Geometry
Unit 7 – Coordinate Geometry
Day 3 Classwork on Applications.

Name _____
Date _____ Block _____

Determine if the given points are ON, INSIDE, or OUTSIDE the given circle:

Center=(5,-2) Radius = 6

(SHOW ALL YOUR WORK)

Circle: $(x-5)^2 + (y+2)^2 = 36$

1. (10, 0)

$r=\sqrt{(10-5)^2+(0+2)^2}$

5^2+2^2

$25+4$

$\sqrt{29}=5.4$

inside

2. (3, 1)

$r=\sqrt{(5-3)^2+(-2-1)^2}$

$2^2 \quad -3^2$

$4+9$

$\sqrt{13}=3.4$

inside

3. (-2, -2)

$r=\sqrt{(-2-5)^2+(-2+2)^2}$

$-7^2 \quad 0$

$\sqrt{49}=7$

Outside

4. A circle has a radius of 2 and a center of (2, -3). Will the following points lie on the circle?

a. (2, -5)

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

$0+2^2$

$\sqrt{4}=2$

on

b. (3, -1)

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

$(1)^2+(2)^2$

$1+4$

$\sqrt{5}=2.2$

Outside

5. Austin loves listening to his favorite country station, 101.5 Kicks fm. On a map, the station's headquarters are located at (7, 3) and emits a signal that reaches a 50 mile radius.

a. Can Austin listen to his favorite station when he's chilling by the pool at a friend's house who lives at (49, -5)?

$r=\sqrt{(49-7)^2+(-5-3)^2}$

$(42)^2+(-8)^2$

$1764+64$

$\sqrt{1828}$

42.7 miles

Austin is inside the Circle so he can get the signal

Convert

6. The Space Race in the 1960's between The Soviets and The Americans was a race to see who could get a spacecraft to the moon first. The moon has a 2-dimensional region of: $x^2 + y^2 + 882x - 166y + 90{,}345 = 0$. Which country "won" the space race (landed on the moon)?

$(x^2+882x\ \frac{194,481}{441.44})^2 + (y^2-166y+\frac{6889}{83.85}) = -90345+194,481+6889$

$(x+441)^2 + (y-83)^2 = 111,025$

Russia shoots a rocket that lands at: $(-100, 80)$

Center $= (-441, 83)$

$r = 333.2$

$r = \sqrt{(-441+100)^2+(83-80)^2}$

$(-341)^2+(3)^2$

$116281+9$

$\sqrt{116290}$

$r = 341.01$

Russia overshot the moon

USA shoots a rocket that lands at: $(-400, -200)$

Center $(-441, 83)$

$r = 333.2$

$r = \sqrt{(-441+400)^2+(83+200)^2}$

$(41)^2 + (283)^2$

$1681 + 80089$

$\sqrt{81770}$

$r = 285.8$

USA Landed on the moon

7. Clowns are roaming around different areas of Acworth. One clown is at $x^2 + 6x + y^2 - 31 = 0$ And the other clown is roaming a center of $(-2, -2)$ with a radius of 4 miles. Will anyone be attacked by clowns?

one clown $(x^2+6x\ \frac{+9}{3.3})^2 + y^2 = +31+9$

$(x+3)^2+y^2 = 40$

one clown $C = (-3, 0)$ $r = 6.3$ miles

2nd Clown $C = (-2, -2)$ $r = 4$

a. Your house is at (6, 0) $= 9$ miles outside

Clown 1 $= r = \sqrt{(6+3)^2+(0+0)^2}$

$(9)^2$

$81 = 9$

Clown 2 $= r\ \sqrt{(6+2)^2+(0-2)^2}$

$8^2 + 4^2$

$64+16 = \sqrt{80}$

b. Your friend's house is at (3, -3) outside

Clown 1 $\sqrt{(3+3)^2+(-3,0)^2}$

$(9)^2+(3)^2$

$81+9$

$\sqrt{90} = 9.5$ miles

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

$(5)^2+(-1)^2$

$25+1$

$\sqrt{26} = 5.1$ miles

You Both are Safe.