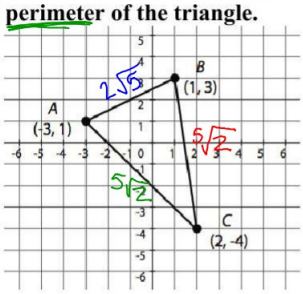
Sec1	Notes 4-3 Applications of Distance Formula	Unit 4

Vocabulary Words	
Perimeter:	Add all the sides together
Calculating Perimeter:	1. Use the distance formula to find each side length 2. Add all side lengths
Area:	$A = b \cdot h$ or $A = l \cdot w$
Calculating Area of a Rectangle:	1. Use the distance formula to find each side length 2. Multiply the 2 sides that are different lengths

Example 1: Triangle ABC has vertices A(-3, 1), B(1, 3), and C(2, -4). Calculate the perimeter of the triangle.



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

$= 2\sqrt{5}$

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

$= 5\sqrt{2}$

$CA = \sqrt{(2--3)^2 + (-4-1)^2}$

$= 5\sqrt{2}$

$2\sqrt{5} + 5\sqrt{2} + 5\sqrt{2} = 2\sqrt{5} + 10\sqrt{2}$ or 18.6

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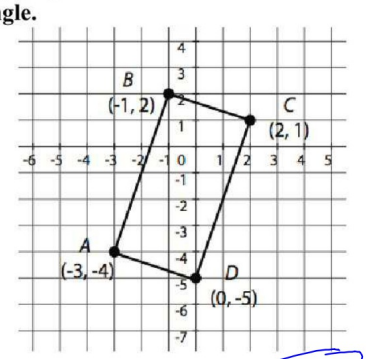
Example 2: Rectangle ABCD has vertices A(-3, -4), B(-1, 2), C(2, 1), and D(0, -5). Calculate the area and perimeter of the rectangle.



$AB = \sqrt{(-3--1)^2 + (-4-2)^2}$

$2\sqrt{10}$

$BC = \sqrt{(-1-2)^2 + (2-1)^2}$

$\sqrt{10}$

$CD = \sqrt{(2-0)^2 + (1--5)^2}$

$2\sqrt{10}$

$DA = \sqrt{(0--3)^2 + (-5--4)^2}$

$= \sqrt{10}$

$2\sqrt{10} \cdot \sqrt{10} = 20$ units^2

Definition of Circle: Made up of points that are the same distance from the center (radius)

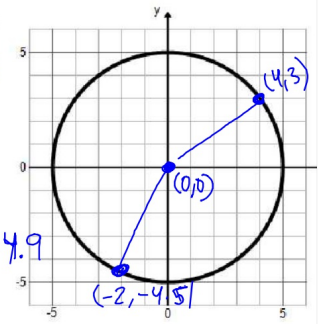
Example 3: Given this circle with an origin of the center and radius 5...

(0,0)

A. Is (4, 3) on the circle?

$\sqrt{(4-0)^2+(3-0)^2} = 5$

Yes



(0,0)

B. Is (-2, -4.5) on the circle?

$\sqrt{(-2-0)^2+(-4.5-0)^2} = 4.9$

NO

C. Is $(\sqrt{7}, 3\sqrt{2})$?

(0,0)

$\sqrt{(\sqrt{7}-0)^2+(3\sqrt{2}-0)^2} = 5$

Yes

Example 4: Given a circle with radius 4 and centered at (1, 3): prove whether or not the following points are on the circle.

A. (3.5, 6) and (1,3)

$\sqrt{(3.5-1)^2+(6-3)^2} = 3.9$

NO

B. (1, 7) and (1,3)

$\sqrt{(1-1)^2+(7-3)^2} = 4$

Yes