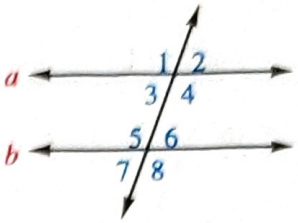
Class Exercises

Short Answer

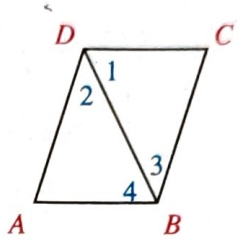
$a \parallel b$ **State the postulate or theorem that justifies each conclusion.**



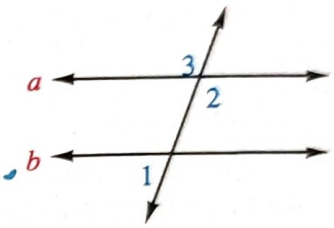
1. $\angle 1 \cong \angle 8$
2. $\angle 4 \cong \angle 5$
3. $m\angle 4 + m\angle 6 = 180$
4. $\angle 3 \cong \angle 7$
5. $\angle 2 \cong \angle 7$
6. $\angle 6 \cong \angle 3$

Sample Exercises

$a \parallel b$, $m\angle 1 = 65$



7. Find $m\angle 5$.
8. Find $m\angle 8$.
9. Find $m\angle 6$.
10. If $\overline{AB} \parallel \overline{CD}$, name a pair of congruent angles.
11. If $\overline{AD} \parallel \overline{BC}$, name two pairs of supplementary angles.



Discussion

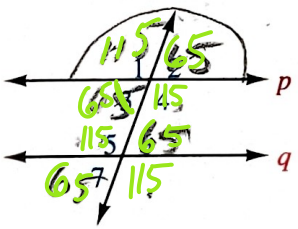
12. If $a \parallel b$, give a convincing argument that $\angle 1$ and $\angle 3$ are supplementary.
13. If $a \parallel b$, give a convincing argument that $\angle 1$ and $\angle 2$ are supplementary.

Exercises

180−65
115

A

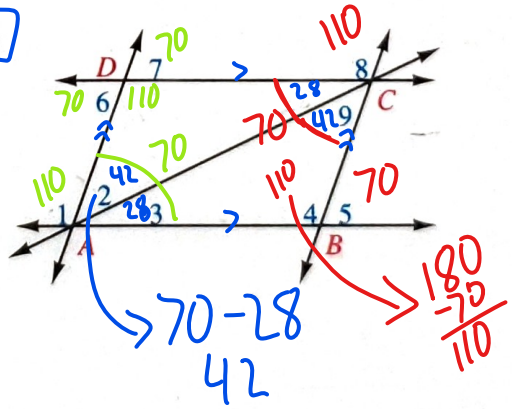
$p \parallel q$, $m\angle 3 = 65$



1. Find $m\angle 1$.
2. Find $m\angle 2$.
3. Find $m\angle 4$.
4. Find $m\angle 5$.
5. Find $m\angle 6$.
6. Find $m\angle 7$.

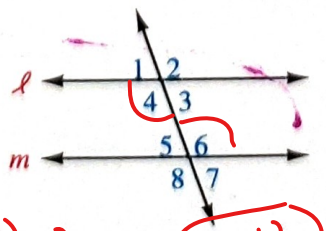
82 98
110 70

$\overline{AB} \parallel \overline{CD}$, $\overline{AD} \parallel \overline{BC}$, $m\angle ADC = 110$, $m\angle ACD = 28$



7. Find $m\angle 1$.
8. Find $m\angle 2$.
9. Find $m\angle 3$.
10. Find $m\angle 4$.
11. Find $m\angle 5$.
12. Find $m\angle 6$.
13. Find $m\angle 7$.
14. Find $m\angle 8$.
15. Find $m\angle 9$.
16. Name all the angles congruent to $\angle 1$.
17. Name all the angles congruent to $\angle 3$.
18. Name all the angles supplementary to $\angle 1$.
19. Name all the angles supplementary to $\angle 3$.

$l \parallel m$ **Find** x.



20. $m\angle 1 = 3x + 7$, $m\angle 5 = 5x - 3$
21. $m\angle 4 = 8x + 12$, $m\angle 6 = 2x + 54$
22. $m\angle 3 = 4x + 7$, $m\angle 6 = 2x + 23$
23. $m\angle 4 = x^2 + 5x$, $m\angle 8 = 9x + 12$
24. $m\angle 2 = x^2 - 6x$, $m\angle 5 = 7x + 220$

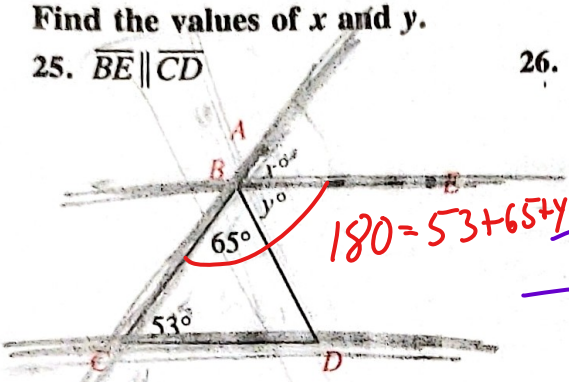
20) $3x+7 = 5x-3$
$-3x \quad +3 \quad -3x \quad +3$
$10 = 2x$
$5 = x$

23) $x^2+5x = 9x+12$
$x^2+5x-9x-12=0$
$x^2-4x-12=0$ $(x+2)(x-6)=0$

$x+2=0$ $x=-2$
$x-6=0$ $x=6$

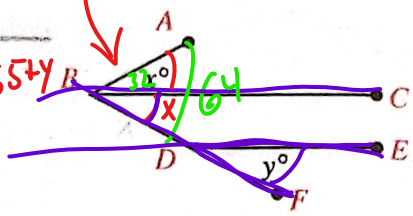
Find the values of x and y.

25. $\overline{BE} \parallel \overline{CD}$



180 = 53 + 65 + y

26. $\overline{BC}$ bisects $\angle ABD$. $m\angle ABD = 64$, $\overline{BC} \parallel \overline{DE}$



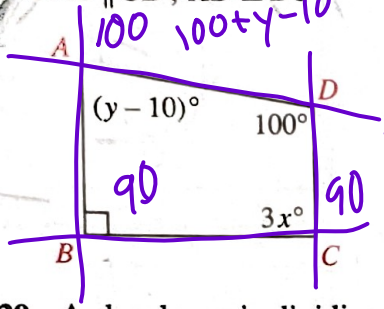
x + x = 64

$\frac{2x}{2} = \frac{64}{2}$

x = 32

y = 32 B/C corr.

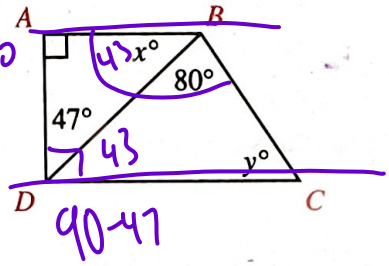
27. $\overline{AB} \parallel \overline{CD}$, $\overline{AB} \perp \overline{BC}$



100 + y − 10 = 180

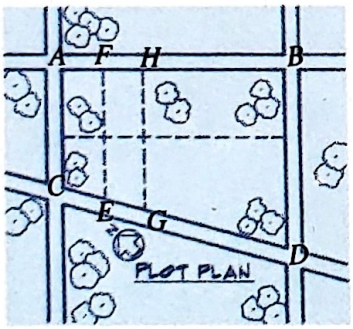
3x + 90 = 180

28. $\overline{AB} \parallel \overline{CD}$, $\overline{AB} \perp \overline{AD}$



90 − 47

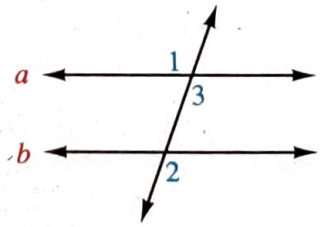
29. A developer is dividing a plot of land into lots so that the sides of each lot are parallel to the street AC. If $m\angle ACD = 105$, find $m\angle CEF$ and $m\angle CGH$.



30. Complete the proof of Theorem 3.3.

Given: $a \parallel b$

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



Proof	Statements	Reasons
	1. $a \parallel b$	1. ___
	2. $\angle 1 \cong \angle 3$	2. ___
	3. $\angle 3 \cong \angle 2$	3. ___
	4. $\angle 1 \cong \angle 2$	4. ___

31. Write a two-column proof for Theorem 3.4.

Given: $a \parallel b$

Prove: $\angle 1$ and $\angle 2$ are supplementary.

Plan First show that $\angle 2 \cong \angle 3$. Then use the fact that $\angle 1$ is the supplement of $\angle 3$.