

What Is a Circle?

Write your answers in your own words. Draw and label diagrams in the sketch areas. After consolidation, revise your notes as needed.

DEFINITION OF A CIRCLE — in your own words, with a labeled sketch

Definition:	Sketch:

THE EQUATION OF A CIRCLE — and where it comes from

For a circle with center (h, k) and radius r:

$$(x - h)^2 + (y - k)^2 = r^2$$

Where this equation comes from — in your own words:

CONNECTION TO PRIOR WORK — what other equation is this the same as?

The equation of a circle is really the _____ formula in disguise.
The distance formula is itself the _____ theorem applied to two points in the coordinate plane.

WHAT TO REMEMBER — common mistakes and the sign trap

The sign trap:
The equation $(x + 1)^2 + (y - 4)^2 = 49$ has center (____, ____) and radius ____
The signs in the center are **opposite** to what they look like in the equation.

Other things to remember:

WORKED EXAMPLES — *three uses of the equation*

Example a — Given center and radius, write the equation

Center $(-2, 7)$, radius 4. Equation:

Example b — Given the equation, find center and radius

$(x - 5)^2 + (y + 3)^2 = 25$. Center: _____ Radius: _____

Work:

Example c — Given a point, determine if it is on, inside, or outside the circle

Circle: $(x - 2)^2 + (y + 1)^2 = 25$. Is the point $(6, 2)$ on, inside, or outside?

Work:

Why this method works: