Name: $\qquad$
$\qquad$

## Chapter 7 Test

## Multiple Choice

For questions 1 to 5 , select the best answer.

1. The exterior angle at the vertex formed by the equal sides of an isosceles triangle is $140^{\circ}$. Which are the measures of the exterior angles at the other vertices?
A $140^{\circ}, 80^{\circ}$
B $110^{\circ}, 110^{\circ}$
C $40^{\circ}, 40^{\circ}$
D $40^{\circ}, 80^{\circ}$
2. In $\triangle M N P$, the interior angle at $N$ is $24^{\circ}$ and the exterior angle at P is $55^{\circ}$. Which is the measure of the interior angle at M ?
A $101^{\circ}$
B $79^{\circ}$
C $31^{\circ}$
D $281^{\circ}$
3. The sum of the interior angles of a convex pentagon
A is always $360^{\circ}$
B is always $540^{\circ}$
C is always $180^{\circ}$
D depends on the shape of the pentagon
4. The area of $\triangle \mathrm{ABC}$ is


A equal to the area of $\triangle B C D$
B half the area of $\triangle \mathrm{ABD}$
C half the area of $\triangle B C D$
D double the area of $\triangle \mathrm{ABD}$
5. The diagonals of a parallelogram

A are always perpendicular to each other
B always bisect the interior angles
C always bisect each other
D always bisect each other at right angles

## Short Response

Show all steps to your solution.
6. Find the measure of each indicated angle.
a)

b)

c)

d)

7. What is the sum of the interior angles of a convex polygon with 9 sides?
8. Explain why each conjecture is true, or use a counterexample to show it is false.
a) A triangle can have more than one obtuse angle.
b) A quadrilateral can have more than one obtuse angle.

## Extend

Provide complete solutions.
9. The sum of the interior angles of a regular convex polygon is $2520^{\circ}$.
a) What is the measure of each interior angle?
b) What is the measure of each exterior angle?
10. One exterior angle of an isosceles triangle is $80^{\circ}$.
a) Find the possible measures of the other two exterior angles.
b) How many answers can you find? Explain.

Name: $\qquad$

BLM 7.CT. 1 Chapter 7 Test

1. B
2. C
3. B
4. D
5. C
$\begin{array}{ll}\text { 6. a) } x=53^{\circ} & \text { b) } x=145^{\circ}\end{array}$
c) $x=y=z=60^{\circ} ; a=b=c=120^{\circ}$
d) $a=126^{\circ} ; b=131^{\circ} ; c=110^{\circ} ; d=147^{\circ} ; e=49^{\circ}$
6. $1260^{\circ}$
7. a) False; the sum of the interior angles of a triangle is $180^{\circ}$. If two angles are obtuse, the sum of the angles will be greater than $180^{\circ}$.
b) True; the sum of the interior angles of a quadrilateral is $360^{\circ}$. A quadrilateral can have one or two obtuse angles.

Date: $\qquad$

## BLM 7.CT. 1

## (continued)

$\begin{array}{lll}\text { 9. a) } 157.5^{\circ} & \text { b) } 22.5^{\circ}\end{array}$
10. a) $140^{\circ}, 140^{\circ}$

b) One; if the $80^{\circ}$ exterior angle is at one of the vertices with equal interior angles, the equal interior angles would be $100^{\circ}$. The sum of the interior angles of a triangle is $180^{\circ}$. $2 \times 100^{\circ}=200^{\circ}$, so this triangle is not possible.

