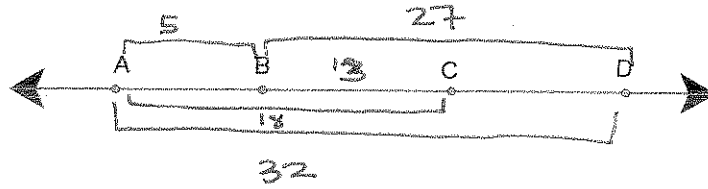


GAT Review – Angles, Lines, Rays, Segments and Polygons

Name KEY  
class \_\_\_\_\_ date \_\_\_\_\_

1. On the number line below, if  $AC = 18$ ,  $BD = 27$ , and  $AD = 32$ , find  $BC$



$$BC + AB = AC$$

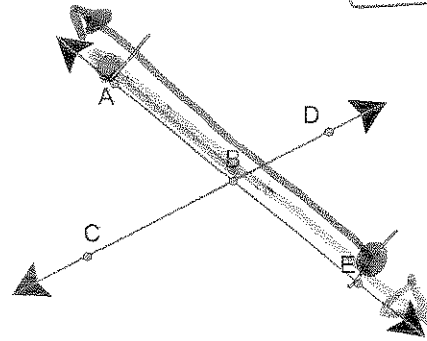
$$x + 5 = 18$$

$$x = 13$$

13 units

2. Use the following drawing:

- A.  $\overline{AB} \cap \overline{EA} = \underline{\overline{AE}}$
- B.  $\overline{AB} \cup \overline{EA} = \underline{\overline{AE}}$
- C.  $\overline{BC} \cap \overline{BE} = \underline{B}$
- D.  $\overline{BC} \cup \overline{BE} = \underline{\overline{CBE}}$



3. Find the coordinates of the midpoint of a segment with the given endpoints. *→ AVERAGE*

a)  $C(3, 10)$  and  $D(-1, -6)$

$$\left( \frac{3 + (-1)}{2}, \frac{10 + (-6)}{2} \right)$$

1, 2

b)  $E(4, -8)$  and  $F(-8, -4)$

$$\left( \frac{4 + (-8)}{2}, \frac{-8 + (-4)}{2} \right)$$

-2, -6

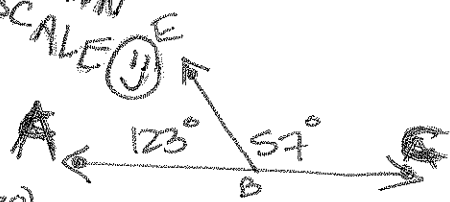
4. Rays, segments, and lines which intersect at right angles are called perpendicular

5. Two non adjacent angles formed by two intersecting lines are called vertical angles (which are  $\cong$ )

6. Draw a diagram of the condition  
Set up the needed equations and solve  
Find the measures of the missing angles

Angle ABE and angle EBC form a linear pair.

NOT DRAWN TO SCALE



$$m\angle ABE = 7(x - 3) + 3(2x - 4) = 7(9) + 3(20) = 63 + 60 = 123$$

$$m\angle EBC = 19 - 2(5 - 2x) = 19 - 2(-19) = 19 + 38 = 57$$

$$\begin{array}{r} 180 \\ -123 \\ \hline 57 \end{array}$$

$$m\angle ABE + m\angle EBC = 180$$

$$7x - 21 + 6x - 12 + 19 - 10 + 4x = 180$$

$$17x - 24 = 180$$

$$17x = 204 \quad x = 12$$

$$\begin{array}{r} 19 \\ +19 \\ \hline 38 \end{array}$$

$$\begin{array}{r} 12 \\ 3 \overline{) 204} \\ \underline{36} \\ 34 \\ \underline{36} \\ 4 \end{array}$$

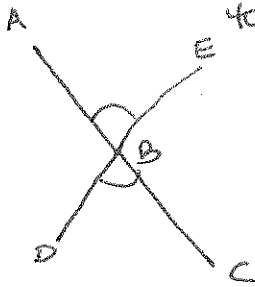
7. Angle ABE and angle DBC form vertical angles and angle ABD and angle ABE are supplementary. Set up the diagram and label it correctly, find the measures of the angles by showing all of your algebra work.

$$\begin{array}{r} 24 \\ + 16 \\ \hline 68 \end{array}$$

$$64^\circ = m\angle ABE = 3(5x - 6y) + 16$$

$$64^\circ = m\angle DBC = 8 - 2(3y - 5x)$$

$$116^\circ = m\angle ABD = 10(4x - 3y) - 84$$



$$m\angle ABE = m\angle DBC$$

$$15x - 18y + 16 = 8 - 6y + 10x$$

$$5x - 12y = -8$$

$$m\angle ABD + m\angle ABE = 180$$

$$40x - 30y - 84 + 15x - 18y + 16 = 180$$

$$55x - 48y - 68 = 180$$

$$55x - 48y = 248$$

$$-20x + 48y = +32$$

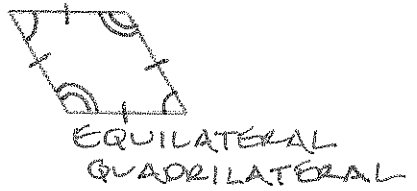
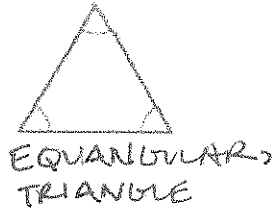
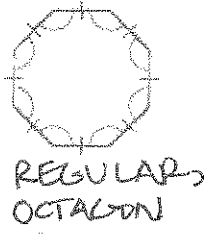
$$35x = 280 \quad 5(8) - 12y = -8$$

$$x = 8 \quad -12y = -48$$

$$y = 4 \quad (8, 4)$$

$$\begin{array}{r} 8 \\ 5 \overline{) 280} \\ \underline{240} \\ 40 \end{array}$$

a) Tell whether the polygon is best described as equiangular, equilateral, regular, or none of these.



b) name the above polygons based on the number of sides.

Decide whether the statement is always, sometimes, or never true.

- 9. A rhombus is a quadrilateral. ALWAYS
- 10. A rectangle is a trapezoid. NEVER
- 11. A trapezoid is an isosceles trapezoid. SOMETIMES
- 12. A parallelogram is a rectangle. SOMETIMES

13. In a convex quadrilateral, the first angle is known to be a right angle. The second angle is six more than five times an unknown quantity. The third angle is five more than ten times an unknown quantity. The fourth angle is four times an unknown quantity. Find the measure of each angle.

$$5x + 6 + 10x + 5 + 4x = 270$$

$$19x + 11 = 270$$

$$19x = 259$$

$$x = 13.631...$$

$$\approx 55^\circ, 74^\circ, 141^\circ, 90^\circ$$

NOTE: WILL BE AN INTEGER VALUE ON YOUR TEST :)