Answers for Lesson 6-3, pp. 324–326 Exercises

1. 5
2. \( x = 3, y = 4 \)
3. \( x = 1.6, y = 1 \)
4. \( \frac{5}{3} \)
5. 5
6. 13

7. Yes; both pairs of opp. sides are \( \cong \).
8. No; the quad. could be a kite.
9. Yes; both pairs of opp. \( \triangle \) are \( \cong \).
10. It remains a \( \square \) because the shelves and connecting pieces remain \( \parallel \).
11. A quad. is a \( \square \) if and only if opp. sides are \( \cong \) (6-1 and 6-5); opp. \( \triangle \) are \( \cong \) (6-2 and 6-6); diags. bis. each other (6-3 and 6-7).

b. Div. Prop. of Eq.
c. \( AD \parallel BC, AB \parallel DC \)
d. If same-side int. \( \angle \) are suppl., the lines are \( \parallel \).
e. Def. of \( \square \)

13. Draw diagonals \( \overline{TX} \) and \( \overline{WY} \) intersecting at \( R \).
   a. \( TW \cong YX \) (Given)
b. \( \angle TWR \cong \angle XYG \) (Alt. Int. \( \triangle \) \( \cong \))
c. \( \angle WTR \cong \angle YXR \) (Alt. Int. \( \triangle \) \( \cong \))
d. \( \triangle TWR \cong \triangle YXR \) (ASA)
e. \( WR \cong YR \) (CPCTC)
f. \( TR \cong XR \) (CPCTC)
g. The diagonals bisect each other. (def. of bis.)
h. \( TWXY \) is a \( \square \) (Thm. 6-7).
Answers for Lesson 6-3, pp. 324–326 Exercises (cont.)

14. $x = 15, y = 25$
15. $x = 3, y = 11$
16. $c = 8, a = 24$
17. $k = 9, m = 23.4$
18. D
19. Answers may vary. Sample:

![Diagram of parallelogram]

20. $\angle JKN \cong \angle LMN$ (given), $\angle LKN \cong \angle JMN$ (given), and $MK \cong MK$, so $\triangle JKM \cong \triangle LMK$ by ASA. $JK \cong ML$ and $MJ \cong LK$ (CPCTC), so $JKLM$ is a $\square$ because opp. sides are $\cong$ (Thm. 6-5).

21. $\triangle TRS \cong \triangle RTW$ (given), so $ST \cong RW$ and $SR \cong TW$. $RSTW$ is a $\square$ because opp. sides are $\cong$ (Thm. 6-5).

22. (4, 0)  
23. (6, 6)  
24. (−2, 4)

25. You can show a quad. is a $\square$ if both pairs of opp. sides are $\parallel$ or $\cong$, if both pairs of opp. $\triangle$ are $\cong$, if diagonals bisect each other, if all consecutive $\triangle$ are suppl., or if one pair of opp. sides is both $\parallel$ and $\cong$.

26. $\frac{1}{6}$
27. Answers may vary. Sample:
   
   1. $\overline{AB} \cong \overline{CD}, \overline{AC} \cong \overline{BD}$ (Given)
   
   2. $\overline{ACDB}$ is a $\Box$. (If opp. sides of a quad. are $\cong$, then it is a $\Box$.)
   
   3. $M$ is the midpoint of $\overline{BC}$. (The diag. of a $\Box$ bisect each other.)
   
   4. $\overline{AM}$ is a median. (Def. of a median)

28. $G(-4, 1), H(1, 3)$