NAME _____ DATE _____ PERIOD _____

4

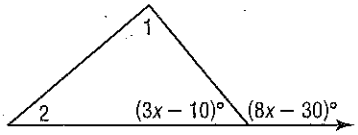
Chapter 4 Test, Form 3

SCORE _____

1. If $\triangle ABC$ is isosceles, $\angle B$ is the vertex angle, $AB = 20x - 2$, $BC = 12x + 30$, and $AC = 25x$, find x and the measure of each side of the triangle. 1. _____

2. Given $A(0, 4)$, $B(5, 4)$, and $C(-3, -2)$, find the measure of the sides of the triangle. Then classify the triangle by its sides and angles. 2. _____

Use the figure to answer Questions 3–5.



3. Find x. 3. _____

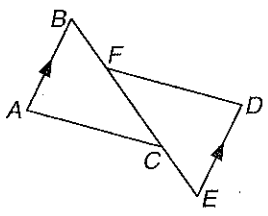
4. $m\angle 1$, if $m\angle 1 = 4x + 10$. 4. _____

5. $m\angle 2$ 5. _____

6. Verify that the following preserves congruence, assuming that corresponding angles are congruent. $\triangle ABC$ is reflected over the x-axis as follows. 6. _____
$A(-1, 1) \rightarrow A'(-1, -1)$
$B(4, 2) \rightarrow B'(4, -2)$
$C(1, 5) \rightarrow C'(1, -5)$
Verify $\triangle ABC \cong \triangle A'B'C'$.

7. Determine whether $\triangle GHI \cong \triangle JKL$, given $G(1, 2)$, $H(5, 4)$, $I(3, 6)$ and $J(-4, -5)$, $K(0, -3)$, $L(-2, -1)$. Explain. 7. _____

8. In the figure, $\overline{AC} \cong \overline{FD}$, $\overline{AB} \parallel \overline{DE}$, and $\overline{AC} \parallel \overline{FD}$. Name the postulate that could be used to prove $\triangle ABC \cong \triangle DEC$. Choose from SSS, SAS, ASA, and AAS. 8. _____



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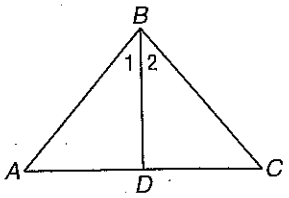
4 Chapter 4 Test, Form 3 *(continued)*

For Questions 9 and 10, complete this two-column proof.

Given: $\triangle ABC$ is an isosceles triangle with base $\overline{AC}$.
D is the midpoint of $\overline{AC}$.

Prove: $\overline{BD}$ bisects $\angle ABC$.

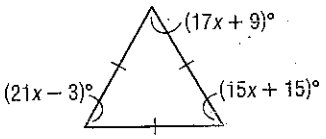


Statements	Reasons
1. $\triangle ABC$ is isosceles with base $\overline{AC}$.	1. Given
2. $\overline{AB} \cong \overline{CB}$	2. Def. of isosceles triangle.
3. $\angle A \cong \angle C$	3. (Question 9)
4. D is the midpoint of $\overline{AC}$.	4. Given
5. $\overline{AD} \cong \overline{CD}$	5. Midpoint Theorem
6. $\triangle ABD \cong \triangle CBD$	6. (Question 10)
7. $\angle 1 \cong \angle 2$	7. CPCTC
8. $\overline{BD}$ bisects $\angle ABC$.	8. Def. of angle bisector

9. _____

10. _____

11. Find x.



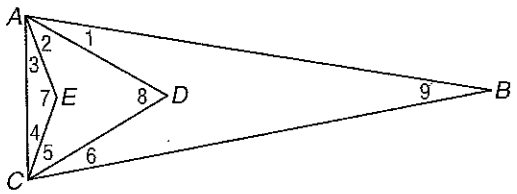
11. _____

12. Position and label isosceles $\triangle ABC$ with base $\overline{AB}$ $(a + b)$ units long on a coordinate plane

12. _____

Bonus In the figure, $\triangle ABC$ is isosceles, $\triangle ADC$ is equilateral, $\triangle AEC$ is isosceles, and the measures of $\angle 9$, $\angle 1$, and $\angle 3$ are all equal. Find the measures of the nine numbered angles.

B: _____



Chapter 4 Assessment Answer Key

Form 3

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1. $x = 4$, $AB = 78$, $BC = 78$, $AC = 100$

2. $AB = 5$, $BC = 10$, $AC = 3\sqrt{5}$; scalene obtuse

3. 20

4. 90

5. 40

6. $AB = A'B' = \sqrt{26}$, $BC = B'C' = 3\sqrt{2}$, $AC = A'C' = 2\sqrt{5}$

7. $GH = JK = 2\sqrt{5}$, $IG = LJ = 2\sqrt{5}$, $IH = LK = 2\sqrt{2}$; $\triangle GHI \cong \triangle JKL$ by SSS.

8. AAS

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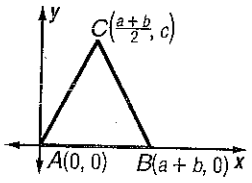
9. Isosceles Triangle Theorem

10. SAS

11. $x = 3$

12. 

B: $m\angle 1$, $m\angle 3$, $m\angle 4$, $m\angle 6$, and $m\angle 9$ each equal 20, $m\angle 2 = 40$, $m\angle 5 = 40$, $m\angle 8 = 60$, and $m\angle 7 = 140$