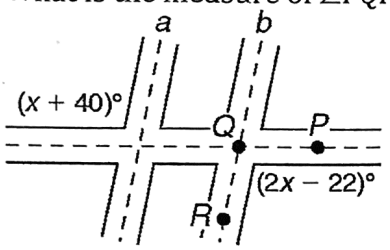
Congruent Quiz Review

Quiz TOMORROW!

1. In the diagram, roads a and b are parallel.
What is the measure of $\angle PQR$?

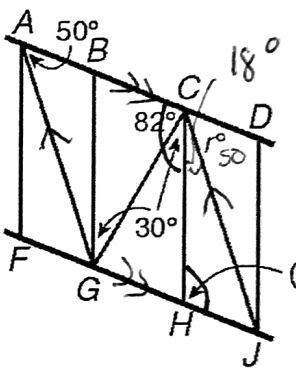


$x + 40 = 2x - 22$
$+22 \quad +22$
$x + 62 = 2x$
$-x \quad -x$
$62 = x$

$2(62) - 22$
$124 - 22$
$\boxed{102°}$

Use the diagram of a staircase railing for Exercises 2 and 3. $\overline{AG} \parallel \overline{CJ}$ and $\overline{AD} \parallel \overline{FJ}$. Choose the best answer.

2. Which is a true statement about the measure of $\angle DCJ$?
   - A It equals 30°, by the Alternate Interior Angles Theorem.
   - B It equals 30°, by the Corresponding Angles Postulate.
   - C It equals 50°, by the Alternate Interior Angles Theorem.
   - D It equals 50°, by the Corresponding Angles Postulate.



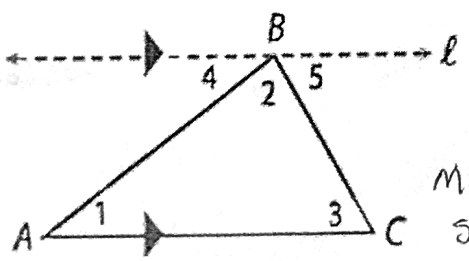
$180 - 68 = 112$
$112 = 3n + 7$
$-7 \quad -7$
$\frac{105}{3} = \frac{3n}{3}$
$35 = n$

3. Which is a true statement about the value of n?
   - F It equals 25°, by the Alternate Interior Angles Theorem.
   - G It equals 25°, by the Same-Side Interior Angles Theorem.
   - H It equals 35°, by the Alternate Interior Angles Theorem.
   - or J It equals 35°, by the Same-Side Interior Angles Theorem.

J + H both work!

$3n + 7 = 30 + 82$
$3n + 7 = 112$
$-7 \quad -7$
$\frac{3n}{3} = \frac{105}{3}$
$\boxed{n = 35}$

4. Prove the triangle angle sum theorem.



$\ell \parallel \overline{AC}$ which is given
$\angle 4 \cong \angle 1$ because Alternate Interior Angles
$\angle 5 \cong \angle 3$ because Alternate Interior Angles.
$m\angle 4 + m\angle 2 + m\angle 5 = 180$ because they are a straight angle.
so then
$m\angle 1 + m\angle 2 + m\angle 3 = 180$ which proves the triangle angle sum theorem.

5. Write the converse of the following statements:

a. If you can see the stars, then it is night.

If it is the night, then you can see the stars

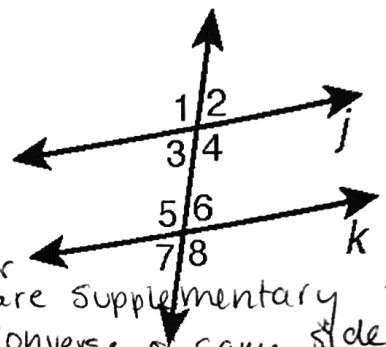
b. If an angle has a measure less than 90 degrees, then it is acute.

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

c. If a figure has four right angles, then it is a square.

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

6. Use the given information to show that $j \parallel k$.
State which converse you used.



a. **Given:** $m\angle 3 = 12x°$, $m\angle 5 = 18x°$, $x = 6$

$12(6) = 72$ $\quad 72 + 108 = 180$

$18(6) = 108$ $\quad m\angle 3 + m\angle 5 = 180$

So same side interior angles are supplementary so $j \parallel k$.

using converse of same side interior postulate

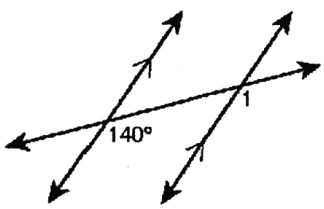
b. **Given:** $m\angle 2 = 8x°$, $m\angle 7 = (7x + 9)°$, $x = 9$

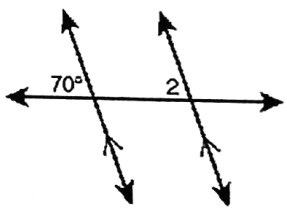
$m\angle 2 = 8(9) = 72$ $\quad m\angle 2 = m\angle 7$

$m\angle 7 = 7(9) + 9 = 72$ alternate exterior angles are congruent so $j \parallel k$

using converse of alternate exterior angle theorem.

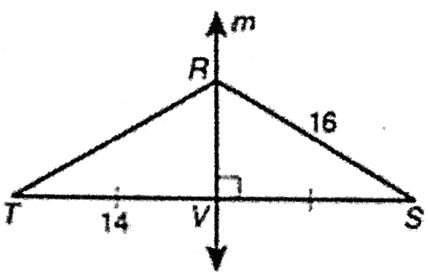
Find each angle measure. Explain how you get your angle measure.





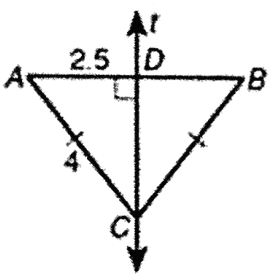
7. $m\angle 1$ 140° corresponding 8. $m\angle 2$ 70° corresponding.

9.



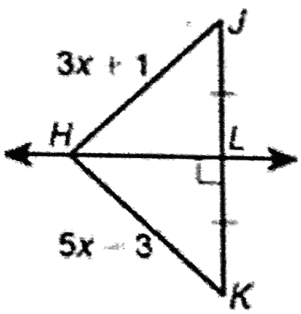
$RT =$ 16

10.



$AB =$ 5

11.



$HJ =$ 7

$3(2) + 1 =$

$6 + 1 = 7$

$3x + 1 = 5x - 3$

$-3x \quad -3x$

$1 = 2x - 3$

$+3 \quad +3$

$\frac{4}{2} = \frac{2x}{2}$

$2 = x$

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

slope	parallel	perpendicular
$\frac{4}{3}$	$4/3$	$-3/4$
$-\frac{2}{5}$	$-2/5$	$5/2$
5	5	$-\frac{1}{5}$
-1	-1	1
0	0	Undefined
$\frac{a}{b}$	$\frac{a}{b}$	$-\frac{b}{a}$

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

13. $y = 3x + 5$, $y = -3x + 1$

neither the slope would be $-\frac{1}{3}$.

14. $y = -\frac{2}{3}x + 5$, $y = \frac{3}{2}x - 8$

perpendicular. Opposite reciprocol slopes.

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

perpendicular

Opposite reciprocol slopes.

16. $y = 5x$, $y = 4 + 5x$

parallel, same slopes

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

17. $y = -2x - 5$, (-1, 4)

$4 = -2(-1) + b$

$4 = 2 + b$

$2 = b$

$y = -2x + 2$

$y = \frac{1}{2}x + b$

$4 = \frac{1}{2}(-1) + b$

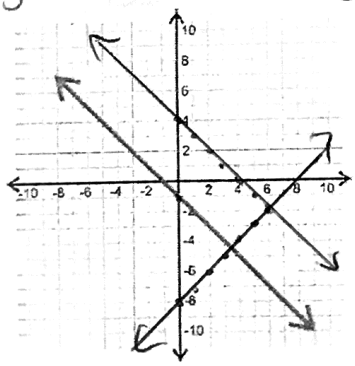
$4 = -\frac{1}{2} + b$

$4\frac{1}{2} = b$

$y = \frac{1}{2}x + 4.5$

18. $y = -2x - 5$, (-1, 4)

perpendicular



19. Graph a line parallel to the line given through the given point. Write the equation for your line.

slope: -1

b: 4

$y = -x + 4$

20. Graph a line perpendicular to the line given through the given point. Write the equation for your line.

slope: 1

b: -8

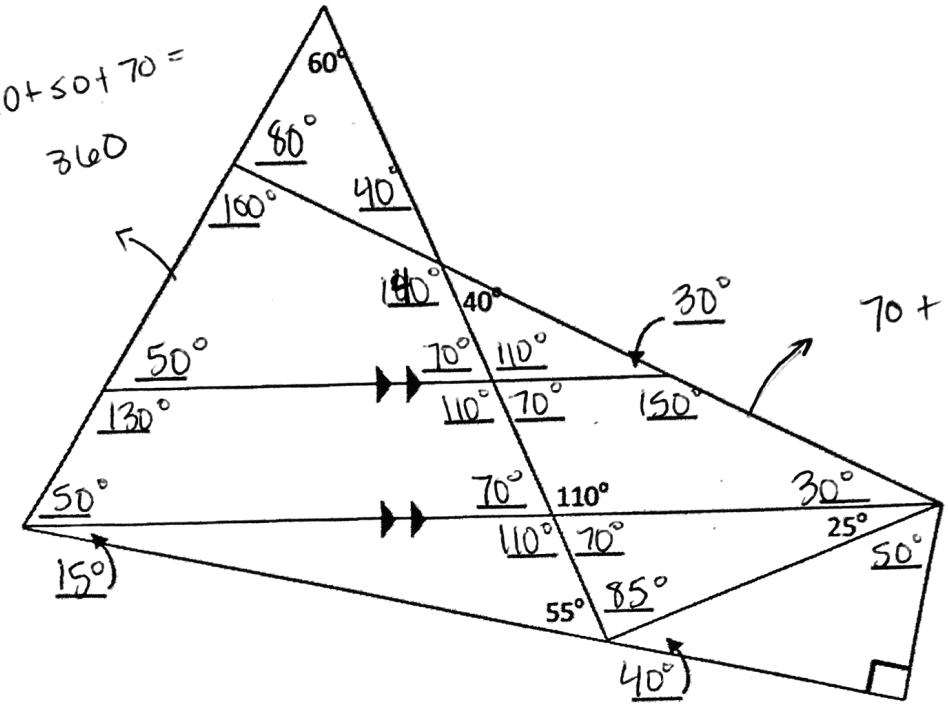
$y = x - 8$

Angle Challenge

Using everything you've learned in geometry so far, find ALL the angle measures!!!

100 + 140 + 50 + 70 = 360

70 + 150 + 110 + 30 = 360

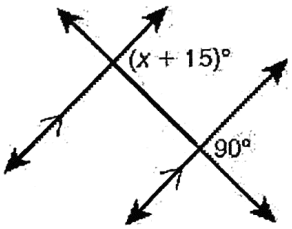


Find *x*.

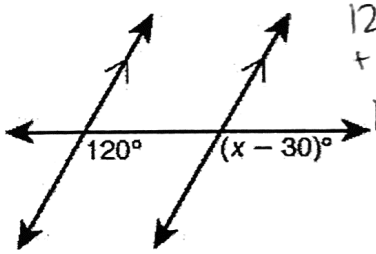
22.

$x + 15 = 90$

$x = 75$



23.



$120 = x - 30$

$+30 \quad +30$

$150 = x$

Exponent Rules Review (not on quiz, just good practice)

1. $\dfrac{4a^5z^2}{8z^5a^{-2}}$

$\dfrac{a^7}{2z^3}$

2. $\left(\dfrac{j^5k^3}{j^6}\right)^3$

$\left(\dfrac{k^3}{j}\right)^3 = \dfrac{k^9}{j^3}$

3. $(-2)^3 \cdot 4^{-2}$

$\dfrac{-8}{16} = -\dfrac{1}{2}$

4. $(m^2n)^5 \cdot (m^{-5})^4$

$m^{10}n^5 \cdot m^{-20} = \dfrac{n^5}{m^{10}}$

5. $(5x^4)^3x^{-12}$

$125x^{12}x^{-12}$

$= 125$

6. $\dfrac{a^5b^5c^{-3}d^{-1}}{e^{-3}f^2g^{-6}}$

$\dfrac{a^5b^5e^3g^6}{c^3df^2}$