

1. Use the diagram to the right to list a pair of ...

a) Corresponding Angles

$$\angle 1 + \angle 5, \angle 2 + \angle 6$$

$$\angle 3 + \angle 7, \angle 4 + \angle 8$$

c) Alternate Exterior Angles

$$\angle 1 + \angle 8, \angle 3 + \angle 6$$

e) Vertical Angles

$$\angle 1 + \angle 4, \angle 2 + \angle 3$$

$$\angle 5 + \angle 8, \angle 6 + \angle 7$$

b) Alternate Interior Angles

$$\angle 2 + \angle 7, \angle 4 + \angle 5$$

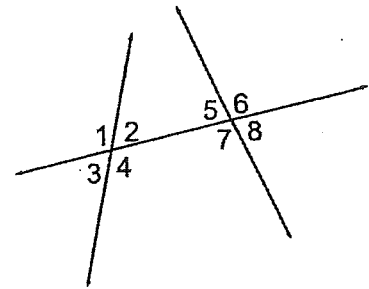
d) Same Side Interior Angles

$$\angle 2 + \angle 5, \angle 4 + \angle 7$$

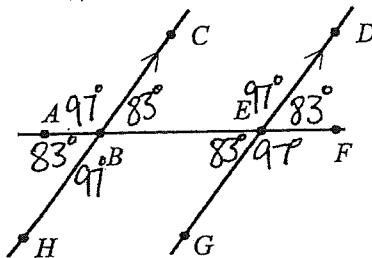
f) Linear Pair

$$\angle 1 + \angle 2, \angle 1 + \angle 3, \angle 3 + \angle 4, \angle 2 + \angle 4$$

$$\angle 5 + \angle 6, \angle 6 + \angle 8, \angle 8 + \angle 7, \angle 7 + \angle 5$$



2. Label the measure of each of the 8 angles in the picture if $m\angle AEG = 83^\circ$.



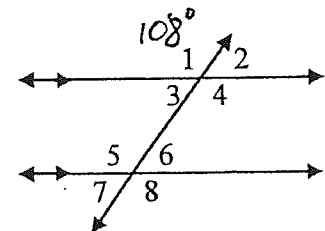
3. If $m\angle 1 = 108^\circ$, which of the following statement is FALSE?

[A] $m\angle 5 = 108^\circ$

[B] $m\angle 6 = 72^\circ$

[C] $m\angle 3 + m\angle 5 = 180^\circ$

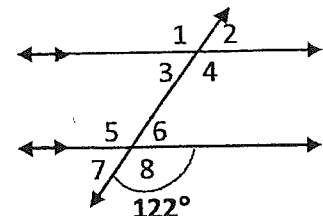
[D] $m\angle 1 = m\angle 7$



4. In the figure to the right, the $m\angle 8 = 122^\circ$.

Find the $m\angle 2$. Give a detailed explanation with geometric reasoning for each step.

$\angle 8$ and $\angle 4$ are corresponding angles
 so $m\angle 4 = 122^\circ$. $\angle 4$ and $\angle 2$ are linear
 pair 'so $m\angle 2 = 58^\circ$



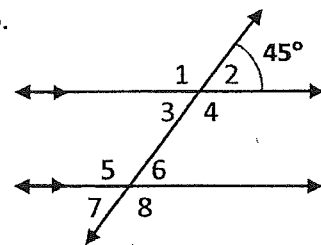
5. In the figure to the right, the $m\angle 2 = 45^\circ$.

Find the $m\angle 5$. Give a detailed explanation with geometric reasoning for each step.

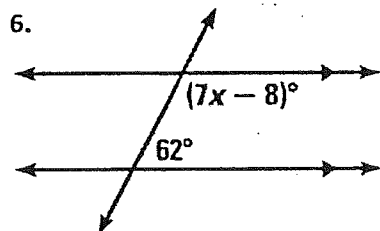
$\angle 2$ & $\angle 4$ are linear pair, so $m\angle 4 = 135^\circ$.

$\angle 4$ & $\angle 5$ are alternate interior angles

so $m\angle 5 = 135^\circ$



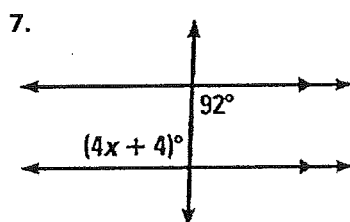
Find the value of x . Justify your answer. (Example: $x = \underline{\hspace{1cm}}$ When the lines are parallel, the $\underline{\hspace{1cm}}$ angles are $\underline{\hspace{1cm}}$.)



$$\begin{aligned} 62 + 7x - 8 &= 180 \\ 7x + 54 &= 180 \\ -54 &-54 \\ 7x &= 126 \end{aligned}$$

$$\boxed{x = 18}$$

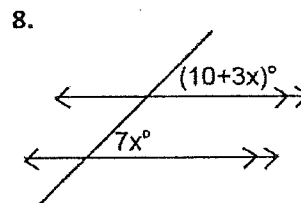
CIA are supplementary



$$\begin{aligned} 92 &= 4x + 4 \\ -4 &-4 \\ 88 &= 4x \\ \frac{88}{4} &= \frac{4x}{4} \end{aligned}$$

$$\boxed{22 = x}$$

When the lines are $\parallel$,
AIA are $\cong$

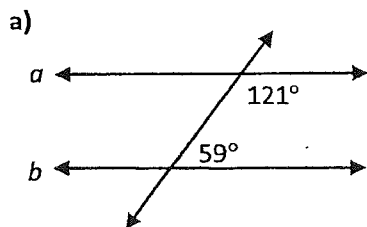


$$\begin{aligned} 7x &= 10 + 3x \\ -3x &-3x \\ 4x &= 10 \\ \frac{4x}{4} &= \frac{10}{4} \end{aligned}$$

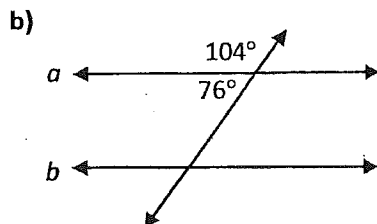
$$\boxed{x = 2.5}$$

When the lines are $\parallel$,
the CA are $\cong$

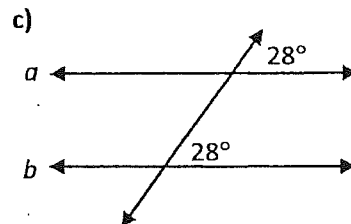
9. Determine if lines a and b are parallel. Explain why/why not.



Yes, SCIA are
supplementary

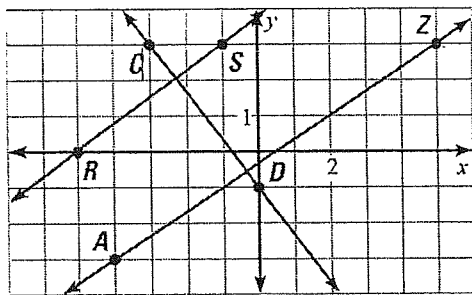


Unsure, Linear Pairs
are not enough
information



Yes, CA are
congruent

10. Find the slope of each line. Which lines, if any, are parallel ($\parallel$) or perpendicular ($\perp$).



Slopes:

$$\overline{CD} = -4/3$$

$$\overline{RS} = 3/4$$

$$\overline{AZ} = 2/3 (= 6/9)$$

Answer to the question:

$$\overleftrightarrow{CD} \perp \overleftrightarrow{RS}$$

For questions 16 and 17, write the equation of the line given the following information.

11. Find the equation of a line that passes through P(-4, -5) and is parallel to $y = 6x - 7$

$$\begin{aligned} y &= mx + b \\ -5 &= 6(-4) + b \\ b &= 19 \end{aligned}$$

$$y = 6x + 19$$

12. Find the equation of a line that passes through P(-4, 2) and is perpendicular to $y = -2x + 4$

$$\perp m = \frac{1}{2}$$

$$\begin{aligned} y &= mx + b \\ 2 &= \frac{1}{2}(-4) + b \\ 2 &= -2 + b \\ b &= 4 \end{aligned}$$

$$y = \frac{1}{2}x + 4$$

13. Danielle says that the line perpendicular to $y = 5x + 9$ passing through the point (10, 4) is $y = -5x + 54$.

a) What is Danielle's error?

New slope should be $-\frac{1}{5}$, not -5.

b) Find the correct equation of the perpendicular line.

$$\begin{aligned} y &= mx + b \\ 4 &= -\frac{1}{5}(10) + b \\ 4 &= -2 + b \\ b &= 6 \end{aligned}$$

$$y = -\frac{1}{5}x + 6$$

14. Decide which lines below (if any) are parallel and which are perpendicular. Explain your reasoning. (2 points)

line a: $y = -7x + 1$

line b: $y = 7x$

line c: $y = \frac{1}{7}x + 2$

line d: $y = \frac{3}{4}x - 9$

line e: $y = \frac{3}{4}x + 5$

Any Parallel Lines?

$$d \parallel e$$

Any Perpendicular Lines?

$$a \perp c$$