**4.1 Extra Problems ANSWERS**

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| 1) 127o |
| 2) D |
| 3) B |

**4.2 Extra Problems ANSWERS**

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| 1) 118o |
| 2) $ $Scalene $AB=2\sqrt{5}, BC=5, AC= \sqrt{53}$ |
| 3) A |
| 4) Given: $∆XYZ≅∆XRQ$Prove: X is the midpoint of $\overbar{YR}$ |
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| 1. $∆XYZ≅∆XRQ$ | 1. Given |
| 2. $\overbar{XY} ≅ \overbar{XR}$ | 2. CPCTC |
| 3. X is the midpoint of $\overbar{YR}$ | 3. If a point divides a segment into 2 $≅segments, then it is a midpoint$ |

5)Given: $∆ABC≅∆XYZ$,$∠11 $supp. $∠B$, $∠12 $supp. $∠Y$Prove: $∠11≅∠12$

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| 1. $∆ABC≅∆XYZ$,$∠11 $supp. $∠B$, $∠12 $supp. $∠Y$ | 1. Given |
| 2. $∠B ≅ ∠Y$ | 2. CPCTC |
| 3. $∠11≅∠12$ | 3. If 2 $∠^{'}$s are supp. to $≅ ∠^{'}s ,$then they are $≅ $to eachother |

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**4.3 Extra Problems ANSWERS**

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| 1)  Given: $\overbar{CB} ≅ \overbar{ED}, \overbar{CA} ≅ \overbar{CE}, and$$$ \overbar{AC} bisects \overbar{BD}$$ Prove: $∆ABC≅∆ADE$ |   DB AEC |
| 1) $\overbar{CB} ≅ \overbar{ED}, \overbar{CA} ≅ \overbar{CE}, $$$and \overbar{AC} bisects \overbar{BD}$$ |  | 1) Given |
| 2) $\overbar{AB} ≅ \overbar{AD}$ |  | 2) If a point is a bisector, then it creates 2 congruent segments. |
| 3) $∆ABC≅∆ADE$ |  | 3) SSS (1, 1, 2) |
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| 2) Given: $\overbar{QR}≅ \overbar{SR}, \overbar{ST}≅ \overbar{QT}$ Prove: $∆QRT≅∆SRT$    | Q RT S  |
| 1) $\overbar{QR}≅ \overbar{SR}, \overbar{ST}≅ \overbar{QT}$ | 1) Given |
| 2) $\overbar{TR}≅ \overbar{TR}$ | 2) Reflexive |
| 3) $∆QRT≅∆SRT$ | 3) SSS (1, 1, 2) |
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| 3)  Given: R is the midpoint of $\overbar{QS} and \overbar{PT}.$ Prove: $PQ≅TS$ |  P SRQT |
| 1) R is the midpt of $\overbar{QS} and \overbar{PT}.$ | 1) Given |
| 2) $\overbar{PR}≅ \overbar{RT}, \overbar{QR}≅ \overbar{RS}$ | 2) If a segment is a midpoint, then it creates 2 congruent segments. |
| 3) $∠$PRQ and $∠$SRT are vertical | 3) Diagram (optional step) |
| 4) $∠PRQ≅ ∠SRT$ | 4) If two angles are vertical angles, then they are congruent. |
| 5) $∆PRQ≅∆TRS$ | 5) SAS (2, 4, 2) |
| 6) $PQ≅TS$ | 6) CPCTC |
| 4)  Given: $\overbar{BD}⊥ \overbar{AC}, \overbar{BD} bisects \overbar{AC}$ Prove: $∆ABD≅∆CBD$  |  |
| 1) $\overbar{BD}⊥ \overbar{AC}, \overbar{BD} bisects \overbar{AC}$ | 1) Given |
| 2) $∠$ADB and $∠$CDB are rt <’s | 2) If 2 seg are $⊥$, then they create rt $∠$’s. |
| 3) $∠ADB≅∠CDB$ | 3) If 2 $∠$s are rt $∠$s, then they are congruent. |
| 4) $\overbar{AD}≅ \overbar{DC}$ | 4) If a segment bisects a segment, then it creates two congruent segments. |
| 5) $\overbar{BD}≅ \overbar{BD}$ | 5) Reflexive Property |
| 6) $∆ABD≅∆CBD$ | 6) SAS (4, 3, 5) |
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| 5)  Given: $\overbar{YX}≅ \overbar{WZ}, \overbar{YX} || \overbar{ZW}$ Prove: $∆YXZ≅∆WZX$   | WXYZ  |
| 1) $\overbar{YX}≅ \overbar{WZ}, \overbar{YX} ∥\overbar{ZW}$ | 1) Given |
| 2) $\overbar{ZX}≅ \overbar{ZX}$ | 2) Reflexive Property |
| 3) $∠YXZ≅ <WZX$ | 3) If parallel lines, then alt int $∠$s are congruent. |
| 4) $∆YXZ≅∆WZX$ | 4) SAS (1, 3, 2) |
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**4.6 Extra Problems ANSWERS**

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| 1) 84o |
| 2) **Given:** $∠W ≅ ∠Y$, $\overbar{WV}≅ \overbar{ZY}$ **Prove:** $∆XWV≅∆XYZ$W | VZYX |
| 1) $∠W ≅ ∠Y$, $\overbar{WV}≅ \overbar{ZY}$ | 1) Given |
| 2) $\overbar{WX}≅ \overbar{XY}$ | 2) If , then  |
| 3) $∆XWV≅∆XYZ$ | 3) SAS (1, 1, 2) |
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| 3) 30o |   |
| 4) *x* = 25o, and *y* = 75o |  |
| 5) **Given:**  $\overbar{FG}≅ \overbar{FH}$ **Prove:** $∠G≅ ∠JHK$G | J KFH |
| 1) $\overbar{FG}≅ \overbar{FH}$ | 1) Given |
| 2) $∠G≅ ∠FHG$ | 2) If , then |
| 3) $∠JHK≅ ∠FHG$ | 3) If 2 $∠$s are vertical, then they are congruent. |
| 4) $∠G≅ ∠JHK$ | 4) Transitive |
|  |  |
| 6) 57 |
| 7) $x=25, y=10$ |
| 8) **Given:** $∠XVZ ≅ ∠XZV$, $\overbar{WV}≅ \overbar{ZY}$ **Prove:** $∠W≅∠Y$W | VZYX |
| 1) $∠XVZ ≅ ∠XZV$, $\overbar{WV}≅ \overbar{ZY}$ | 1) Given |
| 2) $\overbar{XV}≅ \overbar{XZ}$ | 2) If , then  |
| 3) <XVW is supp to $∠$XVZ <XZY is supp to $∠$XZV  | 3) If 2 $∠$s form a linear pair, then they are supp.  |
| 4) $∠XVW ≅ ∠XZY$ | 4) If two angles are supplements of congruent angles, then they are congruent. |
| 5) $∆XWV≅∆XYZ$ | 5) SAS (1, 4, 2) |
| 6) $∠W≅∠Y$ | 6) $CPCTC$ |
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| 9) **Given:** $∠1 ≅ ∠3$, $∠2 ≅ ∠4$ **Prove:** $\overbar{EH}≅ \overbar{FI}$ |  |
| 1) ∠1≅∠3,∠2≅∠4 |  | 1. Given
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| 2) HG ≅ GI |  | 1. If , then
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| 3) $∠$EGH ≅ $∠$FGI |  | 1. If two angles are vertical, then they are congruent.
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| $$4) ∆HGE≅∆IGF$$ |  | 1. ASA(1, 2, 3)
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| $$ 5) \overbar{EH}≅\overbar{FI}$$ |  | 1. CPCTC
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