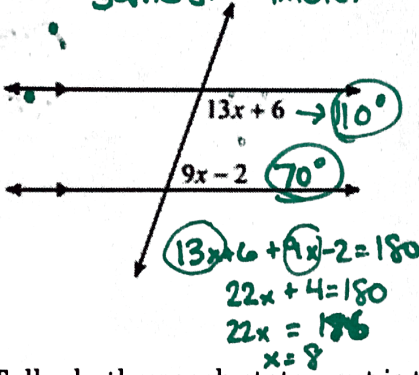
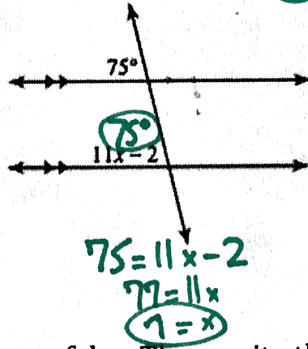


1. Solve for x in each picture. Then plug back in to find each angle measure.

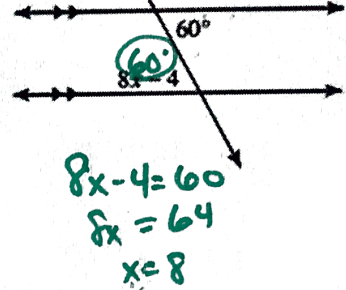
a. Same side Interior



b. Corresponding



c. alternate interior



2. Tell whether each statement is true or false. Then write the converse of the following statements, and state whether the converse is true or false.

a. If an angle has a measure less than 90 degrees, then it is acute. **TRUE**

Converse: If an angle is acute, it has a measure less than 90 degrees. **TRUE**

b. If a figure has four right angles, then it is a square. **False** → could be a rectangle

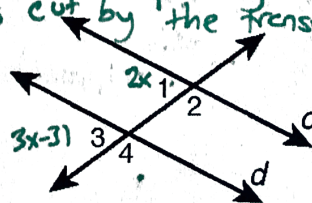
If it is a square, then it has four right angles. **TRUE**

3. What is the difference between the corresponding angles theorem and the converse of the corresponding angles theorem? Explain in your own words.

The corresponding angles theorem states if lines cut by a transversal are parallel, then the corresponding angles are congruent.
 The converse states that if the corresponding angles are congruent, then the lines cut by the transversal are parallel.

4. Use the given information to show that $c \parallel d$. State which converse you used.

Given: $m\angle 1 = 2x^\circ$, $m\angle 3 = (3x - 31)^\circ$, $x = 31$



$m\angle 1 = 2(31) = 62^\circ$
 $m\angle 3 = 3(31) - 31 = 62^\circ$
 $m\angle 1 = m\angle 3$
 $c \parallel d$ by the converse of the corresponding angles theorem.

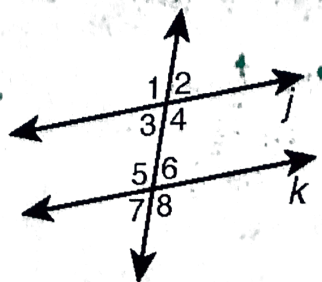
5. Use the given information to show that $j \parallel k$.

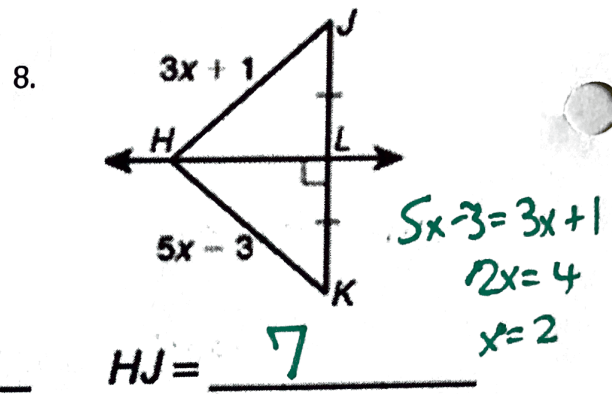
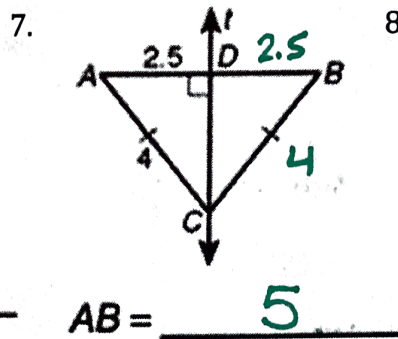
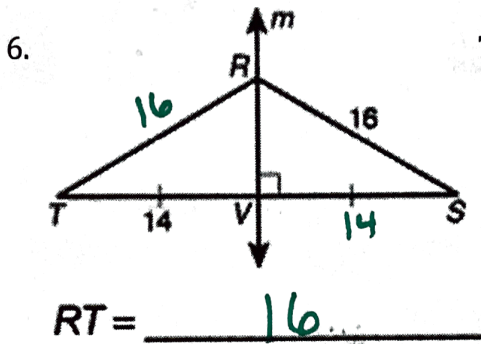
State which converse you used

Given: $m\angle 3 = 12x^\circ$, $m\angle 5 = 18x^\circ$, $x = 6$

$12(6) = 72$
 $18(6) = 108$

$m\angle 3 + m\angle 5 = 180^\circ$
 $j \parallel k$ by the converse of the same side interior angles theorem.





9. For each slope given, identify what slope the parallel and perpendicular line would have.

slope	parallel	perpendicular
$\frac{2}{5}$	$\frac{2}{5}$	$-\frac{5}{2}$
$-\frac{9}{8}$	$-\frac{9}{8}$	$\frac{8}{9}$
8	8	$-\frac{1}{8}$
1	1	-1
0	0	undefined
$\frac{1}{2}$	$\frac{1}{2}$	-2

Are the following lines parallel perpendicular or neither? How do you know?

10. $y = 2x + 10$, $y = -2x + 1$

neither - slopes are not the same nor opposite reciprocal

11. $y = 5$, $x = 2$

perpendicular - one is a vertical line, the other is a horizontal line

12. $y = -4x + 1$, $y = \frac{1}{4}x + 2$

perpendicular - slopes are opposite reciprocal

13. $y = 10x$, $y = 4 + 10x$

parallel - the slopes are the same

Write the equation of a line that is parallel AND a line that is perpendicular to a given line through the given point.

14. $y = 2x + 9$, $(-1, 4)$

parallel
 slope: 2 point: $(-1, 4)$
 $y = 2x + b$
 $4 = 2(-1) + b$
 $4 = -2 + b$
 $6 = b$
 $y = 2x + 6$

perpendicular
 slope: $-\frac{1}{2}$ point: $(-1, 4)$
 $y = -\frac{1}{2}x + b$
 $4 = -\frac{1}{2}(-1) + b$
 $4 = \frac{1}{2} + b$
 $3.5 = b$
 $y = -\frac{1}{2}x + 3.5$

15. $y = -\frac{1}{4}x - 5$, $(8, 2)$

parallel
 slope: $-\frac{1}{4}$ point: $(8, 2)$
 $y = -\frac{1}{4}x + b$
 $2 = -\frac{1}{4}(8) + b$
 $2 = -2 + b$
 $4 = b$
 $y = -\frac{1}{4}x + 4$

perpendicular
 slope: 4 point: $(8, 2)$
 $y = 4x + b$
 $2 = 4(8) + b$
 $2 = 32 + b$
 $-30 = b$
 $y = 4x - 30$