

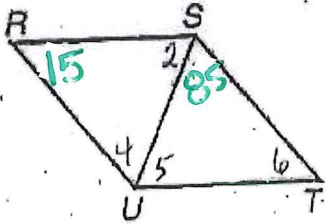
Name: Key

Hour: _____

Quadrilateral Practice

Directions: In #1-5 find all of the missing angles.

Parallelogram



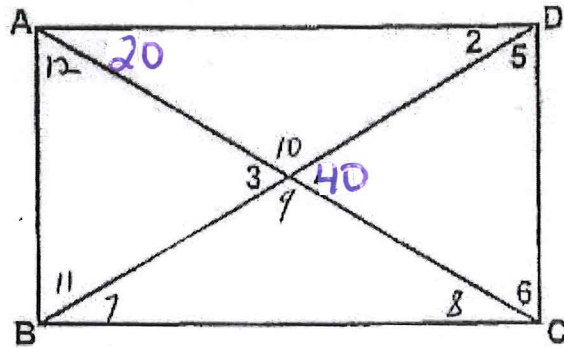
1. Given that $m\angle 1 = 15^\circ$ and $m\angle 3 = 85^\circ$ for the parallelogram, find the following angles:

$m\angle 2 = \underline{80^\circ}$ $m\angle 4 = \underline{85^\circ}$
 $m\angle 5 = \underline{80^\circ}$ $m\angle 6 = \underline{15^\circ}$

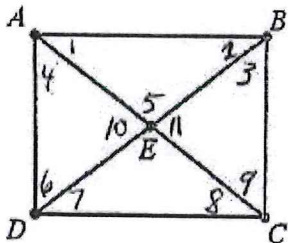
2. Given that $m\angle 1 = 20^\circ$ and $m\angle 4 = 40^\circ$ for the rectangle, find the following angles:

$m\angle 2 = \underline{20^\circ}$ $m\angle 3 = \underline{40^\circ}$
 $m\angle 5 = \underline{70^\circ}$ $m\angle 6 = \underline{70^\circ}$
 $m\angle 7 = \underline{20^\circ}$ $m\angle 8 = \underline{20^\circ}$
 $m\angle 9 = \underline{120^\circ}$ $m\angle 10 = \underline{120^\circ}$
 $m\angle 11 = \underline{70^\circ}$

Rectangle



Square



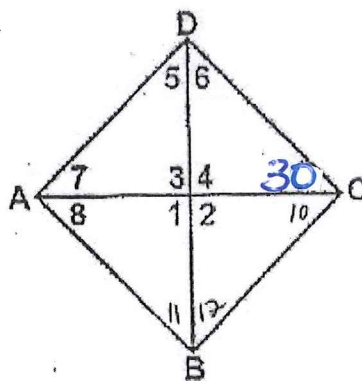
3. Given that the shape is a square, find the following angles:

$m\angle 1 = \underline{45^\circ}$ $m\angle 3 = \underline{45^\circ}$
 $m\angle 2 = \underline{45^\circ}$ $m\angle 5 = \underline{90^\circ}$
 $m\angle 4 = \underline{45^\circ}$ $m\angle 7 = \underline{45^\circ}$
 $m\angle 6 = \underline{45^\circ}$ $m\angle 9 = \underline{45^\circ}$
 $m\angle 8 = \underline{45^\circ}$ $m\angle 10 = \underline{90^\circ}$
 $m\angle 10 = \underline{90^\circ}$ $m\angle 11 = \underline{90^\circ}$

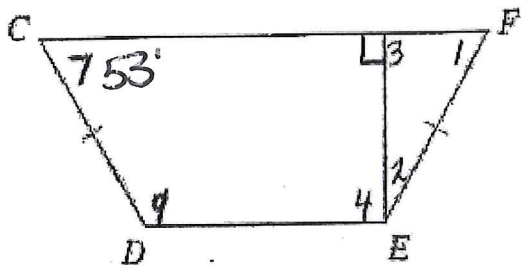
Rhombus

4. Given the $m\angle 9 = 30^\circ$ for the rhombus, find the following angles:

| | |
|---|---|
| $m\angle 1 =$ <u>90°</u> | $m\angle 2 =$ <u>90°</u> |
| $m\angle 3 =$ <u>90°</u> | $m\angle 4 =$ <u>90°</u> |
| $m\angle 5 =$ <u>60°</u> | $m\angle 6 =$ <u>60°</u> |
| $m\angle 7 =$ <u>30°</u> | $m\angle 8 =$ <u>30°</u> |
| $m\angle 10 =$ <u>30°</u> | $m\angle 11 =$ <u>60°</u> |
| $m\angle 12 =$ <u>60°</u> | |



Isosceles Trapezoid



5. Given $m\angle 7 = 53^\circ$ for the isosceles trapezoid, find the following angle measures:

| |
|---|
| $m\angle 1 =$ <u>53°</u> |
| $m\angle 2 =$ <u>37°</u> |
| $m\angle 3 =$ <u>90°</u> |
| $m\angle 4 =$ <u>90°</u> |
| $m\angle 9 =$ <u>127°</u> |

Identifying Properties: In problems 6-13 below, list the letters of the quadrilaterals that the properties hold true for:

- a) Parallelogram
 b) Rectangle
 c) Rhombus
 d) Square

6. Diagonals bisect each other.

a, b, c, d

8. All sides are congruent.

c, d

10. Opposite angles are congruent.

a, b, c, d

12. Diagonals are perpendicular.

c, d

7. All \angle 's are right \angle 's

b, d

9. Opposite sides are congruent.

a, b, c, d

11. Diagonals are congruent.

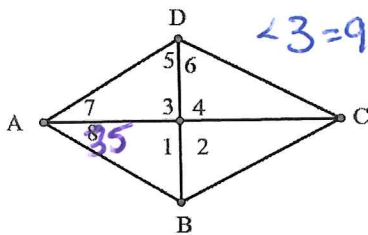
b, d

13. Opposite sides are parallel.

a, b, c, d

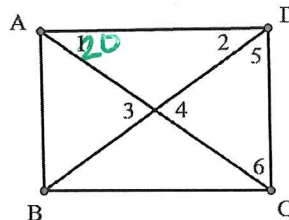
Directions: Find the missing angle measure or variable. Show all work! Justify your set ups!

14. ABCD is a rhombus. If $m\angle 8 = 35^\circ$, Find the measure of $\angle 1, \angle 2, \angle 3, \angle 4, \angle 5, \angle 6, \angle 7$.



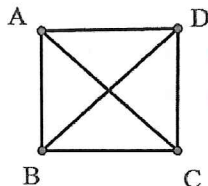
$\angle 1 = 90^\circ - \angle 8 = 55^\circ$
 $\angle 2 = 90^\circ - \angle 8 = 55^\circ$
 $\angle 3 = 90^\circ - \angle 8 = 55^\circ$
 $\angle 4 = 90^\circ - \angle 8 = 55^\circ$
 $\angle 5 = 35^\circ$
 $\angle 6 = 35^\circ$
 $\angle 7 = 35^\circ$

15. ABCD is a rectangle. If $m\angle 1 = 20^\circ$ find the measures of $\angle 2, \angle 3, \angle 4, \angle 5, \angle 6$.



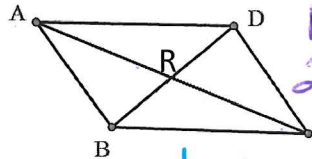
$\angle 2 = 20^\circ$
 $\angle 3 = 40^\circ$
 $\angle 4 = 40^\circ$
 $\angle 5 = 70^\circ$
 $\angle 6 = 70^\circ$

16. ABCD is a square. If $AC = 16$ in and $BD = 2x + 4$, find x .



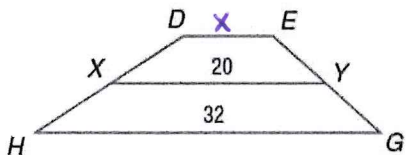
$AC = BD$ (diagonals are congruent)
 $16 = 2x + 4$
 $12 = 2x$
 $6 = x$

17. ABCD is a parallelogram. $AR = 2x + 3$, $RC = 35$, $BR = 4y - 10$, $DR = 90$. Find x and y .



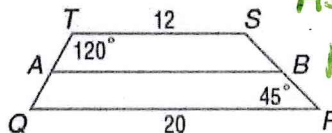
$AR = RC$ (diagonals bisect each other)
 $2x + 3 = 35$
 $2x = 32$
 $x = 16$
 $BR = DR$ (diagonals bisect each other)
 $4y - 10 = 90$
 $4y = 100$
 $y = 25$

18. For trapezoid $DEGH$, X and Y are midpoints of the legs. Find DE .



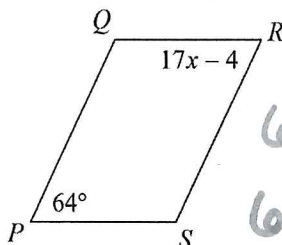
$XY = \frac{1}{2}(DE + HG)$
 $2 \cdot 20 = \frac{1}{2}(x + 32)$
 $40 = x + 32$
 $x = 8$

19. For trapezoid $QRST$, A and B are midpoints of the legs. Find AB , $m\angle Q$, and $m\angle S$.



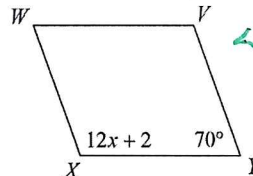
$AB = \frac{1}{2}(TS + QR)$
 $AB = \frac{1}{2}(12 + 20)$
 $AB = 16$
 $\angle Q + 120 = 180$
 $\angle Q = 60^\circ$
 $\angle S + 45 = 180$
 $\angle S = 135^\circ$

20. Find x in the parallelogram.



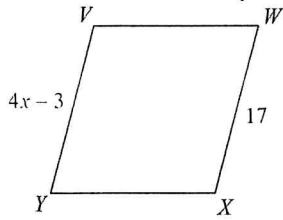
$\angle P \cong \angle R$ (opposite angles are congruent)
 $64 = 17x - 4$
 $68 = 17x$
 $4 = x$

21. Find x in the parallelogram.



$\angle X + \angle Y = 180$ (consecutive interior angles are supplementary)
 $12x + 2 + 70 = 180$
 $12x + 72 = 180$
 $12x = 108$
 $x = 9$

22. Find x in the parallelogram.



$VY \cong WX$ opp sides are \cong
 $4x-3=17$
 $4x=20$
 $x=5$

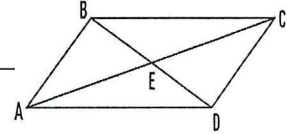
23. Each side of a quadrilateral is 12 cm long. Which 2 of the following *must* also describe this quadrilateral?

- I. Square (sides of equal length and 90° angles)
- II. Rhombus (sides of equal length)
- III. Rectangle (90° angles)
- IV. Parallelogram (opposite sides parallel)

- A. I and II only
- B. I and III only
- C. II and III only
- D. II and IV only
- E. III and IV only

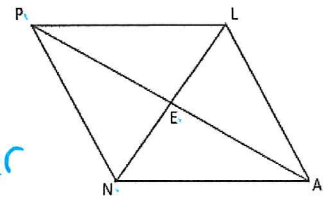
24. Write geometric statement along with the correct justification for parallelogram ABCD.

- a.) $AB \cong DC$ because: opp sides are \cong
- b.) $\angle ABC \cong \angle ADC$ because: opp angles are \cong
- c.) $EA \cong EC$ because: diag bisect each other
- d.) $BC \parallel AD$ because: opp sides are \parallel
- e.) $\angle BAD \cong \angle BCD$ because: opp angles are \cong
- f.) $\angle BEA \cong \angle CED$ because: vertical \angle s are \cong
- g.) $\angle BCA \cong \angle CAD$ because: alt int \angle s are \cong
- h.) $\angle BCD + \angle CDA = 180$ because: consec \angle s are suppl.



25. Use rhombus PLAN to write the correct geometric statement (if needed) and justification.

- a.) $AL \cong PL$ because: 4 \cong sides in a rhombus
- b.) $\angle NEA = 90$ because: diag are \perp
- c.) $EA \cong EP$ because: diag bisect each other
- d.) $NA \parallel PL$ because: opp sides are \parallel
- e.) $\angle NPE \cong \angle LPA$ because: diag bisect the angle
- f.) $\angle PLA \cong \angle PNA$ because: opp \angle s are \cong
- g.) $\angle LNA \cong \angle LNP$ because: diag bisect the angles
- h.) $\angle LEA = 90$ because: diag are \perp



Many answers!

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