

**Summer Packet for Students Enrolled in Honors Geometry**  
**2016-2017 School Year**

Dear Parents and Students,

This math packet contains 51 problems related to the 9<sup>th</sup> grade Common Core mathematics curriculum. Students enrolled to take Honors Geometry are expected to possess full mastery of the 9<sup>th</sup> grade curriculum prior to entering this course. The purpose of this packet is three-fold:

1. Students will have the opportunity to review the 9<sup>th</sup> grade curriculum as a means to be better prepared for the accelerated pace and depth of knowledge of this course.
2. Students will demonstrate their preparedness for this course and mastery of skills of the content necessary to experience success in this course.
3. Students will gain a better understanding of the high-rigor expectations of this course and of the honors program at Lassiter High School.

Additionally, honors math students are expected to have skills and abilities to research and identify useful online resources when needed. Resources such as the Khan Academy or Google searches can help aid students in the areas or topics that require additional support.

This packet will be due on Monday, August 8, 2016. It will be graded for accuracy and recorded as a quiz grade.

We look forward to working with you and your child next school year.

Thanks,

The Honors Geometry Team  
Lassiter High School

Name \_\_\_\_\_

Quiz Score \_\_\_\_\_

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**Directions: As you complete this packet, show your work (when appropriate), and write your final answers in the space provided.**

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Directions: In questions 1 – 4, simplify completely!

1)  $\sqrt{80x^5}$

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2)  $8\sqrt{153y^2} * -2\sqrt{136y}$

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3)  $\sqrt{-75} + \sqrt{-108}$

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4)  $\sqrt[3]{5}(\sqrt[3]{50} - 6)$

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*Directions: In questions 5 – 7, determine if each statement is ALWAYS true, SOMETIMES true, or NEVER true.*

5) The sum of two irrational numbers is irrational.

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6) The product of a nonzero rational number and an irrational number is rational.

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7) The sum of a rational number and an irrational number is irrational.

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*Directions: In questions 8 – 10, solve each problem.*

8) A rectangular yard has a length of 15 yards and a width of 23 feet. What is the area of this yard?

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9) A triangle has a base that measures 50.8 cm. The height of this triangle is 7 mm. What is the area of this triangle?

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10) What is the length of a diagonal in a square that has 24 inch sides? Round your answer to 3 significant digits.

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Directions: Use the given expression to answer questions 11 – 13.

$$17(5x^4 - 12x^2 + 3)(x - 4)$$

11) How many factors are in the expression?

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12) How many terms are in the expanded expression?

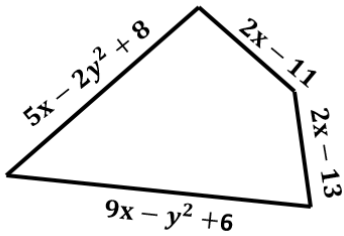
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13) What is the co-efficient of  $x^4$  in the factored expression?

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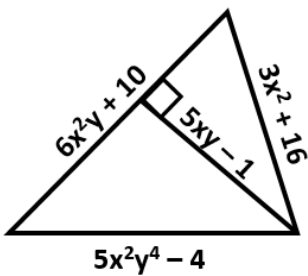
Directions: In questions 13 – 14, solve each problem.

13) What is the perimeter of the figure below?



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14) What is the area of the figure below?



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Directions: In questions 15 – 19, perform the given operations. Simplify. Write your answer in descending order.

15)  $3(5x - 6)^2$

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16)  $(x^3 + 4x - 5)(x^2 - 2)$

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17)  $(x^3 - 5x^2 + 10x - 1) - (5x^2 + 15x - 32)$

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18)  $(4x^4 - 3x + 2) + (5x + 8)(x - 20)$

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19)  $5x^3(2x^2 - 6x + 12)$

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20) Solve for the radius in  $V = \frac{4}{3}\pi r^3$

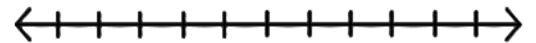
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21) Solve for c in the quadratic formula

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*Directions: In questions 22 – 23, solve and graph the solution on a number line.*

22)  $4 - 2x > 6x - 8$



23)  $x^2 - 8x + 2 \leq 50$



24) Factor completely:  $144x^2 - 16$

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*Directions: In questions 25 – 27, factor completely!*

25)  $16x^2 + 2x - 3$

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26)  $2x^3 + 5x^2 + 6x + 15$

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27)  $8x^3 + 88x^2 + 240x$

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28) What is the equation of the line that passes through (4, -6) and (8, 0)?

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29) What is the equation of the line that passes through (5, -12) and (5, 4)?

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*Directions: In questions 30 – 33, solve each quadratic using the specified method.*

30)  $3x^2 - 23x - 8 = 0$  using the quadratic formula

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31)  $x^3 - 5x^2 - 49x + 245 = 0$  using zero product property

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32)  $10x^2 - 13x - 3 = 0$  using factoring

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33)  $x^2 - 2x - 24 = 0$  using completing the square

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Directions: Use the following information to answer questions 34 – 36.

Given:  $A(0, 0)$ ,  $B(4, 1)$ , &  $C(-4, 1)$

34) What is  $B'$  after a reflection over the  $y$ -axis?

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35) What is  $C'$  after a rotation of  $270^\circ$  CW about the origin?

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36) What is  $A'$  after the following transformation has occurred:  $(x, y) \rightarrow (x - 3, y + 10)$ ?

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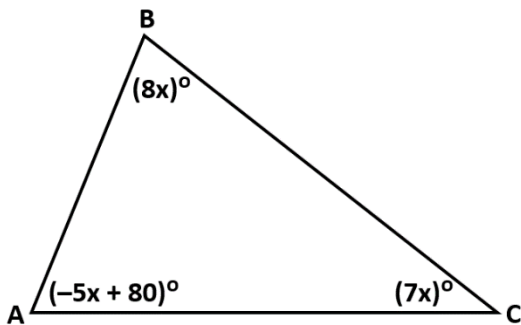
37) If  $(x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$ , is the resulting image similar or congruent to the pre-image?

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38) Given the rule  $(x, y) \rightarrow (y - 5, -x + 1)$ , what is one possible sequence of transformations that could have occurred?

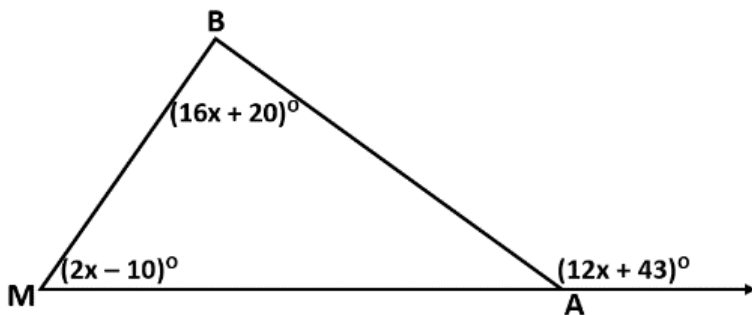
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39) In the given figure, what is  $m\angle A$ ? Note: the figure is NOT drawn to scale.



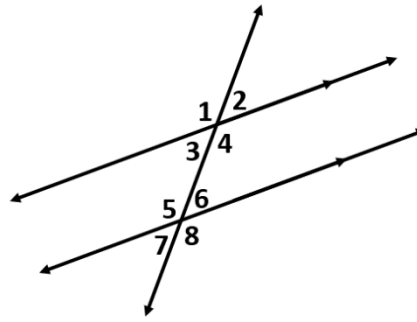
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40) In the given figure, what is  $m\angle B$ ? Note: the figure is NOT drawn to scale.



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Directions: Use the given figure to answer questions 41 – 43.



41) Which angle is alternate interior to  $\angle 4$ ?

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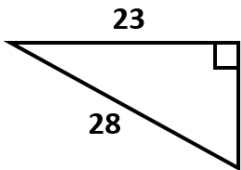
42) If  $m\angle 2 = 70^\circ$ , what is the measure of its corresponding angle?

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43) If  $m\angle 3 = (2x + 5)^\circ$  and  $m\angle 5 = (10x - 30)^\circ$ , what is  $m\angle 3$  to the nearest degree?

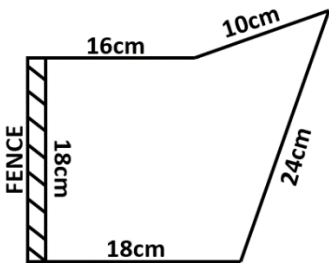
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44) Find the length of the missing side to the nearest hundredth. Note: the figure is NOT drawn to scale.



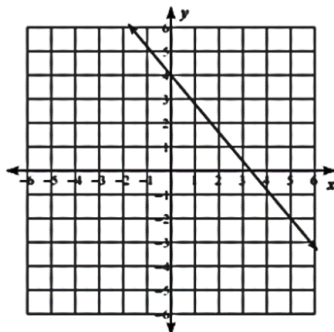
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45) Luke has drawn a model figure as shown below to represent a garden he wishes to build. If he is planning on using a scale factor of 2 cm : 5 ft, how long does the fence need to be?



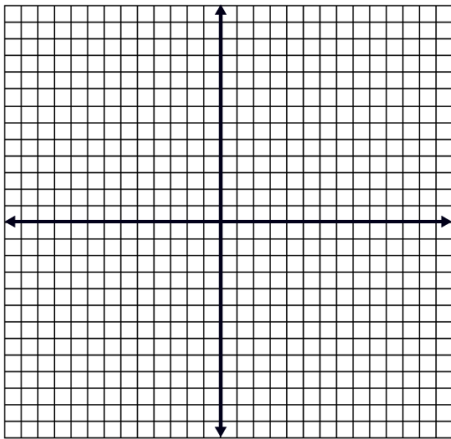
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46) What is the equation of the line that is parallel to the line in the figure and that intersects the y-axis at  $(0, -7)$ ?



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47) What is the distance between  $A(-7, 10)$  and  $B(5, 5)$ ?



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48) Chandra has  $6050\text{in}^3$  of paint to pour into a cylindrical can that is 16in tall and has a diameter of 24in. Will the cylindrical can be large enough to hold all of this paint?

49) Line  $J$  is represented by the equation  $3x - 2y = 10$ . Line  $M$  is perpendicular to Line  $J$  at  $(6, -1)$ . What is the equation of Line  $M$ ?

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50) Solve the system: 
$$\begin{cases} x - 6y = -23 \\ 4x + 9y = 7 \end{cases}$$

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51) What is the equation of the line in point slope form that passes through  $(3, -2)$  and  $(-7, -1)$

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