NAME KEY DATE _____ PERIOD _____

6.4 & 6.5 Practice

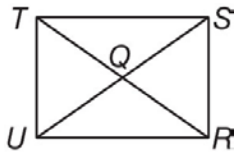
Example 1: Quadrilateral *RUTS* below is a rectangle. If *US* = 6*x* + 3 and *RT* = 7*x* – 2, find *x*.

The diagonals of a rectangle are congruent, so *US* = *RT*.

$6x + 3 = 7x - 2$

$3 = x - 2$

$5 = x$



Example 2: Quadrilateral *RUTS* below is a rectangle. If $m\angle STR = 8x + 3$ and $m\angle UTR = 16x - 9$, find $m\angle STR$.

$\angle UTS$ is a right angle, so $m\angle STR + m\angle UTR = 90^\circ$.

$8x + 3 + 16x - 9 = 90$

$24x - 6 = 90$

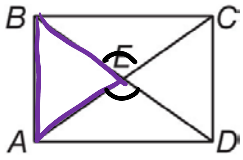
$24x = 96$

$x = 4$

$m\angle STR = 8x + 3 = 8(4) + 3$ or 35°

You try!!

Quadrilateral *ABCD* is a rectangle.



1. If *AE* = 36 and *CE* = 2*x* – 4, find *x*.

$2x - 4 = 36$

$2x = 40$

$x = 20$

2. If *BE* = 6*y* + 2 and *CE* = 4*y* + 6, find *y*.

$6y + 2 = 4y + 6$

$2y = 4$

$y = 2$

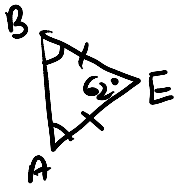
3. If *BC* = 24 and *AD* = 5*y* – 1, find *y*.

$5y - 1 = 24$

$5y = 25$

$y = 5$

4. If $m\angle BEA = 62^\circ$, find $m\angle BAC$.



$180 - 62 = 118^\circ$

$\frac{118}{2} = 59^\circ$

5. If $m\angle AED = (12x)^\circ$ and $m\angle BEC = (10x + 20)^\circ$, find $m\angle AED$.

vertical ∠s

$12x = 10x + 20$

$2x = 20$

$x = 10^\circ$

$m\angle AED = 12(10) = 120^\circ$

6. If *BD* = 8*y* – 4 and *AC* = 7*y* + 3, find *BD*.

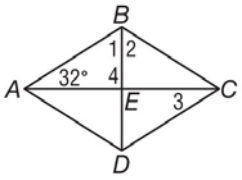
$8y - 4 = 7y + 3$

$y = 7$

$BD = 8(7) - 4 = 56 - 4 = 52$

NAME _____ DATE _____ PERIOD _____

Example: In rhombus *ABCD*, $m\angle BAC = 32^o$. Find the measure of each numbered angle.

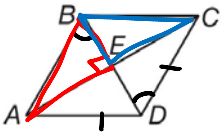


ABCD is a rhombus, so the diagonals are perpendicular and $\triangle ABE$ is a right triangle. Thus $m\angle 4 = 90^o$ and $m\angle 1 = 90 - 32$ or 58^o. The diagonals in a rhombus bisect the vertex angles, so $m\angle 1 = m\angle 2$. Thus, $m\angle 2 = 58^o$.

A rhombus is a parallelogram, so both pairs of opposite sides are parallel. $\angle BAC$ and $\angle 3$ are alternate interior angles for parallel lines, so $m\angle 3 = 32^o$.

You try!!

Quadrilateral *ABCD* is a rhombus. Find each value or measure.



1. If $m\angle ABD = 60^o$, find $m\angle BDC$.

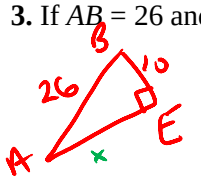
60°

if ll lines, then alt. int. $\angle$s $\cong$

2. If $AE = 8$, find AC.

16u

3. If $AB = 26$ and $BD = 20$, find AE.



$2 = 10$

$10^2 + x^2 = 26^2$

$100 + x^2 = 676$

$x^2 = 576$

24u

4. Find $m\angle CEB$.

90°

diagonals $\perp$

5. If $m\angle CBD = 58^o$, find $m\angle ACB$.

180
−90
−58

32°

6. If $AE = 3x - 1$ and $AC = 16$, find x.

$2(3x-1) = 16$

$6x - 2 = 16$

$6x = 18$

$x = 3$u

7. If $AD = 2x + 4$ and $CD = 4x - 4$, find x.

$4x - 4 = 2x + 4$

$2x = 8$

$x = 4$u

8. If $m\angle BAE = (3x + 12)^o$ and $m\angle DAE = (5x - 2)^o$, find x.

$5x - 2 = 3x + 12$

$2x = 14$

$x = 7°$

Diagonals bisect opp. $\angle$s

Quadrilateral *QRST* is a square. Find each value or measure.

1. If $m\angle TQR = (8n + 8)^o$, find n.

$8n + 8 = 90$

$8n = 82$

$n = 10.25°$