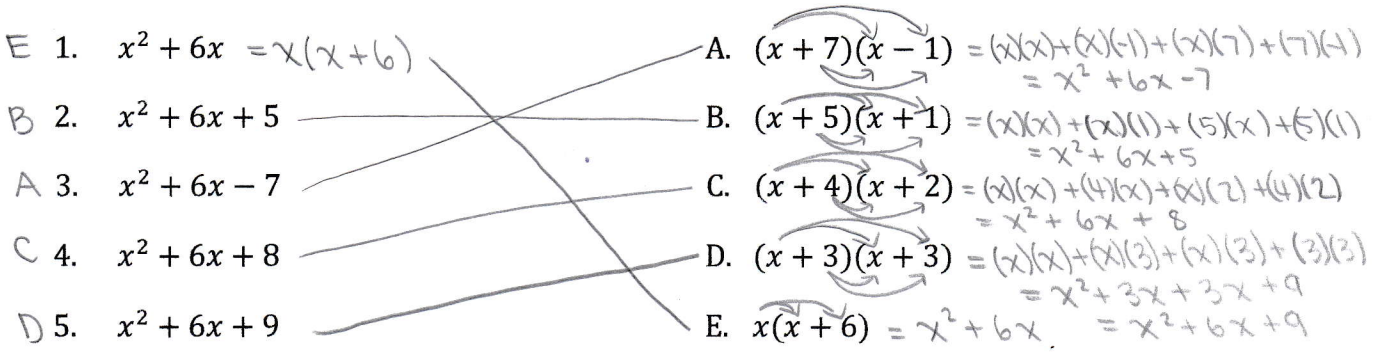
Name: Key Period: _____

# MULTIPLYING BINOMIALS PRACTICE PROBLEMS

1. Match each quadratic expression with an equivalent expression in factored form. Show your work.




2. An equation of a circle is $x^2 - 8x + 16 + y^2 + 10y + 25 = 81$.

   a. What is the radius of the circle?

   The radius of the circle is 9.

$x^2-8x+16+y^2+10y+25=81$
$[x^2-2(4)x+4^2]+[y^2+2(5)x+5^2]=81$
$(x-4)^2+(y+5)^2=81$
$(x-4)^2+(y+5)^2=9^2$

   b. What is the center of the circle?

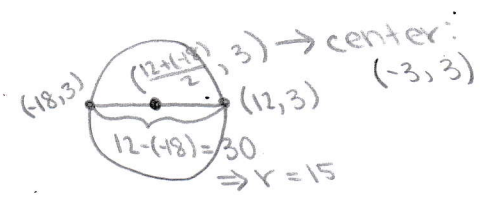
   The center of the circle is $(4,-5)$.

3. Write 3 perfect square trinomials. Then rewrite them as squared binomials.

$x^2+10x+25$ $(x+5)^2$

$x^2-8x+16$ $(x-4)^2$

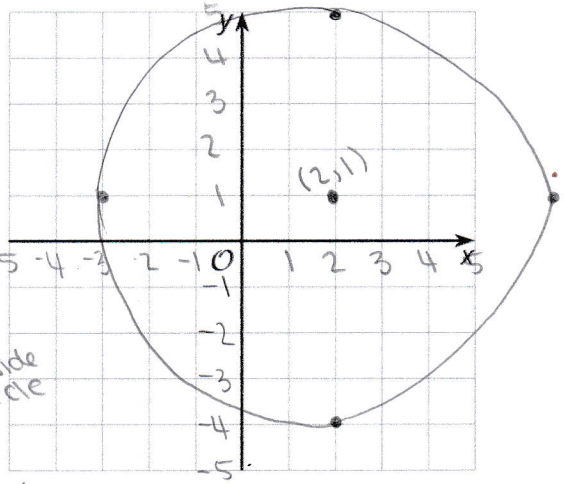
$x^2-6x+9$ $(x-3)^2$




4. a. Write an equation of the circle that has a diameter with endpoints (12,3) and (-18,3).

$(x+3)^2 + (y-3)^2 = 15^2$

a. Graph the circle $(x-2)^2 + (y-1)^2 = 25$.




b. For each point, determine if it is on the circle. If not, decide whether it is inside the circle or outside of the circle. distance from (x,y) to center (2,1) must be 5.

i. (4,0) ← not on circle

$\sqrt{(4-2)^2+(0-1)^2} = \sqrt{4+1} = \sqrt{5} < 5$ inside circle

ii. (-3,3) ← not on circle

$\sqrt{(-3-2)^2+(3-1)^2} = \sqrt{25+4} = \sqrt{29} > 5$ outside circle

iii. (-2,-2)

$\sqrt{(-2-2)^2+(-2-1)^2} = \sqrt{16+9} = \sqrt{25} = 5$ on the circle

d. How can you use distance calculations to decide if a point is inside, on, or outside a circle?

If the distance from the center of the circle to the point is:
equal to the radius (on the circle)
less than the radius (inside the circle)
greater than the radius (outside the circle)

5. The triangle whose vertices are (2,5), (3,1), and (4,2) is transformed by the rule $(x, y) \rightarrow (x-2, y+4)$. Is the image similar or congruent to the original figure?

(a.) The image is congruent to the original triangle. $(x,y) \rightarrow (x-2, y+4)$

The transformation $(x,y) \rightarrow (x-2, y+4)$ is a translation, therefore there exists a sequence of rigid transformations that takes the image to the pre-image. (⇒ they are ≅)

moves image left 2 units

moves image up 4 units

b. The image is similar but not congruent to the original triangle.

c. The image is neither similar nor congruent to the original triangle.