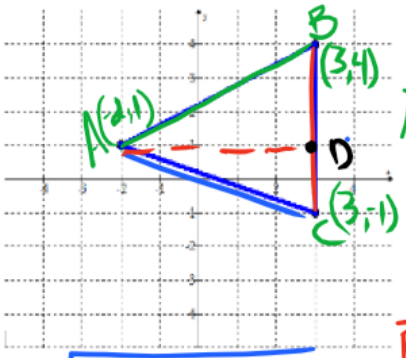
Coordinate Plane Part 1 Review

Name_____

1. Find the Area and perimeter of following triangle.



Perimeter

$\overline{AB}$: $d=\sqrt{(3-(-2))^2+(4-1)^2}$
$=\sqrt{5^2+3^2}$
$=\sqrt{25+9}$
$=\sqrt{34}$

$\overline{BC}$: $d=\sqrt{(3-3)^2+(-1-4)^2}$
$d=\sqrt{(0)^2+(-5)^2}$
$=\sqrt{0+25}$
$=\sqrt{25}=5$

$\overline{AC}$: $d=\sqrt{(3-(-2))^2+(-1-1)^2}$
$=\sqrt{(5)^2+(-2)^2}$
$=\sqrt{25+4}$
$=\sqrt{29}$

Area $=\frac{1}{2}$ base(height)

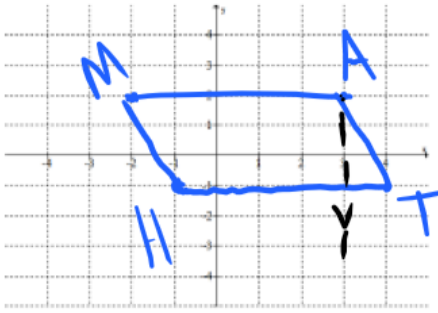
$b=\overline{BC}=5$

$h=\overline{AD}=5$

$A=\frac{1}{2}(5)(5)=12.5$

$P=\sqrt{34}+\sqrt{29}+5=16.216$

2. Plot the following points on the graph below. Calculate the perimeter & Area of the graphed shape.
M(-2, 2) A(3, 2) T(4, -1) H(-1, -1)



Perimeter

$\overline{MA}$: $d=5$

$\overline{HT}$: $d=5$

$\overline{MH}$: $d=\sqrt{(-1-(-2))^2+(-1-(-2))^2}$
$=\sqrt{(1)^2+(1)^2}$
$=\sqrt{2}$

$\overline{AT}$: $d=\sqrt{(4-3)^2+(-1-2)^2}$
$=\sqrt{(1)^2+(-3)^2}$
$=\sqrt{10}$

$P=5+5+\sqrt{10}+\sqrt{10}=16.325$

Area $A=b\cdot h$

b: $\overline{HT}$: $d=5$

h: $\overline{AT}$: $d=3$

$A=5(3)=15$

3. Is triangle ABC a Right Triangle? Use slope and/or distance formula to justify your answer.
A(-3,-1), B(-2,-2) C(-4,-4)

$\overline{AB}$: $m=\frac{-2-(-1)}{-2-(-3)}=\frac{-1}{1}=-1$

$\overline{BC}$: $m=\frac{-4-(-2)}{-4-(-2)}=\frac{-2}{-2}=1$

$\overline{AC}$: $m=\frac{-4-(-1)}{-4-(-3)}=\frac{-3}{-1}=3$

$\triangle ABC$ is a right triangle because $\overline{AB}$ and $\overline{BC}$ have opp. reciprocal slopes, which makes them perpendicular.

4. If figure EFGH a Parallelogram, Square, Rectangle, or none of these? Use slope and/or distance formula to justify your answer.

E = (1, 2), F = (2, 5), G = (5, 6) and H = (4, 3).

$\overline{EF}$: $m = \frac{5-2}{2-1} = \frac{3}{1}$

$\overline{FG}$: $m = \frac{6-5}{5-2} = \frac{1}{3}$

$\overline{GH}$: $m = \frac{3-6}{4-5} = \frac{-3}{-1} = \frac{3}{1}$

$\overline{HE}$: $m = \frac{2-3}{1-4} = \frac{-1}{-3} = \frac{1}{3}$

EFGH is a parallelogram because opp. sides have the same slope. This means that the opp. sides are parallel.

5. Find two equations one that is parallel & one that is perpendicular to the line 2y-12x=18 that passes through (12, 30)

Original line

$2y - 12x = 18$

$2y = 12x + 18$

$y = 6x + 18$

$m = 6$

New line: parallel

$m = 6$

$y = 6x + b$

$(30) = 6(12) + b$

$30 = 72 + b$

$-42 = b$

$y = 6x - 42$

New line: perpendicular

$m = -\frac{1}{6}$

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

$30 = -\frac{1}{6}(12) + b$

$30 = -2 + b$

$32 = b$

$y = -\frac{1}{6}x + 32$

6. Find two equations one that is parallel & one that is perpendicular to the line going through these points (9,16), (11,-20).

Original line

$m = \frac{-20-16}{11-9}$

$= \frac{-36}{2}$

$= -18$

New line: Parallel

$m = -18$

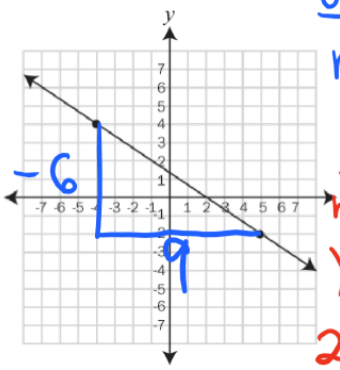
$y = -18x$

New line: Perp.

$m = -\frac{1}{18}$

$y = -\frac{1}{18}x$

7. Find two equations one that is parallel & one that is perpendicular to the line shown and pass through the point (6,2).



original line

$m = \frac{-6}{9} = \frac{-2}{3}$

New Line: Parallel

$m = -\frac{2}{3}$ (6,2) (x, y)

$y = -\frac{2}{3}x + b$ → $y = -\frac{2}{3}x + 6$

$2 = -\frac{2}{3}(6) + b$

$2 = -4 + b$

$6 = b$

New line: Perp

$m = \frac{3}{2}$ (6,2)

$y = \frac{3}{2}x + b$ → $y = \frac{3}{2}x - 7$

$2 = \frac{3}{2}(6) + b$

$2 = 9 + b$

$-7 = b$