### Answers for Lesson 6-2, pp. 315–318 Exercises

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<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1.</td>
<td>127</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>76</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>100</td>
<td>6.</td>
</tr>
<tr>
<td>7.</td>
<td>3; 10, 20, 20</td>
<td>8.</td>
</tr>
<tr>
<td>9.</td>
<td>20</td>
<td>10.</td>
</tr>
<tr>
<td>11.</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>$12; m \angle Q = m \angle S = 36, m \angle P = m \angle R = 144$</td>
<td>13.</td>
</tr>
<tr>
<td>14.</td>
<td>$x = 6, y = 8$</td>
<td>15.</td>
</tr>
<tr>
<td>16.</td>
<td>$x = 7, y = 10$</td>
<td>17.</td>
</tr>
<tr>
<td>18.</td>
<td>$x = 3, y = 4$</td>
<td>19.</td>
</tr>
<tr>
<td>20.</td>
<td>Pick 4 equally spaced lines on the paper. Place the paper so that the first button is on the first line and the last button is on the fourth line. Draw a line between the first and last buttons. The remaining buttons should be placed where the drawn line crosses the 2 $\parallel$ lines on the paper.</td>
<td></td>
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<tr>
<td>21.</td>
<td>3</td>
<td>22.</td>
</tr>
<tr>
<td>23.</td>
<td>6</td>
<td>24.</td>
</tr>
<tr>
<td>25.</td>
<td>9</td>
<td>26.</td>
</tr>
<tr>
<td>27.</td>
<td>2.25</td>
<td>28.</td>
</tr>
<tr>
<td>29.</td>
<td>4.5</td>
<td>30.</td>
</tr>
<tr>
<td>31.</td>
<td>$BC = AD = 14.5$ in.; $AB = CD = 9.5$ in.</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>$BC = AD = 33$ cm; $AB = CD = 13$ cm</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>The opp. $\triangle$ are $\cong$, so they have $=$ measures. Consecutive $\triangle$ are suppl., so their sum is 180.</td>
<td></td>
</tr>
</tbody>
</table>
Answers for Lesson 6-2, pp. 315–318 Exercises (cont.)

35. a. $\overline{DC}$
b. $\overline{AD}$
c. $\equiv$
d. Reflexive
e. ASA
f. CPCTC

36. $MNPQ$ is a \[。

**Given**

- $\angle M$ and $\angle N$ are suppl.
- $\angle N$ and $\angle P$ are suppl.
- $\angle P$ and $\angle Q$ are suppl.

Consec. $\angle$ in a \[ are suppl.

- $\angle M \equiv \angle P$
- $\angle N \equiv \angle Q$

Two $\angle$ suppl. to the same $\angle$ are $\equiv$.

37. 38, 32, 110
38. 81, 28, 71
39. 95, 37, 37

40. The lines going across may not be $\parallel$ since they are not marked as $\parallel$.

41. 18, 162

42. Answers may vary. Sample:

1. $LENS$ and $NGTH$ are \[s. (Given)
2. $\angle ELS \equiv \angle ENS$ and $\angle GTH \equiv \angle GNH$ (Opp. $\angle$ of a \[ are $\equiv$.)
3. $\angle ENS \equiv \angle GNH$ (Vertical $\angle$ are $\equiv$.)
4. $\angle ELS \equiv \angle GTH$ (Trans. Prop. of $\equiv$)
43. Answers may vary. Sample: In \( \triangle LENS \) and \( \triangle NGTH \), \( \overline{GT} \parallel \overline{EH} \) and \( \overline{EH} \parallel \overline{LS} \) by the def. of a \( \square \). Therefore \( \overline{LS} \parallel \overline{GT} \) because if 2 lines are \( \parallel \) to the same line then they are \( \parallel \) to each other.

44. Answers may vary. Sample:
   1. \( \triangle LENS \) and \( \triangle NGTH \) are \( \square \). (Given)
   2. \( \angle GTH \cong \angle GNH \) (Opp. \( \angle \) of a \( \square \) are \( \cong \).)
   3. \( \angle ENS \cong \angle GNH \) (Vertical \( \angle \) are \( \cong \).)
   4. \( \angle LEN \) is supp. to \( \angle ENS \) (Consec. \( \angle \) in a \( \square \) are suppl.)
   5. \( \angle ENS \cong \angle GTH \) (Trans. Prop. of \( \cong \))
   6. \( \angle E \) is suppl. to \( \angle T \) (Suppl. of \( \cong \) \( \angle \) are suppl.)

45. \( x = 12, y = 4 \)

46. \( x = 0, y = 5 \)

47. \( x = 9, y = 6 \)

48. Answers may vary. Sample: In \( \square RSTW \) and \( \square XYPZ \), \( \angle R \cong \angle T \) and \( \angle X \cong \angle T \) because opp. \( \angle \) of a \( \square \) are \( \cong \). Then \( \angle R \cong \angle X \) by the Trans. Prop. of \( \cong \).

49. In \( \square RSTW \) and \( \square XYPZ \), \( \overline{XY} \parallel \overline{TW} \) and \( \overline{RS} \parallel \overline{TW} \) by the def. of a \( \square \). Then \( \overline{XY} \parallel \overline{RS} \) because if 2 lines are \( \parallel \) to the same line, then they are \( \parallel \) to each other.

50. \( AB \parallel CD \) and \( AD \parallel BC \) by def. of \( \square \). \( \angle 2 \cong \angle 3 \) and \( \angle 1 \cong \angle 4 \) by alt. int. \( \angle \). \( \angle 1 \cong \angle 2 \) by def. of \( \angle \) bisect., so \( \angle 3 \cong \angle 4 \) by Trans. Prop. of \( \cong \).

51. a. Answers may vary. Check students’ work.

   b. No; the corr. sides can be \( \cong \) but the \( \angle \) may not be.
Answers for Lesson 6-2, pp. 315–318 Exercises (cont.)

52. a. \( \overrightarrow{AB} \parallel \overrightarrow{CD} \parallel \overrightarrow{EF} \) and \( \overline{AC} \cong \overline{CE} \) (Given)
   b. \( ABGC \) and \( CDHE \) are parallelograms. (Def. of a \( \square \))
   c. \( \overline{BG} \cong \overline{AC} \) and \( \overline{DH} \cong \overline{CE} \) (Opp. sides of a \( \square \) are \( \cong \)).
   d. \( \overline{BG} \cong \overline{DH} \) (Trans. Prop. of \( \cong \))
   e. \( \overline{BG} \parallel \overline{DH} \) (If 2 lines are \( \parallel \) to the same line, then they are \( \parallel \) to each other.)
   f. \( \angle 2 \cong \angle 1, \angle 1 \cong \angle 4, \angle 4 \cong \angle 5, \) and \( \angle 3 \cong \angle 6 \) (If 2 lines are \( \parallel \), then the corr. \( \triangle \)s are \( \cong \)).
   g. \( \angle 2 \cong \angle 5 \) (Trans. Prop. of \( \cong \))
   h. \( \triangle BGD \cong \triangle DHF \) (AAS)
   i. \( \overline{BD} \cong \overline{DF} \) (CPCTC)

53. a. Given: 2 sides and the included \( \angle \) of \( \square ABCD \) are \( \cong \) to the corr. parts of \( \square WXYZ \). Let \( \angle A \cong \angle W, \overline{AB} \cong \overline{WX} \) and \( \overline{AD} \cong \overline{WZ} \). Since opp. \( \angle \)s of a \( \square \) are \( \cong \), \( \angle A \cong \angle C \) and \( \angle W \cong \angle Y \). Thus \( \angle C \cong \angle Y \) by the Trans. Prop. of \( \cong \). Similarly, opp. sides of a \( \square \) are \( \cong \), thus \( \overline{AB} \cong \overline{CD} \) and \( \overline{WX} \cong \overline{ZY} \). Using the Trans. Prop. of \( \cong \), \( \overline{CD} \cong \overline{ZY} \). The same can be done to prove \( \overline{BC} \cong \overline{XY} \). Since consec. \( \angle \)s of a \( \square \) are suppl., \( \angle A \) is suppl. to \( \angle D \), and \( \angle W \) is suppl. to \( \angle Z \). Suppls. of \( \cong \angle \)s are \( \cong \), thus \( \angle D \cong \angle Z \). The same can be done to prove \( \angle B \cong \angle X \). Therefore, since all corr. \( \angle \)s and sides are \( \cong \), \( \square ABCD \cong \square WXYZ \).
   b. No; opp. \( \angle \)s and sides are not necessarily \( \cong \) in a trapezoid.