

Name: \_\_\_\_\_

## **TMS: Honors Geometry Summer Packet**

This packet is optional for Honors Geometry TMS students to use as a resource.

### **Part I: Points, Slopes, and Equations of Lines**

1. Write an equation in Slope-Intercept Form ( $y = mx + b$ ) for a line that goes through the points (1, -2) and (5, 6).
2. Write an equation in Slope-Intercept Form that has a slope of  $\frac{3}{2}$  and goes through the point (-4, 5).
3. Write an equation in Slope- Intercept Form that is parallel to the equation  $y = 3x - 4$  and goes through the point (7, 6).
4. Write an equation in Slope-Intercept Form that is perpendicular to the equation  $y = -3x + 1$  and goes through the point (6, -8).

5. Rewrite the equation  $y = \frac{1}{2}x + 5$  in Standard Form ( $Ax + By = C$ ) where A, B, and C are integers.

6. Rewrite the the equation  $y = \frac{1}{2}x + 5$  in Point-Slope Form ( $y - y_1 = m(x - x_1)$ ).

7. Solve the following equations algebraically. Show all work in order to receive any credit. Check your final answer.

a.  $3(y - 5) = 12$   
11

b.  $6(x - 4) + 5 =$

c.  $\frac{1}{4}(28x - 8) = 7x - 2$

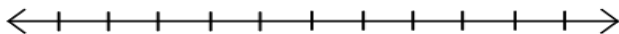
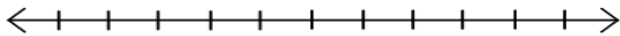
d.  $\frac{2n-9}{2} = n$

8. The length of a rectangle is 11 cm more than its width. The perimeter is 90 cm. Find the length and width of the rectangle. Show all work algebraically in order to receive any credit.

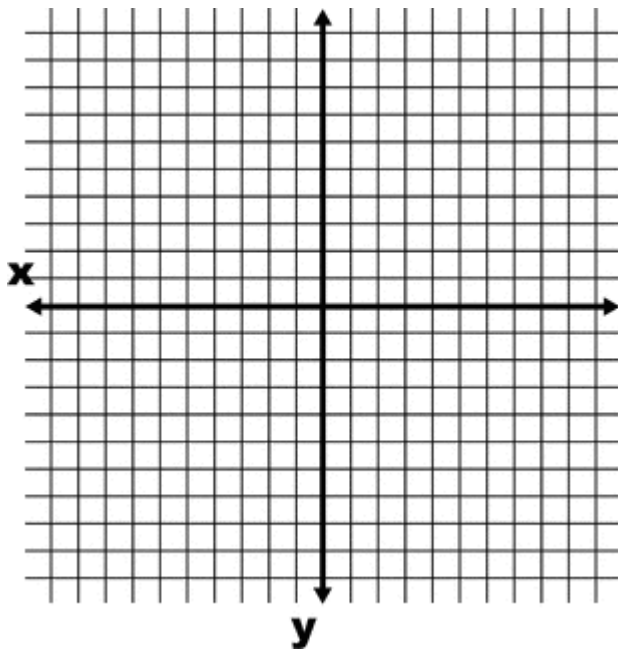
9. Solve and graph the following inequalities on a number line. Show all work in order to receive any credit.

a.  $-2x + 6 \leq 10$

b.  $3x + 2 \geq 5x - 6$



10. Graph a line that goes through the points (5,-2) and (-6, 10) and give the equation in Standard Form of that line.



Equation: \_\_\_\_\_

## Part 2: Algebraic Skills

Perform the operations below without a calculator. Write your final answer in simplest form.

11.  $1\frac{1}{5} - \frac{2}{3}$

12.  $2\frac{7}{8} + \frac{1}{4}$

13.  $\frac{2}{5} \cdot \frac{25}{40}$

14.  $2\frac{1}{3} \div \frac{7}{9}$

15.  $7 - 15(3x^3 - 5x) + 20x$

16. Evaluate  $-6s^3 - 4t^2$ , for  $s = 2$  and  $t = -3$ .

**Simplify. Show all work.**

17.  $(a + 5)(a + 3)$

18.  $(3x - 8)(x - 6)$

19.  $(5x + 4)(5x - 4)$

20.  $(x + 6)^2$

21.  $(y - 2)^2$

22.  $(3 - g)(2g + 3)$

23.  $5x(x + 6)$

24.  $2y(y^2 + 3y - 4)$

25.  $(3 - g)(g - 3)$

**Factor the expression. If the expression cannot be factored, say so.**

26.  $x^2 + 6x + 5$

27.  $x^2 + 3x - 40$

28.  $x^2 - 13x + 22$

29.  $x^2 - 4x - 12$

30.  $x^2 + 2x + 4$

31.  $x^2 - 11x + 28$

**Part 3: Basic Geometry Knowledge (Show all work in order to receive any credit.)**

32. A rectangle has length of 10" and width of 4". Find its:

area

perimeter

33. A circle has diameter of 8'. LEAVING YOUR ANSWERS IN TERMS OF  $\pi$ , find its:

area

circumference

34. A right triangle has legs 9" and 12".

Sketch this figure:

Find the hypotenuse. (Hint: Use the Pythagorean Theorem.)

Find its perimeter.

Find its area.

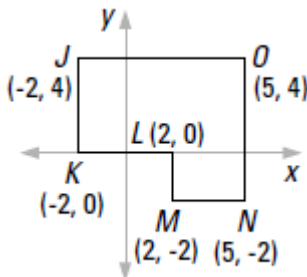
35. A square has an area of 169 square centimeters.

How long is one of its sides?

Find its perimeter

36. A regular polygon is a figure in which all of the sides have the same length and all of the angles have the same measure. Find the perimeter of a regular pentagon in which one side has a length of  $5x$ .

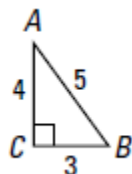
37. Using this figure:



Find its perimeter.

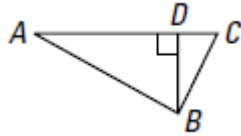
Find its area.

38. Find the area of



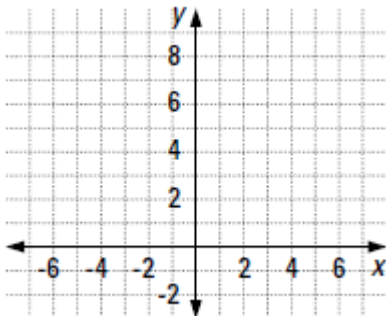
$\triangle ABC$ .

39. Find the area of  $\triangle ABC$ . Given:  $AD = 10$ ,  $DC = 4$ ,  $DB = 5$



40. A triangle has vertices  $(-3,3)$ ,  $(2,7)$ , and  $(5,3)$

Draw the triangle on the coordinate plane on the right.



Find the area of the triangle.

41. One side of an equilateral triangle has length 15 inches. What is its perimeter?

42. The length of one side of a square is  $\frac{3}{5}$  of a foot.

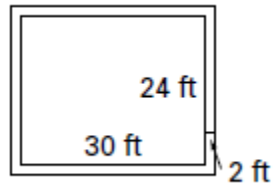
Find its area.

Find its perimeter.

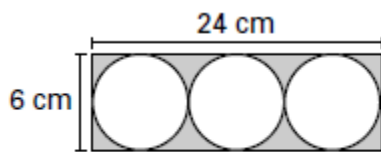


43.

A rectangular pool is 24 feet wide and 30 feet long. It is surrounded by a walk that is 2 ft wide, as shown at the right. What is the outer perimeter of the walk?



44. The sketch below shows three circular disks cut from a rectangular sheet of metal. EXPLAIN IN A SENTENCE how you can tell that the sketch is labeled INCORRECTLY.



45. A geometry classroom is square-shaped and has a perimeter of 88 feet. What is its area?