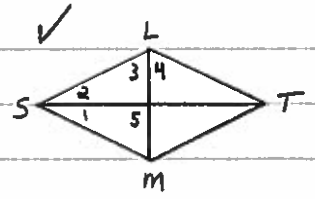
A#43 p. 187 WE #1-19 Key

(1-10 → Table)
(11-19 → Reasons)

WE #1-10

Property	▱	Rectangle	Rhombus	Square
1. Opp. sides are ∥	✓	✓	✓	✓
2. Opp. sides are ≅	✓	✓	✓	✓
3. Opp. ∠s are ≅	✓	✓	✓	✓
4. A diagonal forms 2 ≅ △s	✓ (SSS ≅ Int)	✓	✓	✓
6. Diagonals bisect each other	✓	✓	✓	✓
6. Diagonals are ≅		✓		✓
7. Diagonals are ⊥			✓	✓
8. A diagonal bisects 2 ∠s			✓	✓
9. All ∠s are Rt. ∠s		✓		✓
10. All sides are ≅			✓	✓

For #11-13, SLTM is a rhombus.



11. ① m∠1 = 25° [Given]
② ∠1 ≅ ∠2 [Diagonals of a Rhombus bisect 2 ∠s]
m∠2 = 25° [Def. of ≅ ∠s]
③ $\overline{ST} \perp \overline{LM}$ [Diagonals of a Rhombus are ⊥]
m∠5 = 90° [Def. of ⊥]
④ ∠2 is Comp. to ∠3 [Acute ∠s of a Rt △ are Comp.]
m∠3 + 25 = 90° [Def. of Comp. ∠s]
m∠3 = 65°
⑤ ∠3 ≅ ∠4 [Diagonals of a Rhombus bisect 2 ∠s]
m∠4 = 65° [Def. of ≅ ∠s]

12. ① ∠1 ≅ ∠2 [Diagonals of a Rhombus bisect 2 ∠s]
② m∠1 = 3x + 8, m∠2 = 11x − 24 [Given]
3x + 8 = 11x − 24 [Def. of ≅ ∠s]
8x = 32
x = 4

13. ① ∠1 ≅ ∠2 [Diagonals of a Rhombus bisect 2 ∠s]
② ∠2 is comp to ∠3 [Acute ∠s of a Rt △ are comp]
③ ∠1 is comp to ∠3 [≅ complements converse]
④ m∠1 = 3x + 1, m∠3 = 7x − 11 [Given]
⑤ 3x + 1 + 7x − 11 = 90 [Def. of comp. ∠s]
→ 10x = 100
x = 10

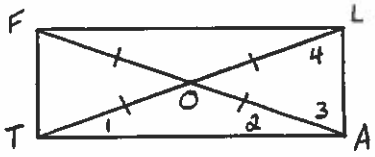
For #11-13:
① $\overline{ST}$ bisects ∠LSM and ∠LTM
$\overline{LM}$ bisects ∠SLT and ∠SMT
[Diagonals of a Rhombus bisect 2 ∠s]
② $\overline{ST} \perp \overline{LM}$
[Diagonals of a Rhombus are ⊥]

A#43 Continued

Key

p.187 WE #14-19

For #14-16, FLAT is a rectangle.



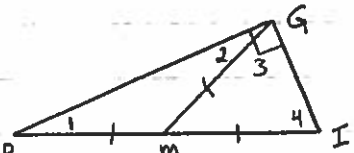
14. ① $m\angle 1 = 18°$ [Given]
② $m\angle 2 = 18°$ [Base $\angle$s Thm / Def. of $\cong$ $\angle$s] see #5
③ $m\angle 2 + m\angle 3 = 90°$ [$\perp$ Ext sides → adj. comp. $\angle$s] see #2
$m\angle 3 = 72°$
④ $m\angle 4 = 72°$ [Base $\angle$s Thm / Def. of $\cong$ $\angle$s] see #5

15. ① $FA = 27$ [Given]
② $TL = 27$ [Def. of $\cong$ seg] see #1
③ $LO = \frac{1}{2}TL$ [midpt thm] see #3
$LO = 13\frac{1}{2}$

16. ① $TO = 4y + 7$, $FA = 30$ [Given]
② $TL = 30$ [Def. of $\cong$ seg] see #1
③ $TO = \frac{1}{2}TL$ [midpt thm] see #3
$4y + 7 = \frac{1}{2}(30)$
$4y = 8$
$y = 2$

For #14-16:
① $\overline{FA} \cong \overline{TL}$ [Diagonals of a Rectangle are $\cong$]
② $\angle A, \angle L, \angle F, \angle T$ are Rt $\angle$s [Def. of Rectangle]
③ O is the midpt of $\overline{FA}$ and $\overline{TL}$ [Diagonals of a $\square$ bisect each other]
④ $OT = OA = OL = OF$ [The midpt of the hypotenuse of a Right $\triangle$ is equidistant from the 3 vertices]
⑤ $\overline{OT} \cong \overline{OA} \cong \overline{OL} \cong \overline{OF}$ [Def. of $\cong$ seg.]

For #17-19, $\overline{GM}$ is a median of Rt $\triangle$ IRG.



17. ① $m\angle 1 = 32°$ [Given]
② $m\angle 2 = 32°$ [Base $\angle$s Thm / Def. of $\cong$ $\angle$s] see #3
③ $m\angle 2 + m\angle 3 = 90°$ [Ext sides $\perp$ → adj. comp. $\angle$s]
$m\angle 3 = 58°$
④ $m\angle 4 = 58°$ [Base $\angle$s Thm / Def. of $\cong$ $\angle$s] see #3

For #17-19:
① M is the midpt of $\overline{RI}$ [Def. of median]
② $MR = MG = MI$ [The midpt of the hypotenuse of a right $\triangle$ is equidistant from the three vertices.]
③ $\overline{MR} \cong \overline{MG} \cong \overline{MI}$ [Def. of $\cong$ seg.]

18. ① $m\angle 4 = 7x - 3$, $m\angle 3 = 6(x+1)$ [Given]
② $7x - 3 = 6(x+1)$ [Base $\angle$s Thm / Def. of $\cong$ $\angle$s] see #3
$7x - 3 = 6x + 6$
$x = 9$

19. ① $GM = 2y + 3$, $RI = 12 - 8y$ [Given]
② $MI = \frac{1}{2}RI$ [midpt Thm] see #1
③ $GM = \frac{1}{2}RI$ [Trans Prop of =] see #2
$2y + 3 = \frac{1}{2}(12 - 8y)$
$2y + 3 = 6 - 4y$
$6y = 3$
$y = \frac{1}{2}$