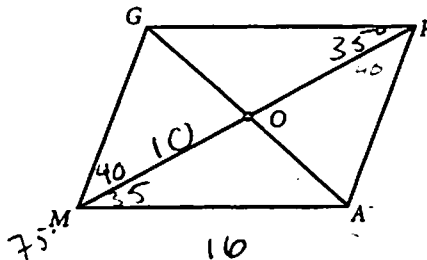


4.3
Practice
3.2 Properties of Quadrilaterals

Use your conjectures about quadrilaterals from Activities 1-4 in the textbook to find the indicated measurements.

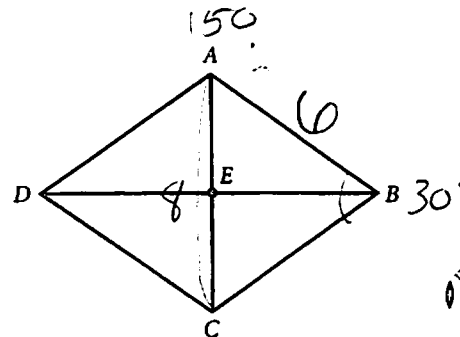
In parallelogram $GRAM$, $MO = 10$, $MA = 16$, $m\angle GMA = 75^\circ$, and $m\angle MRG = 35^\circ$.

- | | | | |
|------------------|-----------|------------------|------------|
| 1. $m\angle GRA$ | <u>75</u> | 2. $m\angle MGR$ | <u>105</u> |
| 3. RO | <u>10</u> | 4. GR | <u>16</u> |
| 5. $m\angle RMA$ | <u>35</u> | 6. $m\angle GMO$ | <u>40</u> |



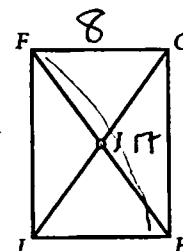
In rhombus $ABCD$, $AB = 6$, $AC = 8$, and $m\angle ABC = 30^\circ$.

- | | | | |
|-------------------|------------|-------------------|-----------|
| 7. $m\angle ADC$ | <u>30</u> | 8. $m\angle AEB$ | <u>90</u> |
| 9. BC | <u>6</u> | 10. AE | <u>4</u> |
| 11. $m\angle BAD$ | <u>150</u> | 12. $m\angle CED$ | <u>90</u> |
| 13. CD | <u>6</u> | 14. EC | <u>4</u> |



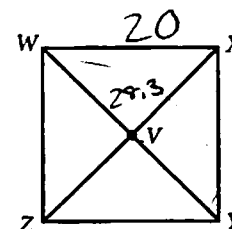
In rectangle $FGHI$, $FG = 8$, $FI = 15$, and $FH = 17$.

- | | | | |
|----------|------------|-------------------|------------|
| 15. HI | <u>8</u> | 16. GH | <u>15</u> |
| 17. GI | <u>17</u> | 18. FJ | <u>8.5</u> |
| 19. GJ | <u>8.5</u> | 20. $m\angle FIH$ | <u>90</u> |



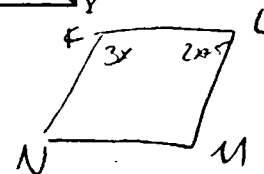
In square $WXYZ$, $WX = 20$ and $WY \approx 28.3$.

- | | | | |
|-------------------|-----------|-------------------|-------------|
| 21. XY | <u>20</u> | 22. XZ | <u>28.3</u> |
| 23. $m\angle WVX$ | <u>90</u> | 24. $m\angle XYV$ | <u>45</u> |



25. In parallelogram $KLMN$, $m\angle K = (3x)^\circ$ and $m\angle L = (2x + 5)^\circ$. Find x and the measure of each angle in $KLMN$.

$x = 35$



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$$3x + 2x + 5 = 180$$

$$5x = 175$$

$$x = 35$$

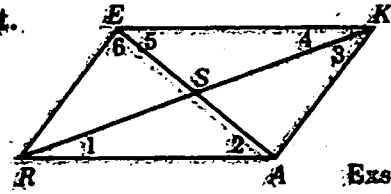
NAME _____

DATE _____

SCORE _____

Ways to Prove that Quadrilaterals are Parallelograms

Exercises 1-14 refer to $\square AKER$. Complete each statement.



Exs. 1-14

1. If $RS = 12$, $RK = \underline{24}$.

2. If $RK = 28$, $SK = \underline{14}$.

3. If $m\angle ARE = 53$, $m\angle AKE = \underline{53}$.

4. If $m\angle 1 = 20$, $m\angle 4 = \underline{20}$.

5. If $m\angle RAK = 130$, $m\angle ARE = \underline{50}$.

6. If $m\angle 5 = 20$ and $m\angle 6 = 33$, $m\angle 2 = \underline{20}$.

Find the value of x or y .

$3x - 2 = 25$
 $3x = 27$

$2x + 5 = 17$
 $2x = 12$

7. If $RE = 3x - 2$ and $AK = 25$, $x = \underline{9}$.

8. If $ES = 2x + 5$ and $SA = 17$, $x = \underline{6}$.

9. If $EK = 4x - 3$ and $RA = 53$, $x = \underline{14}$.

10. If $RK = 12x$ and $RS = 7x - 3$, $x = \underline{3}$.

11. If $m\angle 2 = (2y - 9)$ and $m\angle 5 = (y + 14)$, $y = \underline{20}$.

$4x - 3 = 53$
 $4x = 56$
 $x = 14$
 $6x = 7x - 3$
 $-x = -3$
 $x = 3$
 $2y - 9 = y + 14$
 $y = 20$

12. If $m\angle ASK = (3y + 6)$ and $m\angle ESK = 135$, $y = \underline{13}$.

$3y + 6 + 135 = 180$
 $3y = 39$

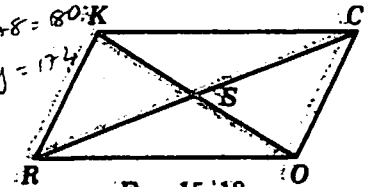
13. If $m\angle RAK = 150$ and $m\angle KER = 6y$, $y = \underline{25}$.

$150 = 6y$

14. If $m\angle ARE = (3y + 15)$ and $m\angle REK = (y - 7)$, $y = \underline{43}$.

$3y + 15 + y - 7 = 180$
 $4y + 8 = 180$
 $4y = 172$

State the principal definition or theorem that enables you to deduce, from the information given, that quadrilateral $RCOR$ is a parallelogram.



Exs. 15-18

15. $\overline{OR} \cong \overline{CK}$; $\overline{OC} \cong \overline{RK}$ Opp sides \cong

16. $\overline{RK} \cong \overline{OC}$; $\overline{RK} \parallel \overline{OC}$ one side \cong and \parallel

17. $\overline{OR} \parallel \overline{CK}$; $\overline{OC} \parallel \overline{RK}$ opp sides \parallel

18. $RS = \frac{1}{2}RC$; $SO = \frac{1}{2}KO$ Diagonals bisect each other

