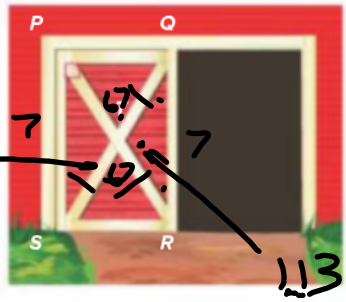
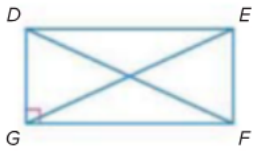
Example 1 **FARMING** An X-brace on a rectangular barn door is both decorative and functional. It helps to prevent the door from warping over time. If $ST = 3\frac{13}{16}$ feet, $PS = 7$ feet, and $m\angle PTQ = 67$, find each measure.

1. QR 7
2. SQ $\frac{61}{8}$ $7\frac{5}{8}$ $3\frac{13}{16}$
3. $m\angle TQR$ $33\frac{1}{2}$
4. $m\angle TSR$ $56\frac{1}{2}$



Example 2 **ALGEBRA** Quadrilateral $DEFG$ is a rectangle.

5. If $FD = 3x - 7$ and $EG = x + 5$, find EG.
6. If $m\angle EFD = 2x - 3$ and $m\angle DFG = x + 12$, find $m\angle EFD$.



$48 + 13$ $\frac{61}{1\frac{5}{8}}$ · 2

Example 4 **COORDINATE GEOMETRY** Graph each quadrilateral with the given vertices. Determine whether the figure is a rectangle. Justify your answer using the indicated formula.

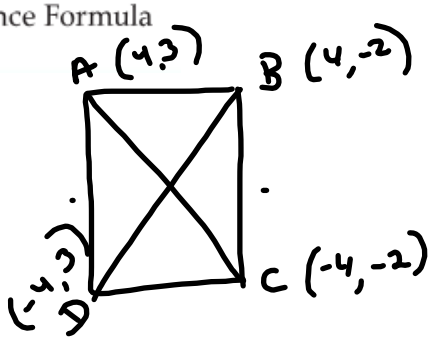
8. $W(-4, 3)$, $X(1, 5)$, $Y(3, 1)$, $Z(-2, -2)$; Slope Formula

9. $A(4, 3)$, $B(4, -2)$, $C(-4, -2)$, $D(-4, 3)$; Distance Formula

Slope

AB $\frac{-2-3}{4-4}$ = und CD $\frac{-2-3}{-4--4}$ = und

AD $\frac{3--3}{4--4} = 0$ BC $\frac{-2--2}{4--4} = 0$



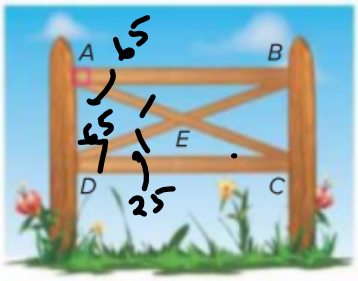
$AC = \sqrt{(4--4)^2+(3--2)^2} = \sqrt{89}$

$BD = \sqrt{(4--4)^2+(2-3)^2} = \sqrt{89}$

Practice and Problem Solving

Extra Practice is on page

mple 1 **FENCING** X-braces are also used to provide support in rectangular fencing. If $AB = 6$ feet, $AD = 2$ feet, and $m\angle DAE = 65$, find each measure.



10. BC = 50

11. DB $c^2 = a^2 + b^2$, $c^2 = 2^2 + 6^2$, $c^2 = 4 + 36$, $c = \sqrt{40}$

12. $m\angle CEB$

13. $m\angle EDC$

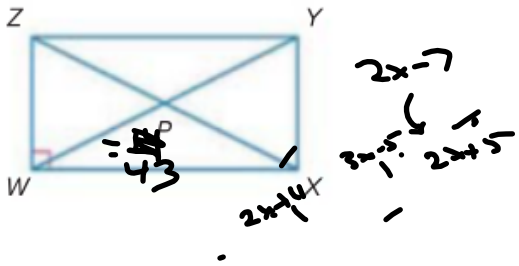
Example 2

MP **REGULARITY** Quadrilateral $WXYZ$

14. If $ZY = 2x + 3$ and $WX = x + 4$,

15. If $PY = 3x - 5$ and $WP = 2x + 11$

16. If $m\angle ZYW = 2x - 7$ and $m\angle WY$ find $m\angle ZYW$.



$2x+11 = 3x-5$

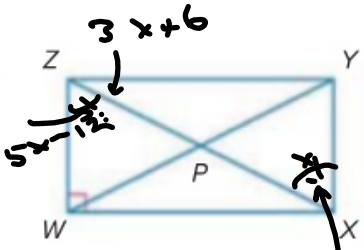
$16 = x$

$2(16)+11 = 43$

17. If $ZP = 4x - 9$ and $PY = 2x + 5$, find ZX.

18. If $m\angle XZY = 3x + 6$ and $m\angle XZW = 5x - 12$, find $m\angle YXZ$.

19. If $m\angle ZXW = x - 11$ and $m\angle WZX = x - 9$, find $m\angle ZXY$.



$8x - 6 = 90$

$8x = 96$

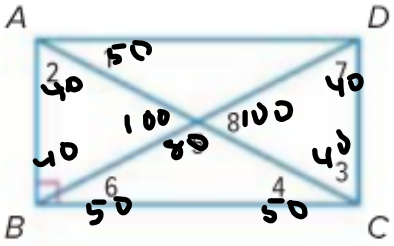
$x = 12$

$5(12) - 12 = 48$

Quadrilateral $ABCD$ is a rectangle. Find each measure if $m\angle 2 = 40$.

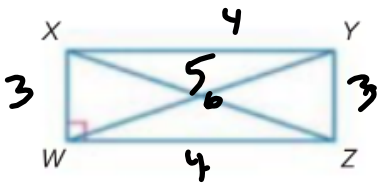
26. $m\angle 1$ **27.** $m\angle 7$ **28.** $m\angle 3$

29 $m\angle 5$ **30.** $m\angle 6$ **31.** $m\angle 8$



ALGEBRA Quadrilateral $WXYZ$ is a rectangle.

39. If $XW = 3$, $WZ = 4$, and $XZ = b$, find YW.



$b^2 = 3^2 + 4^2$

$b^2 = 9 + 16$

$\sqrt{b^2} = \sqrt{25}$

$b = 5$

3	6	9
4	8	12
5	10	15
5	12	13