

Geometry Review for Section 1.1 – 1.6
Big Quiz Date: September 15, 2008

Name _____

JEC

When studying for math you should work problems! “Looking over” your notes or reading through the book will do little or nothing to help prepare. The best sources of problems are this review, old quizzes, problem worked during class, and then the book (generally in that order). Copy a problem onto a separate sheet of paper or cover up the solution and try to rework the problem. When finished, compare your new solution to the original to confirm you correctly answered the question. The following words, formulas, topics, and should not be a surprise, but are assembled in one place to help you ensure you cover everything.

Sections covered:

Section 1-1	Patterns and Inductive Reasoning
Section 1-2	Points, Lines, and Planes
Section 1-3	Segments and Their Measures
Section 1-4	Angles and Their Measures
Section 1-5	Segment and Angles Bisectors
Section 1-6	Angle Pair Relationships

Terms, Topics, & Formulas to know:

<input type="checkbox"/> Points	<input type="checkbox"/> Lines	<input type="checkbox"/> Rays	<input type="checkbox"/> Segments
<input type="checkbox"/> Angles	<input type="checkbox"/> Midpoints	<input type="checkbox"/> Angles Bisectors	<input type="checkbox"/> Pythagorean Theorem
<input type="checkbox"/> Distance Formula	<input type="checkbox"/> Supplementary Angles	<input type="checkbox"/> Complementary Angles	<input type="checkbox"/> Acute Angles
<input type="checkbox"/> Right Angles	<input type="checkbox"/> Obtuse Angles	<input type="checkbox"/> Linear Pair	<input type="checkbox"/> Vertical Angles
<input type="checkbox"/> Adjacent Angles			

These problems will be collected before you take the test

1. $\angle WXY$ is a right angle. Given $m\angle WXZ = 5a + 5$ and $m\angle YXZ = 6a - 3$. Calculate a and $m\angle ZXY$

$$6a - 3 + 5a + 5 = 90$$

$$11a + 2 = 90$$

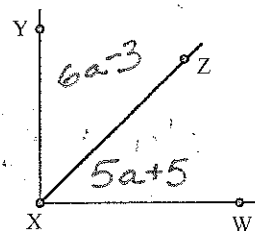
$$11a = 88$$

$$a = 8$$

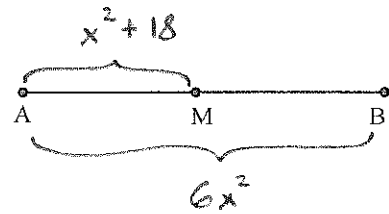
$$m\angle ZXY = 6a - 3$$

$$= 6(8) - 3$$

$$m\angle ZXY = 45^\circ$$



2. M is the midpoint of \overline{AB} . If $AM = x^2 + 18$ and $AB = 6x^2$, calculate x , AM , MB , and AB .



$$2 \cdot AM = AB$$

$$2 \cdot (x^2 + 18) = 6x^2$$

$$2x^2 + 36 = 6x^2$$

$$36 = 4x^2$$

$$9 = x^2$$

$$x = 3$$

$$AM = x^2 + 18 = 3^2 + 18$$

$$AM = 27 = MB$$

$$AB = 54$$

3. Calculate the value of x .

4. Two angles that form a linear pair measure $2x + 100$ and $30 - 7x$. Calculate the value of x and the degree measure of each angle. *It may help to sketch a picture first.*

Method 1

$$3x + 40 + x = 180^\circ$$

$$4x + 40 = 180$$

$$4x = 140$$

$$x = 35$$

Method 2

$$x = \frac{1}{2}x + \frac{35}{2}$$

$$\frac{1}{2}x = \frac{35}{2}$$

$$x = 35$$



$$2x + 100 + 30 - 7x = 180$$

$$-5x + 130 = 180$$

$$-5x = 50$$

$$x = -10$$

$$m\angle 1 = 80^\circ \quad \& \quad m\angle 2 = 100^\circ$$

5. a. Plot the points $A: (4, 3)$, $B: (1, -5)$, $C: (-2, 2)$.

- b. Calculate AB and BC – which is larger?

$$AB = \sqrt{(3+5)^2 + (4-1)^2} = \sqrt{8^2 + 3^2} = \sqrt{64+9} = \sqrt{73}$$

$$AC = \sqrt{(3-2)^2 + (4+2)^2} = \sqrt{1^2 + 6^2} = \sqrt{37}$$

$$BC = \sqrt{(3-2)^2 + (4+2)^2} = \sqrt{1^2 + 6^2} = \sqrt{37}$$

- c. Write the equation of \overline{AC}

$$\text{slope} = \frac{3-2}{4+2} = \frac{1}{6}$$

$$y = \frac{1}{6}x + b$$

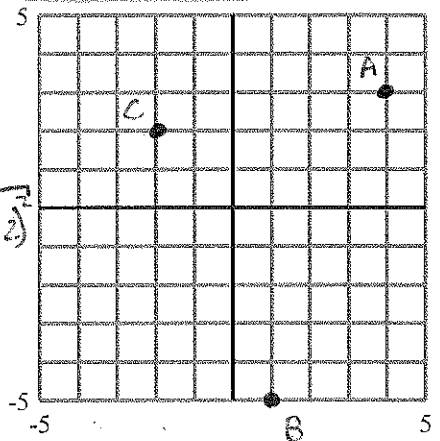
$$3 = \frac{1}{6}(4) + b$$

$$3 = \frac{4}{6} + b$$

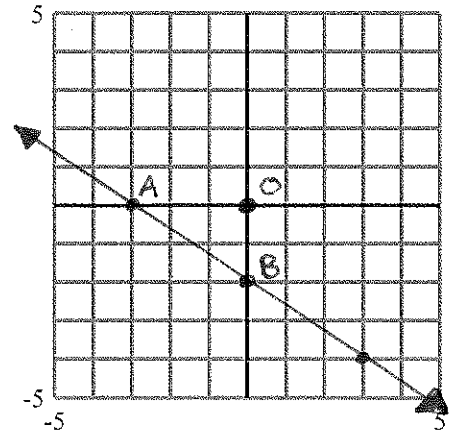
$$3 - \frac{2}{3} = b$$

$$\frac{7}{3} = b$$

$$y = \frac{1}{6}x + \frac{7}{3}$$



6. a. Graph the line $y = -\frac{2}{3}x - 2$
- b. Label the y -intercept as point B , label the x -intercept as point A , and label the origin as point O .
- c. Calculate the perimeter and area of triangle ABO .



$$AO = 3$$

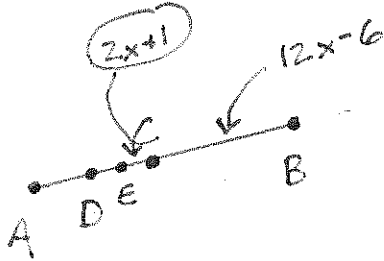
$$BO = 2$$

$$AB = \sqrt{3^2 + 2^2} = \sqrt{13}$$

$$\text{perim.} = 5 + \sqrt{13} \approx 8.606$$

$$\text{area} = \frac{1}{2} \cdot 2 \cdot 3 = 3$$

7. Points $A, B, C, D,$ and E are all collinear. C is the midpoint of \overline{AB} , D is the midpoint of \overline{CA} , and E is the midpoint of \overline{DC} . If $EC = 2x + 1$ and $BC = 12x - 6$, calculate the value of x and the length of \overline{AB} . *Hint: Draw a picture first!*



$$4 \cdot CE = CB$$

$$4 \cdot (2x + 1) = 12x - 6$$

$$8x + 4 = 12x - 6$$

$$10 = 4x$$

$$\frac{5}{2} = \frac{10}{4} = x$$

$$CB = 24$$

$$CE = 6$$

$$AB = 48$$

8. Given $m\angle BPD = m\angle DPE$, $m\angle 2 = 3x$, $m\angle 3 = 3x + 7$, and $m\angle BPD = 7x$, find $m\angle 3$

$$m\angle 2 + m\angle 3 = m\angle 4$$

$$3x + 3x + 7 = 7x$$

$$6x + 7 = 7x$$

$$7 = x$$

$$m\angle 3 = 28^\circ$$

