2.7 Practice

Key

Name the definition, property, postulate or thereom illustrated.

1. $QA = QA$ Reflexive

2. If $AB \cong BC$ and $BC \cong CE$, then $AB \cong \overline{CE}$. Transitive

3. If Q is between P and R, then $PR = PQ + QR$. Segment addition

4. If $AB + BC = EF + FG$ and $AB + BC = AC$, then $EF + FG = AC$. Substitution

5. If $\overline{DE} = \overline{GH}$, then $\overline{GH} \cong \overline{DE}$. Symmetric

Write a ' proof for each of the following.

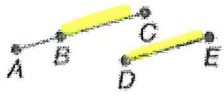
6. **Given:** C is the midpoint of $\overline{BD}$ and $\overline{AE}$.
Prove: $AB = DE$

1.5

1. C is midpt of $\overline{BD}$
C is midpt of $\overline{AE}$
2. $BC \cong CD$, $AC \cong CE$
3. $AC = AB + BC$, $CE = CD + DE$
4. $AB + BC = CD + DE$
5. $AB + BC = BC + DE$
6. $AB = DE$

1. given
2. def of midpt
3. seg. addition
4. Subst.
5. Subst.
6. Subtraction

7. **Given:** $BC = DE$
Prove: $AB + DE = AC$

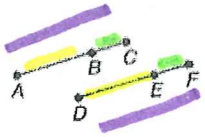


1. $BC = DE$
2. $AB + BC = AC$
3. $AB + DE = AC$

1. Given
2. Seg. addition
3. Substitution

Write a proof.

8. Given: $\overline{AB} \cong \overline{DE}$; $\overline{BC} \cong \overline{EF}$
Prove: $\overline{AC} \cong \overline{DF}$



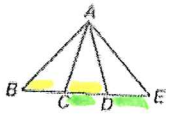
1. $AB \cong DE$, $BC \cong EF$ — 1. Given
2. $AC = AB + BC$, $DF = DE + EF$ — 2. Segment addition
3. $AC = AB + BC$, $DF = AB + BC$ — 3. Substitution
4. $AC \cong DF$ — 4. Substitution

9. Given: $\overline{SU} \cong \overline{LR}$, $\overline{TU} \cong \overline{LN}$
Prove: $\overline{ST} \cong \overline{NR}$

1. $SU \cong LR$, $TU \cong LN$ — 1. Given
2. $SU = ST + TU$, $LR = LN + NR$ — 2. Segment addition
3. $ST + TU = LN + NR$ — 3. Substitution
4. $ST + TU = TU + NR$, $-TU \quad -TU$ — 4. Substitution
5. $ST = NR$ — 5. Subtraction

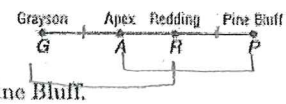
Write a proof.

10. Given: C is the midpoint of $\overline{BD}$.
D is the midpoint of $\overline{CE}$.
Prove: $\overline{BD} \cong \overline{CE}$



1. C is midpt BD, D is midpt of CE — 1. Given
2. $BC \cong CD$, $CD \cong DE$ — 2. def of midpt
3. $BD = BC + CD$, $CE = CD + DE$ — 3. segment addition
4. $BD = BC + CD$, $CE = BC + CD$ — 4. substitution
5. $BD \cong CE$ — 5. substitution

11. TRAVEL Refer to the figure. DeAnne knows that the distance from Grayson to Apex is the same as the distance from Redding to Pine Bluff. Prove that the distance from Grayson to Redding is equal to the distance from Apex to Pine Bluff.



Given: $GA \cong RP$
Prove: $GR \cong AP$

1. $GA = RP$ — 1. Given
2. $GA + AR = GR$, $AR + RP = AP$ — 2. Seg. addition
3. $GA + AR = GR$, $AR + GA = AP$ — 3. Substitution
4. $GR \cong AP$ — 4. Substitution