Early Definitions and Postulates (1.3)

Four Parts of a Mathematical System

1. Undefined terms

2. Defined terms

3. Axioms or postulates

4. Theorems

Definition: An _____ triangle is a triangle that has two congruent sides.

Characteristics of a good definition:

1. It names the term being defined.

2. It places the term into a set or category.

3. It distinguishes the defined term from other terms without providing unnecessary   facts.

4. It is reversible.

Definition: A _____ is the part of the line that consists of two points, known as endpoints and all points between them.

Postulate 1: Through two distinct points, there is exactly one _____.

Postulate 2: The measurement of any line segment is a unique number. (_____Postulate)

Definition: The distance between two points A and B is the _____ of the line segment $\overline{AB}$ that joins the points.

Postulate 3: If X is a point on $\overline{AB}$ and $A - X - B$ then $AX + XB = AB$

Definition: Congruent ($\cong$) line segments are two lines that have the same _____.

Definition: The _____ of a line segment is the point that separates the line segment into two congruent parts.

Example 1: Given M is the midpoint of $\overline{AB}$, AM =3(x+ 3) and MB = 4(x − 2). Find the length of $\overline{AB}$ and the value for x.

Definition: Ray AB denoted by $\overrightarrow{AB}$, is the union of $\overline{AB}$ and all points X on $\overleftrightarrow{AB}$ such that B is between A and X.

Postulate 4: If two lines intersect, they intersect at a _____.

Definition: Parallel lines are lines that lie in the same plane but do _____ intersect.

Postulate 5: Through three noncollinear points, there is exactly one _____.
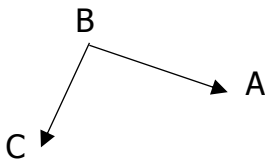
Postulate 6: If two distinct planes intersect, then their intersection is a _____.

Postulate 7: Given two distinct points in a plane, the line containing these points also lies in that plane.

Theorem 1.3.1: The midpoint of a line is _____.

Angles and Their Relationships (1.4)

Definition: An angle is the union of two rays that share a common _____.

Postulate 8: The measurement of an angle is a unique positive number.
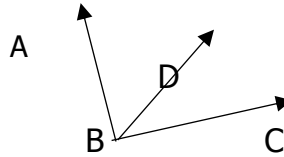
Postulate 9: If a point D lies in the interior of an angle ABC, then $\angle ABD + \angle DBC = \angle ABC$

Example 2: Given: $m\angle\,ABD = 2x + 5$

$m\angle\,DBC = 3x - 4$

$m\angle\,ABC = 86°$

Find $m\angle\,DBC$

A

D

B   C

Definition: Two angles are _____ (adj. $\angle s$) if they have a common vertex and a common side between them. (Check-out the last example).

Definition: _____ angles ($\cong \angle s$) are two angles of the same measure.

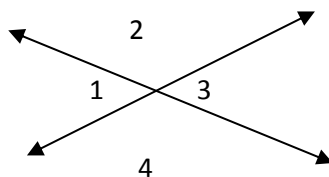**Definition:** The _____ of an angle is the ray that separates the given angle into two congruent angles.

Example 3: Given: $\overrightarrow{BD}$ bisects $\angle\,ABC$

$m\angle\,\text{ABD} = x + y$

$m\angle\,DBC = 2x - 2y$

$m\angle\,ABC = 64°$ find x and y


Definition: _____ **Angles -** is where to straight lines intersect, the pairs of nonadjacent angles formed are vertical angles. Vertical angles are congruent. The two adjacent angles are supplementary.

2

1   3

4

Example 4: Use the figure from above.

a. If $m\angle 4 = 97°$, find the measures of the other 3 angles.

b. If $m\angle 1 = x + 7$ and the $m\angle 2 = 2x - 23$, find x and the measures of four angles.

Example 5: Use the figure to answer each questions.
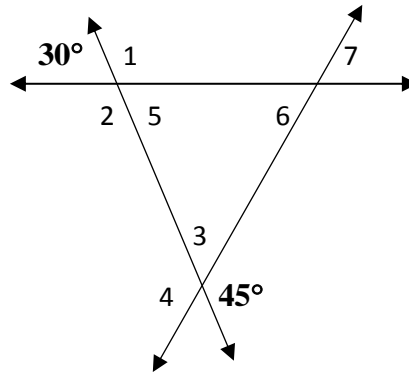
Find the measure of all the angles 1 -7.

Hint: $m\angle 3 + m\angle 5 + m\angle 6 = 180°$

TRY THESE: textbook page 27, #'s 14, 16, 26 and textbook page 35 #'s 10, 18, 23, 26