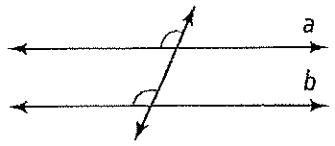
Proving Lines are Parallel

Name _____

Block_____ **Date**_____

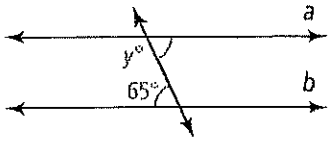
1. State the theorem or postulate that proves a // b.



Theorem/Postulate:

CORRESPONDING

2. State the theorem or postulate that proves a // b.



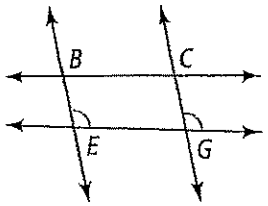
Theorem/Postulate:

ALTERNATE INTERIOR

What is the value of y in order for a ∥ b?

$y =$ 115

3. Which lines or segments are parallel? State the theorem or postulate that justifies your answer.

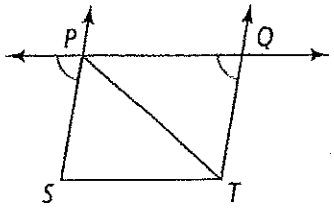


$\overline{BE} \parallel \overline{CG}$

Theorem/Postulate:

CORRESPONDING

4. Which lines or segments are parallel? State the theorem or postulate that justifies your answer.

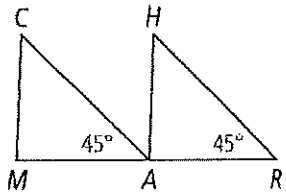


$\overline{PS} \parallel \overline{QT}$

Theorem/Postulate:

CORRESPONDING

5. Which lines or segments are parallel? State the theorem or postulate that justifies your answer.

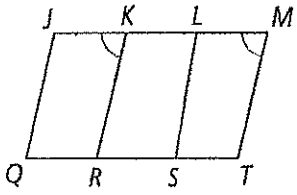


$\overline{CA} \parallel \overline{HR}$

Theorem/Postulate:

CORRESPONDING

6. Which lines or segments are parallel? State the theorem or postulate that justifies your answer.

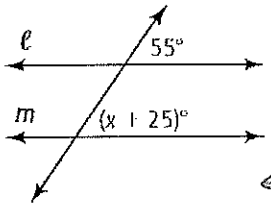


$\overline{KR} \parallel \overline{MT}$

Theorem/Postulate:

CORRESPONDING

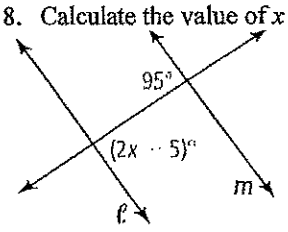
7. Calculate the value of x for which $\ell \parallel m$



$55 = x + 25$

$x =$ 30

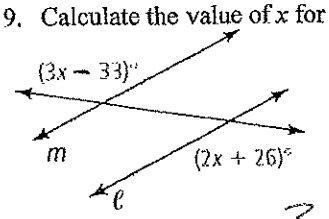
8. Calculate the value of x for which $\ell \parallel m$



$2x - 5 = 95$

$x =$ 50

9. Calculate the value of x for which $\ell \parallel m$

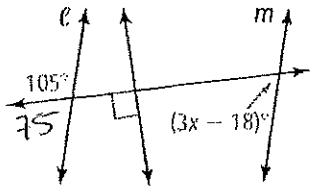


$3x - 33 = 2x + 26$

$x = 59$

$x =$ 59

10. Calculate the value of x for which $\ell \parallel m$



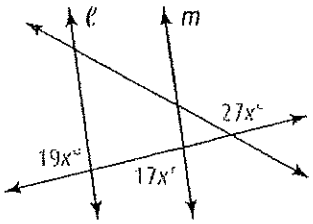
$3x - 18 + 105 = 180$

$3x + 87 = 180$

$3x = 93$

$x =$ 31

11. Calculate the value of x for which $\ell \parallel m$

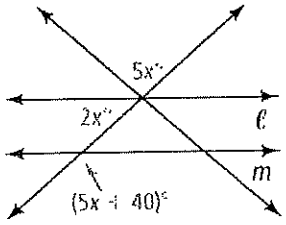


$19x + 17x = 180$

$36x = 180$

$x =$ 5

12. Calculate the value of x for which $\ell \parallel m$



$2x + 5x + 40 = 180$

$7x = 140$

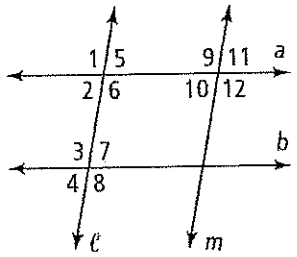
$x =$ 20

Using the sketch to the right, determine which lines, if any, are parallel. Justify each conclusion with a theorem or postulate. IF lines cannot be determined parallel, explain why.

13. $\angle 2$ is supplementary to $\angle 3$

$a \parallel b$

Why? CONSECUTIVE INTERIOR



14. $\angle 1 \cong \angle 3$

$a \parallel b$

Why? CORRESPONDING

15. $\angle 9 \cong \angle 12$

CANNOT BE DETERMINED $\parallel$

Why? VERTICAL $\angle$s DO NOT PROVE $\parallel$ LINES

16. $\angle 6$ is supplementary to $\angle 7$

$a \parallel b$

Why? CONSECUTIVE INTERIOR

17. $\angle 1 \cong \angle 8$

$a \parallel b$

Why? ALTERNATE EXTERIOR

18. $\angle 8 \cong \angle 6$

$a \parallel b$

Why? CORRESPONDING

19. $\angle 2 \cong \angle 10$

$\ell \parallel m$

Why? CORRESPONDING

20. $\angle 5 \cong \angle 10$

$\ell \parallel m$

Why? ALTERNATE INTERIOR

21. $m\angle 7 = 65°$ and $m\angle 9 = 115°$

$a \parallel b$

$\ell \parallel m$

Why? CORRESPONDING / CONSEC INT

22. $\angle 11 \cong \angle 7$

$a \parallel b$

$\ell \quad m$

Why? CORRESPONDING