Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Two-Column Proofs

Multiple Choice
Identify the choice that best completes the statement or answers the question.

Complete the proof by giving the reason for the indicated step.
If $\frac{2}{3}x = 8 - 2x$, then $x = 3$.

Given: $\frac{2}{3}x = 8 - 2x$ Prove: $x = 3$

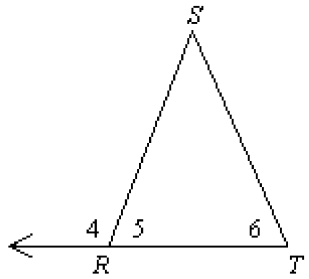
____ 1. a. $\frac{2}{3}x = 8 - 2x$
⇒ b. $2x = 3(8 - 2x)$
c. $2x = 24 - 6x$
d. $8x = 24$
e. $x = 3$

a. Multiplication property of equality
b. Division property of equality
c. Addition property of equality
d. Reflexive property of equality

____ 2. a. $\frac{2}{3}x = 8 - 2x$
b. $2x = 3(8 - 2x)$
c. $2x = 24 - 6x$
⇒ d. $8x = 24$
e. $x = 3$

a. Subtraction property of equality
b. Addition property of equality
c. Substitution property of equality
d. Symmetric property of equality

Copy and complete the proof. Give the reason for the indicated step.



If $m\angle 4 + m\angle 6 = 180°$, then $m\angle 5 = m\angle 6$.
Given: $m\angle 4 + m\angle 6 = 180°$ Prove: $m\angle 5 = m\angle 6$

____ 3. ⇒ a. $m\angle 4 + m\angle 6 = 180°$
b. $m\angle 4 + m\angle 5 = 180°$
c. $m\angle 4 + m\angle 5 = m\angle 4 + m\angle 6$
d. $m\angle 4 = m\angle 4$
e. ___?___ = ___?___

a. Symmetric property of equality
b. Addition property of equality
c. Given
d. Definition of linear angles

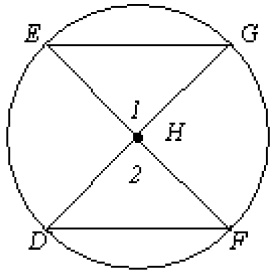
____ 4. a. $m\angle 4 + m\angle 6 = 180°$
b. $m\angle 4 + m\angle 5 = 180°$
⇒ c. $m\angle 4 + m\angle 5 = m\angle 4 + m\angle 6$
d. $m\angle 4 = m\angle 4$
e. ___?___ = ___?___

a. Reflexive property of equality
b. Given
c. Addition property of equality
d. Substitution property of equality

____ 5. a. $m\angle 4 + m\angle 6 = 180°$
b. $m\angle 4 + m\angle 5 = 180°$
c. $m\angle 4 + m\angle 5 = m\angle 4 + m\angle 6$
d. $m\angle 4 = m\angle 4$
⇒ e. ___?___ = ___?___

a. $m\angle 4 = m\angle 5$; Given
b. $m\angle 4 = m\angle 5 = m\angle 6$; Reflexive property of equality
c. $m\angle 4 = m\angle 6$; Given
d. $m\angle 5 = m\angle 6$; Subtraction Property of equality

Write a two-column proof. Give a reason for the indicated step.
Given: Circle H; arc $EG \cong$ arc DF
Prove: $\overline{EG} \cong \overline{DF}$



____ 6. Proof:

a. arc $EG \cong$ arc DF
⇒ b. $\overline{HE} \cong \overline{HD}$ and $\overline{HG} \cong \overline{HF}$
c. $\angle 1 \cong \angle 2$
d. $\Delta EHG \cong \Delta DHF$
e. $\overline{EG} \cong \overline{DF}$

a. Congruent arcs have congruent chords.
b. Chords are congruent.
c. All diameters of a circle are congruent.
d. All radii of a circle are congruent.

____ 7. Proof:

a. arc $EG \cong$ arc DF
b. $\overline{HE} \cong \overline{HD}$ and $\overline{HG} \cong \overline{HF}$
c. $\angle 1 \cong \angle 2$
⇒ d. $\Delta EHG \cong \Delta DHF$
e. $\overline{EG} \cong \overline{DF}$

a. SSS
b. SAS
c. AA
d. ASA

Two-Column Proofs
Answer Section

MULTIPLE CHOICE

1. A
2. B
3. C
4. D
5. D
6. D
7. B