

Name: _____

Triangle Proof Practice (Part 1)

Current "Reasons" List:

Addition Property of Equality
 Division Property of Equality
 Subtraction Property of Equality

CASTC
 Given
 Symmetric Property of Equality

CPCTC
 Simplify

Definition of Congruence
 Substitution
 Triangle Sum Theorem

Fill in the blanks on each proof.

1. Given: On $\triangle ABC$, $m\angle B = 34^\circ$ & $m\angle C = 58^\circ$
 Prove: $m\angle A = 88^\circ$

Statements	Reasons
A.	Given
$m\angle A + m\angle B + m\angle C = 180$	B.
C.	Substitution
$m\angle A + 92 = 180$	D.
E.	Subtraction Property of Equality

Create a proof using the Given information.

2. Given: On $\triangle DEF$, $m\angle D = 21^\circ$ & $m\angle E = 94^\circ$
 Prove: $m\angle F = 65^\circ$

Statements	Reasons

3. Given: $\triangle LMN \sim \triangle RST$, $m\angle L = 20^\circ$, $m\angle N = 130^\circ$
 & $m\angle S = 30^\circ$
 Prove: $m\angle M = 30^\circ$

Statements	Reasons
$\triangle LMN \sim \triangle RST$, $m\angle L = 20^\circ$, $m\angle N = 130^\circ$ & $m\angle S = 30^\circ$	A.
B.	CASTC
$m\angle M = m\angle S$	C.
D.	Substitution

4. Given: $\triangle BCD \sim \triangle EFG$, $m\angle E = 85^\circ$, $m\angle G = 20^\circ$
 & $m\angle C = 75^\circ$
 Prove: $m\angle D = 20^\circ$

Statements	Reasons

5. Given: $\triangle LMN \sim \triangle RST$, $m\angle L = 20^\circ$ &
 $m\angle T = 130^\circ$
 Prove: $m\angle S = 30^\circ$

Statements	Reasons
A.	Given
$\angle L \cong \angle R$	B.
$m\angle L = m\angle R$	C.
D.	Substitution
$m\angle R = 20^\circ$	E.
F.	Triangle Sum Theorem
$20 + m\angle S + 130 = 180$	G.
H.	Simplify
$m\angle S = 30^\circ$	I.

6. Given: $\triangle ABC \sim \triangle DEF$, $m\angle D = 30^\circ$ &
 $m\angle B = 90^\circ$
 Prove: $m\angle F = 60^\circ$

Statements	Reasons

Name: _____

7. Given: $\triangle ABC \cong \triangle DEF$, $m\angle A = 50^\circ$, $m\angle B = 30^\circ$
& $m\angle C = 100^\circ$
Prove: $m\angle D = 50^\circ$

Statements	Reasons
$\triangle ABC \cong \triangle DEF$ $m\angle A = 50^\circ$	A.
$\angle A \cong \angle D$	B.
C.	Definition of Congruence
$50^\circ = m\angle D$	D.
E.	Symmetric Property of Equality

8. Given: $\triangle GHK \cong \triangle LMN$, $m\angle G = 15^\circ$,
 $m\angle H = 123^\circ$ & $m\angle K = 42^\circ$
Prove: $m\angle N = 42^\circ$

Statements	Reasons

9. Given: $\triangle DEF \sim \triangle NPQ$, $m\angle E = 60^\circ$ &
 $m\angle N = 40^\circ$
Prove: $m\angle F = 80^\circ$

Statements	Reasons
A.	Given
$m\angle D + m\angle E + m\angle F = 180$	B.
C.	CASTC
$m\angle D = m\angle N$	D.
E.	Substitution
$40 + 60 + m\angle F = 180$	F.
G.	Simplify
$m\angle F = 80^\circ$	H.

10. Given: $\triangle CDE \sim \triangle FGH$, $m\angle F = 70^\circ$ &
 $m\angle D = 30^\circ$
Prove: $m\angle E = 80^\circ$

Statements	Reasons

11. Given: $\triangle EFG$, $m\angle E = (3x - 50)^\circ$,
 $m\angle F = (x + 60)^\circ$ & $m\angle G = (5x + 8)^\circ$
Prove: $m\angle G = 98^\circ$

Statements	Reasons
A.	Given
$m\angle E + m\angle F + m\angle G = 180$	B.
C.	Substitution
$9x + 18 = 180$	D.
E.	Subtraction Property of Equality
$x = 18$	F.
$m\angle G = 5(18) + 8$	G.
H.	Simplify

12. Given: $\triangle EFG$, $m\angle E = (5x + 10)^\circ$,
 $m\angle F = (3x + 40)^\circ$ & $m\angle G = (2x + 70)^\circ$
Prove: $m\angle E = 40^\circ$

Statements	Reasons

Triangle Proof Practice (Part 1) Answers

<p>1. A. On $\triangle ABC$, $m\angle B = 34^\circ$ & $m\angle C = 58^\circ$ B. Triangle Sum Theorem C. $m\angle A + 34 + 58 = 180$ D. Simplify E. $m\angle A = 88^\circ$</p>	<p>3. A. Given B. $\angle M \cong \angle S$ C. Definition of Congruence D. $m\angle M = 30^\circ$</p>	<p>5. A. $\triangle LMN \sim \triangle RST$, $m\angle L = 20^\circ$ & $m\angle T = 130^\circ$ B. CASTC C. Definition of Congruence D. $20^\circ = m\angle R$ E. Symmetric Property of Equality F. $m\angle R + m\angle S + m\angle T = 180$ G. Substitution H. $m\angle S + 150 = 180$ I. Subtraction Property of Equality</p>
<p>7. A. Given B. CPCTC C. $m\angle A = m\angle D$ D. Substitution E. $m\angle D = 50^\circ$</p>	<p>9. A. $\triangle DEF \sim \triangle NPQ$, $m\angle E = 60^\circ$ & $m\angle N = 40^\circ$ B. Triangle Sum Theorem C. $\angle D \cong \angle N$ D. Definition of Congruence E. $m\angle D = 40^\circ$ F. Substitution G. $100 + m\angle F = 180$ H. Subtraction Property of Equality</p>	<p>11. A. $m\angle E = (3x - 50)^\circ$, $m\angle F = (x + 60)^\circ$ & $m\angle G = (5x + 8)^\circ$ B. Triangle Sum Theorem C. $(3x - 50) + (x + 60) + (5x + 8) = 180$ D. Simplify E. $9x = 162$ F. Division Property of Equality G. Substitution H. $m\angle G = 98^\circ$</p>

Triangle Proof Practice (Part 1) Answers

<p>1. A. On $\triangle ABC$, $m\angle B = 34^\circ$ & $m\angle C = 58^\circ$ B. Triangle Sum Theorem C. $m\angle A + 34 + 58 = 180$ D. Simplify E. $m\angle A = 88^\circ$</p>	<p>3. A. Given B. $\angle M \cong \angle S$ C. Definition of Congruence D. $m\angle M = 30^\circ$</p>	<p>5. A. $\triangle LMN \sim \triangle RST$, $m\angle L = 20^\circ$ & $m\angle T = 130^\circ$ B. CASTC C. Definition of Congruence D. $20^\circ = m\angle R$ E. Symmetric Property of Equality F. $m\angle R + m\angle S + m\angle T = 180$ G. Substitution H. $m\angle S + 150 = 180$ I. Subtraction Property of Equality</p>
<p>7. A. Given B. CPCTC C. $m\angle A = m\angle D$ D. Substitution E. $m\angle D = 50^\circ$</p>	<p>9. A. $\triangle DEF \sim \triangle NPQ$, $m\angle E = 60^\circ$ & $m\angle N = 40^\circ$ B. Triangle Sum Theorem C. $\angle D \cong \angle N$ D. Definition of Congruence E. $m\angle D = 40^\circ$ F. Substitution G. $100 + m\angle F = 180$ H. Subtraction Property of Equality</p>	<p>11. A. $m\angle E = (3x - 50)^\circ$, $m\angle F = (x + 60)^\circ$ & $m\angle G = (5x + 8)^\circ$ B. Triangle Sum Theorem C. $(3x - 50) + (x + 60) + (5x + 8) = 180$ D. Simplify E. $9x = 162$ F. Division Property of Equality G. Substitution H. $m\angle G = 98^\circ$</p>