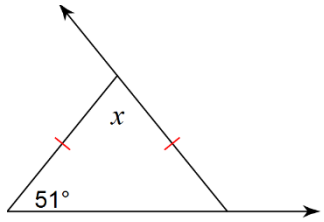
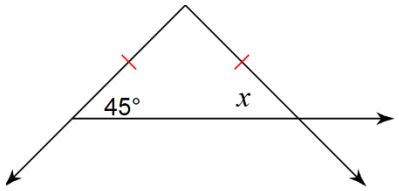
Isosceles Triangle Proofs ws KEY Name: _____Hr:_____

Find the value of x.

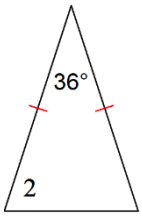
1. 78°



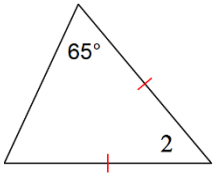
2. 45°



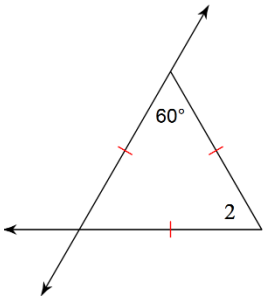
3. x = 6 $m\angle 2 = 11x + 6$



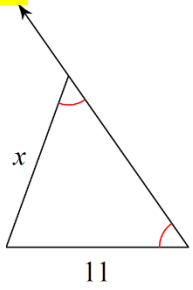
4. x = −8 $m\angle 2 = x + 58$



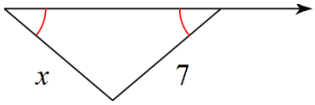
5. x = −11 $m\angle 2 = x + 71$



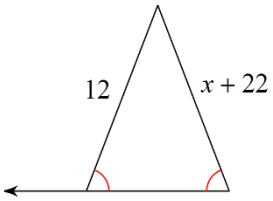
6. x = 11



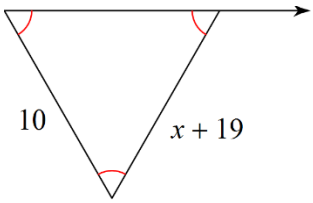
7. x = 7



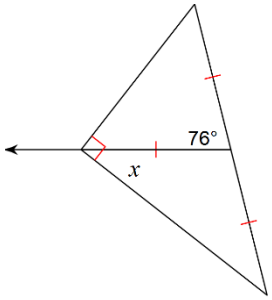
8. x = −10



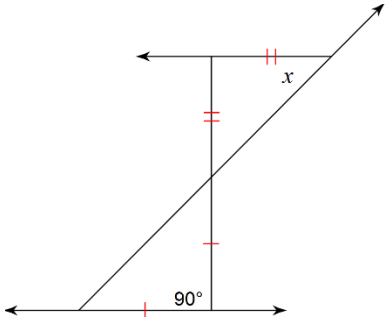
9. x = −9



10. 38°

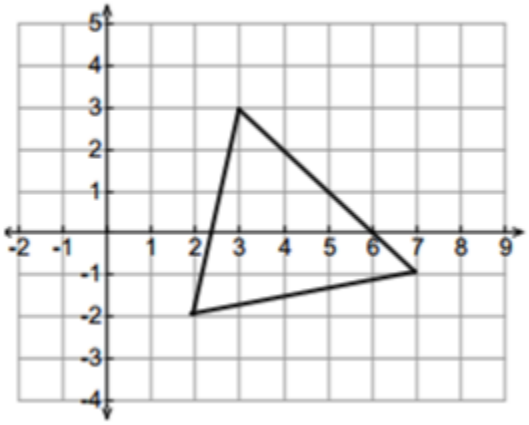


11. 45°



12. Given: $\triangle ABC$ has vertices A $(7,-1)$, B $(2,-2)$ and C $(3,3)$

Prove: $\triangle ABC$ is an isosceles triangle

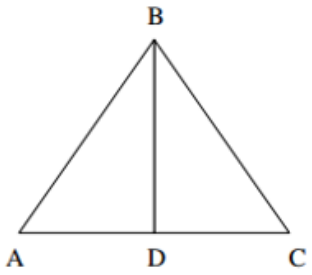


$$\overline{AB} = \sqrt{(7-2)^2 + (-1-(-2))^2}$$
$$\sqrt{25+1}$$
$$\sqrt{26}$$

$$\overline{BC} = \sqrt{(2-3)^2 + (-2-3)^2}$$
$$\sqrt{1+25}$$
$$\sqrt{26}$$

$$\overline{AC} = \sqrt{(7-3)^2 + (-1-3)^2}$$
$$\sqrt{16+16}$$
$$\sqrt{32}$$

13. Given: $\triangle ABC$ is isosceles
$\overline{BD}$ bisects $\angle ABC$
Prove: $\triangle ABD \cong \triangle CBD$

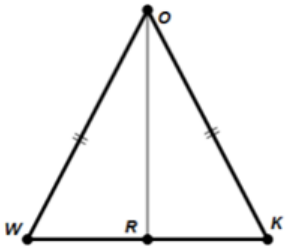


Statement	Reason
1. $\triangle ABC$ is isosceles	1. Given
2. $\angle A \cong \angle C$ or $\overline{AB} \cong \overline{CB}$	2. Base angles in isosceles triangles are congruent/Definition of Isosceles Triangle
3. $\overline{BD}$ bisects $\angle ABC$	3. Given
4. $\angle ABD \cong \angle CBD$	4. Definition of Angles Bisector
5. $\overline{BD} \cong \overline{BD}$	5. Reflexive Property of Congruence
6. $\triangle ABD \cong \triangle CBD$	6. AAS or SAS or ASA

14. Given: $\triangle WOK$ is isosceles

R is the midpoint of $\overline{WK}$

Prove: $\angle OWR \cong \angle OKR$



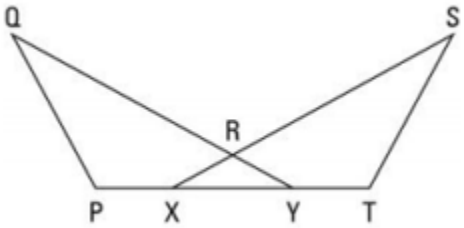
Statement	Reason
1. $\triangle WOK$ is isosceles	1. Given
2. $\overline{WO} \cong \overline{KO}$	2. Definition of an isosceles Triangle
3. R is the midpoint of $\overline{WK}$	3. Given
4. $\overline{WR} \cong \overline{KR}$	4. Definition of a Midpoint
5. $\overline{OR} \cong \overline{OR}$	5. Reflexive Property of Congruence
6. $\triangle WRO \cong \triangle KRO$	6. SSS
7. $\angle OWR \cong \angle OKR$	7. CPCTC

15. Given: $\triangle XRY$ is isosceles

$\overline{PQ} \cong \overline{TS}$

$\angle Q \cong \angle S$

Prove: $\overline{QY} \cong SX$



Statement	Reason
1. $\triangle XRY$ is isosceles	1. Given
2. $\angle x \cong \angle y$	2. Base angles in isosceles triangles are congruent
3. $\overline{PQ} \cong \overline{TS}$	3. Given
4. $\angle Q \cong \angle S$	4. Given
5. $\triangle YQP \cong \triangle XST$	5. AAS
6. $\overline{QY} \cong SX$	6. CPCTC