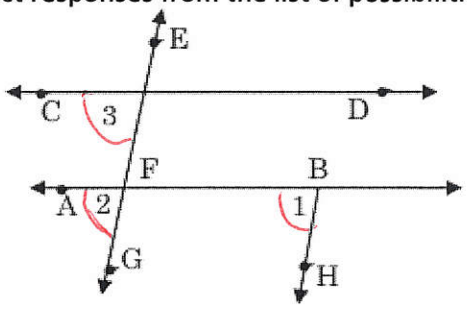
- $\angle 1 \cong \angle 4$
- $\angle 1 \cong \angle 3$
- $\angle 1 \cong \angle 2$
- $\angle 2 \cong \angle 4$

Possible Reasons:

- Converse of Corresponding Angles Theorem
- Given
- Definition of a Linear Pair
- Vertical Angles are Congruent
- Transitive Property
- Converse of Alternate Interior Angles Theorem

41-51. Fill in the blanks with the correct responses from the list of possibilities.

Given: $\angle 3 \cong \angle 1,\ \angle 2 \cong \angle 3$
Prove: $\overleftrightarrow{EG} \parallel \overleftrightarrow{BH}$

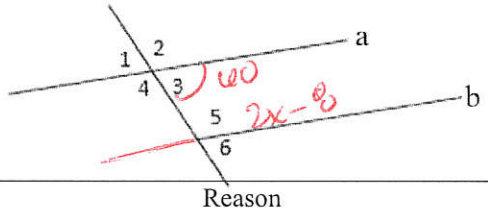


Statement	Reason
$\angle 3 \cong \angle 1,\ \angle 2 \cong \angle 3$	**41.** Given
$\angle 1 \cong \angle 2$	**42.** Transitive Property of Congruence
$\angle 1 \cong \angle 2$ are Corresponding Angles	**43.** Definition of Corresponding Angles
$\overleftrightarrow{EG} \parallel \overleftrightarrow{BH}$	**44.** If Corresponding Angles are Congruent then the lines are parallel

Possible Reasons:

- ✓ Vertical angles are congruent
- ✓ Substitution property of equality
- ✓ Given
- ✓ Transitive Property of Congruence
- ✓ If ll lines, Alternate Interior Angles are congruent
- ✓ Definition of Corresponding Angles
- ✓ If Corresponding Angles are congruent then the lines are parallel

Given: $m\angle 3 = 60^\circ,\ m\angle 5 = 2x - 8,\ a \parallel b$
Prove: $x = 64$



Statement	Reason
$m\angle 3 = 60^\circ,\ m\angle 5 = 2x - 8,\ a \parallel b$	**45.** Given
$180 = m\angle 3 + \angle 5$	**46.** If ll lines, Same Side Interior ∠'s are Supp.
47. $180 = 60 + (2x - 8)$	Substitution property of equality
$180 = 52 + 2x$	**48.** Substitution P.
49 $128 = 2x$	Subtraction property of equality
50. $64 = x$	Division property of equality
51. $x = 64$	Symmetric property of equality

Statements:

$64 = x$
$180^\circ = 60 + 2x - 8$
$64 = x$
$x = 64$
$128 = 2x$

Reasons:

Vertical angles are congruent
Substitution property of equality
Given
Addition property of equality
If ll lines, Same Side Interior Angles are Supplementary
Subtraction property of equality