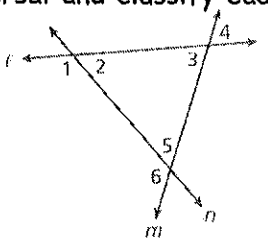
Chapter 3 Review (Unit 2 Exam) Name: KEY

Identify the transversal and classify each angle pair.

1. ∠1 and ∠3

2. ∠2 and ∠5



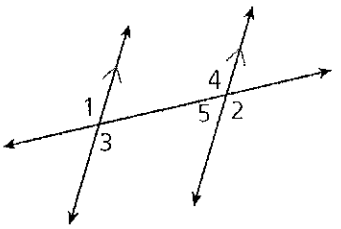
1. corresponding, transversal ℓ

2. SSI, transversal n

State the theorem or postulate that is related to the measures of the angles in each pair. Then find the unknown angle measures.

3. $m\angle 3 = (2x - 135)°$, $m\angle 4 = (x - 30)°$

4. $m\angle 3 = (55x - 5)°$, $m\angle 5 = (15x + 45)°$



3. AIA $\cong$. $2x - 135 = x - 30$

$x = 105$

$m\angle 3 = 210 - 135 = 75°$

$m\angle 4 = 105 - 30 = 75°$

4. SSI Supplementary $55x - 5 + 15x + 45 = 180$

$70x + 40 = 180$

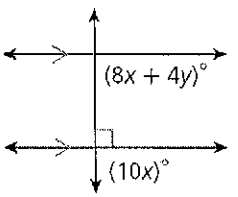
$70x = 140$

$x = 2$

$m\angle 3 = 110 - 5 = 105°$

$m\angle 5 = 30 + 45 = 75°$

5. **Solve to find x and y in the diagram.**



$10x = 90$ $x = 9$

$8(9) + 4y = 90$

$72 + 4y = 90$

$4y = 18$

$y = 4.5$

Determine whether the lines are parallel, intersect, or coincide.

6. $y - 4 = -\frac{1}{2}$, $y - 5 = 2(x + 3)$

$m = 0$ $m = 2$

Intersect (different slopes)

7. $2y = 4x + 12$, $4x - 2y = 8$ →

$y = 2x + 6$

$\frac{-2y}{-2} = \frac{-4x}{-2} + \frac{8}{-2}$

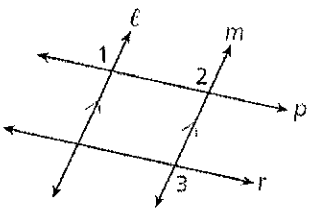
$y = 2x - 4$

Same slope, different y-int. Lines are ||.

8. **Write a two column proof in space below.**

Given: $p \parallel r$, $\angle 1 \cong \angle 3$

Prove: $\ell \parallel m$



Statement	Reason
1. $P \parallel r$	1. given
2. $\angle 2 \cong \angle 3$	2. AEA's
3. $\angle 1 \cong \angle 3$	3 given
4. $\angle 1 \cong \angle 2$	4. trans. prop.
5. $\ell \parallel m$	5. converse of corresp. $\angle$s.

9. Write an equation of a line in slope-intercept form through the point (2, 1) that is $\perp$ to the line $6x - 2y = 12$

$y - 1 = -\frac{1}{3}(x - 2)$

$y - 1 = -\frac{1}{3}x + \frac{2}{3} + \frac{3}{3}$

$+1 \quad +1$

$y = -\frac{1}{3}x + \frac{5}{3}$

$\frac{-2y}{-2} = \frac{-6x}{-2} + \frac{12}{-2}$

$y = 3x - 6$

$\perp$ line, $m = -\frac{1}{3}$

10. Classify each statement below as true or false. If false, draw or state a counterexample.

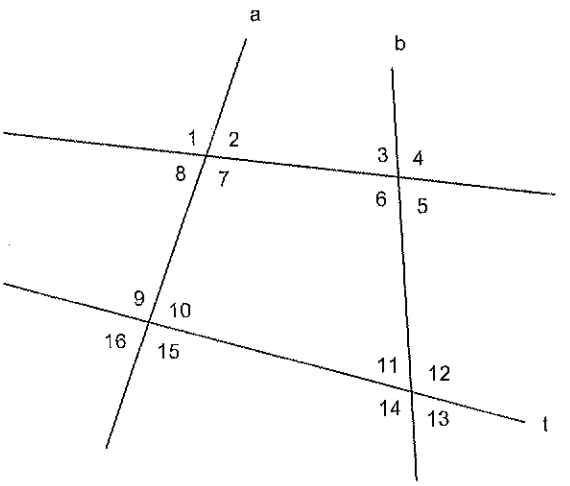
a. Two lines that are not parallel must intersect. TRUE (FALSE)

SKEW LINES

b. When proving that lines are parallel, be sure to use the theorem and not it's converse. TRUE (FALSE)

Must use converse

Given $a \parallel b$, use the picture to the right to complete each statement with a numerical answer.



11. If $m\angle 13 = 13$, then $m\angle 15 =$ 13.

12. If $m\angle 1 = 58$, then $m\angle 6 =$ 122.

13. If $m\angle 15 = 11x$ and $m\angle 13 = 12x - 4$, then x = 4.

$11x = 12x - 4$ (corresp. $\angle$s $\cong$)

$-x = -4$

$x = 4$

14. If $m\angle 1 = 19x + 1$ and $m\angle 5 = 15x + 13$, then $m\angle 1 =$ 58°.

$19x + 1 = 15x + 13$ $\quad 19(3) + 1 = 58°$

$4x = 12$

$x = 3$

Can the given information be used to tell whether lines a and b must be parallel? Write yes or no and justify your answer.

15. $\angle 2$ and $\angle 3$ are congruent. No - If supplementary

16. $\angle 9 \cong \angle 11$ YES - corresponding

17. $a \perp$s and $b \perp$s YES 2 lines $\perp$ to same line are $\parallel$

18. ∠7 and ∠10 are supplements — No - not on correct trans.

19. How do alternate interior angles differ from alternate exterior angles?

Interior are between lines cut by the transversal.
Exterior are on opposite side of each line from interior not the transversal.

20. If two lines are cut by a transversal how many pairs of corresponding angles are formed?

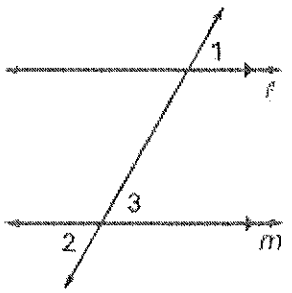
4 pairs

21. If two lines are cut by a transversal, four interior angles are formed. If one pair of alternate interior angles measures 90° explain why all four interior angles must measure 90°.

If A.I.A.s are $\cong$ (90°), then transversal is $\perp$ to both lines. All angles, including interior, must be 90°.

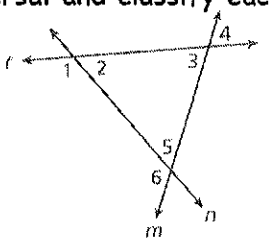
22. Given: $\ell \parallel m$

Prove: $\angle 1 \cong \angle 2$



statement	reason
1. $\ell \parallel m$	1. given
2. $\angle 1 \cong \angle 2$	2. ΔEA'.
	Q.E.D.

Identify the transversal and classify each angle pair.



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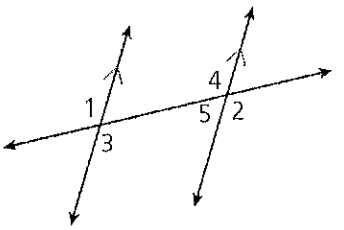
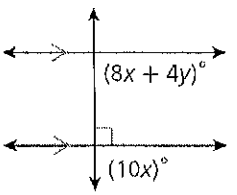


5. **Solve to find *x* and *y* in the diagram.**



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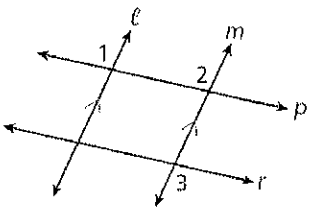

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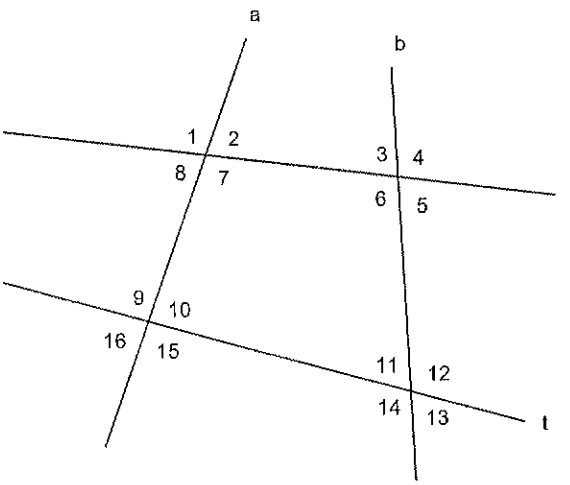

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Prove: $\angle 1 \cong \angle 2$