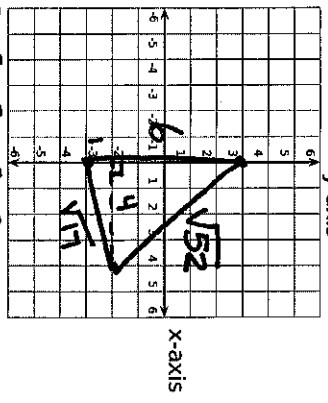


Directions: Answer each question completely. Show ALL work in the space provided. If necessary, you may attach a separate sheet of paper.

1.) Given a triangle with vertices: (0,3), (0,-3) and (4,-2), what is the approximate perimeter? (Round to the nearest hundredth)



$$1^2 + 4^2 = c^2 \quad 4^2 + 6^2 = c^2$$

$$c^2 = 17 \quad c^2 = 52$$

$$c = \sqrt{17} \quad c = \sqrt{52}$$

$$P = 17.33$$

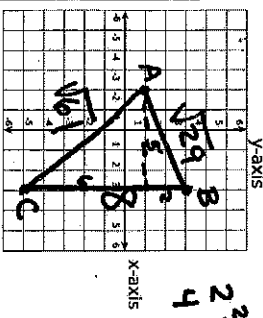
3.) Write the equation of a line parallel to  $y = -4x + 5$  that passes through the point (-8,11).  $m = -4$

$$y - 11 = -4(x + 8)$$

$$y - 11 = -4x - 32$$

$$y + 11 = -4x - 21$$

5.) A triangle has vertices at A(-2,1), B(3,3) and C(3,-5). Using the coordinate grid, graph the triangle and determine the lengths of all three sides.



$$2^2 + 5^2 = c^2$$

$$4 + 25 = c^2$$

$$c^2 = 29$$

$$c = \sqrt{29}$$

Circle the classification that best describes the triangle:

A. Scalene  
 B. Equilateral  
 C. Isosceles

AC  
 $5^2 + 6^2 = c^2$   
 $25 + 36 = c^2$   
 $c^2 = 61$   
 $c = \sqrt{61}$

2.) Given the points: (11,4) and (17,-6)

A. Determine the midpoint.  
 $(\frac{11+17}{2}, \frac{4+(-6)}{2})$   
 $(14, -1)$

B. Determine the distance.

$$\sqrt{(11-17)^2 + (4+6)^2}$$

$$\sqrt{(-6)^2 + (10)^2}$$

$$\sqrt{36 + 100} = \sqrt{136}$$

$$\sqrt{4 \cdot 34}$$

$$D = 2\sqrt{34}$$

4.) Write the equation of a line that is perpendicular to  $y = \frac{3}{4}x - 7$ , that passes through the point (12,5).

$$m = -\frac{4}{3}$$

$$y - 5 = -\frac{4}{3}(x - 12)$$

$$y - 5 = -\frac{4}{3}x + 16$$

$$y + 5 = -\frac{4}{3}x + 21$$

6.) Circle the term that best describes the lines.

Line A:  $6x - 4y = 2$   
 Line B:  $6y - 4x = 20$

A. Parallel  
 B. Perpendicular  
 C. Neither  
 D. These are the same line.

$$6y = \frac{4x+20}{6}$$

$$y = \frac{2}{3}x + \frac{10}{3}$$

$$-4y = -\frac{6x+20}{4}$$

$$y = \frac{3}{2}x - \frac{5}{2}$$

7.) Find the distance between the given points: Write your answers as a simplified radical.

(-5,5), (1,9)

$$\sqrt{(-5-1)^2 + (5-9)^2}$$

$$\sqrt{(-6)^2 + (-4)^2}$$

$$\sqrt{36 + 16} = \sqrt{52}$$

$$2\sqrt{13}$$

8.) Y is the midpoint of XZ. If the coordinates of X are (-4,7) and the coordinates of Z are (2,-9), find the coordinates of Y.

$$(-4,7) \quad (2,-9) \quad (8,-25)$$

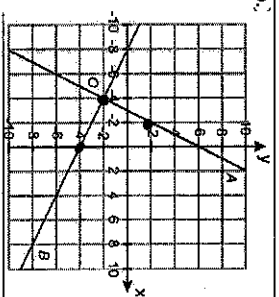
$$+6 \quad -16 \quad +6$$

$$(8, -25)$$

Which statement is true?

A. Line A is parallel to Line B  
 B. Line A is perpendicular to Line B  
 C. Line A & Line B are neither parallel or perpendicular

compare slopes  
 A  
 $m = \frac{2}{3} = 2$   
 B  
 $m = -\frac{1}{2}$



10.) Use the information below to fill in the blanks:

L is the midpoint of GM.  
 $GL = 6y + 20$  and  $LM = 12y - 4$

$Y = \frac{4}{44}$        $GL = 44$   
 $LM = \frac{44}{88}$        $GM = 88$

$$6y + 20 = 12y - 4$$

$$-12y \quad -12y$$

$$\frac{-6y + 20 = -4}{-6} \quad \frac{GL}{24 + 20}$$

$$y = 4$$

$$\frac{GL}{44} \quad \frac{LM}{12(4) - 4}$$

$$44 \quad 48 - 4$$

$$44 \quad 44$$

11.) Drew and Joseph live in the same neighborhood. On a coordinate grid, Drew's home is at (1, 1) and Joseph's home is at (9, -3).

A. How many yards apart are Drew's and Joseph's homes? Round your answer to the nearest hundredth.

$$\sqrt{(1-9)^2 + (1+3)^2}$$

$$\sqrt{(-8)^2 + (4)^2}$$

$$\sqrt{64 + 16} = \sqrt{80}$$

8.94

B. Ryan lives exactly halfway between Drew and Joseph. What are the coordinates of Ryan's home?

$$\left(\frac{1+9}{2}, \frac{1+(-3)}{2}\right)$$

(5, -1)

13.) What is the most accurate way to classify a quadrilateral with two pairs of parallel sides?

- A. Trapezoid  
B. Rectangle  
C. Rhombus  
D. Parallelogram

12.) A line segment has endpoints J(9, 7) and K(11, 5). The point K is the midpoint of line segment JL.

A.) What is the midpoint? (K)

$$M = \frac{9+11}{2}, \frac{7+5}{2}$$

(10, 6)

B.) What is an equation of a line perpendicular to JL and passing through K?

$$m = 1 \quad (10, 6)$$

$$y - 6 = 1(x - 10)$$

$$y - 6 = x - 10$$

$$y = x - 4$$

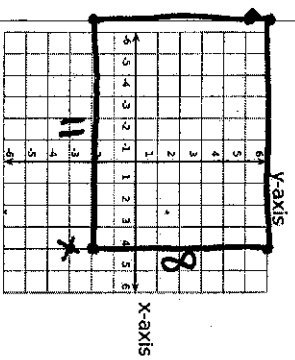
y = x - 4

14.) Check ALL of the terms that could describe a quadrilateral with two pairs of parallel sides, opposite congruent sides and four congruent angles.

- Trapezoid  
 Rectangle  
 Parallelogram  
 square  
 Rhombus

15.) Calculate the area of the rectangle with vertices at:

A(-7, 6), B(4, 6), C(4, -3) and D(-7, -3)



A = 88 units<sup>2</sup>

16.) A construction company is adding a new road in a small town. This road must run perpendicular to the existing road, and must pass through the coordinate (4, 8) on a map. If the equation for the existing road is  $y = 5x + 8$ , what will the equation for the new road be?

$$m = -\frac{1}{5}$$

$$y - 8 = -\frac{1}{5}(x - 4)$$

$$y - 8 = -\frac{1}{5}x + \frac{4}{5} + 8$$

y = -1/5x + 44/5

17.) What is the area of a triangle with vertices at T(1, 2), U(3, 5) and V(6, -1)?

$$\frac{TV}{UV} \cdot \frac{TV}{TV}$$

$$\frac{\sqrt{(1-3)^2 + (2-5)^2}}{\sqrt{(3-6)^2 + (5+1)^2}} \cdot \frac{\sqrt{(1-6)^2 + (2+1)^2}}{\sqrt{(3-6)^2 + (5+1)^2}}$$

$$\frac{\sqrt{(-2)^2 + (-3)^2}}{\sqrt{(-3)^2 + 6^2}} \cdot \frac{\sqrt{(-5)^2 + 3^2}}{\sqrt{(-3)^2 + 6^2}}$$

$$\frac{\sqrt{4+9}}{\sqrt{9+36}} \cdot \frac{\sqrt{25+9}}{\sqrt{9+36}}$$

$$\frac{\sqrt{13}}{\sqrt{45}} \cdot \frac{\sqrt{34}}{\sqrt{45}}$$

$$\frac{\sqrt{13} \cdot \sqrt{34}}{45}$$

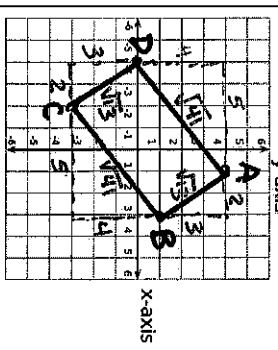
A = 23/2 U 2

18.) Simplify the following radicals.

A.  $\sqrt{98}$  7 $\sqrt{2}$       B.  $\sqrt{32}$  4 $\sqrt{2}$       C.  $\sqrt{27}$  3 $\sqrt{3}$

$\sqrt{49} \cdot \sqrt{2}$        $\sqrt{16} \cdot \sqrt{2}$        $\sqrt{9} \cdot \sqrt{3}$

19.) A rectangle is a quadrilateral with two pairs of parallel congruent opposite sides, and consecutive sides that are perpendicular. Quadrilateral ABCD as vertices A(1, 4), B(3, 1), C(-2, -3), and D(-4, 0). Use the slopes and lengths of sides to determine if this quadrilateral is a rectangle. Clearly label your work.



Quadrilateral ABCD IS NOT a rectangle because:

- 2 sets of parallel congruent sides
- NO PERPENDICULAR LINES  $\rightarrow$  NO R.T.'S
- 

SLOPES

AB  $\frac{1-4}{3-1} = -\frac{3}{2}$       BC  $\frac{-3-1}{-2-3} = \frac{-4}{-5} = \frac{4}{5}$       AB || CD

CD  $\frac{0+3}{-4+2} = -\frac{3}{2}$       AD  $\frac{0-4}{-4-1} = \frac{-4}{-5} = \frac{4}{5}$       BC || AD

NO right angles  
(NO perpendicular lines)  
 $\downarrow$   
NO opposite reciprocal slopes