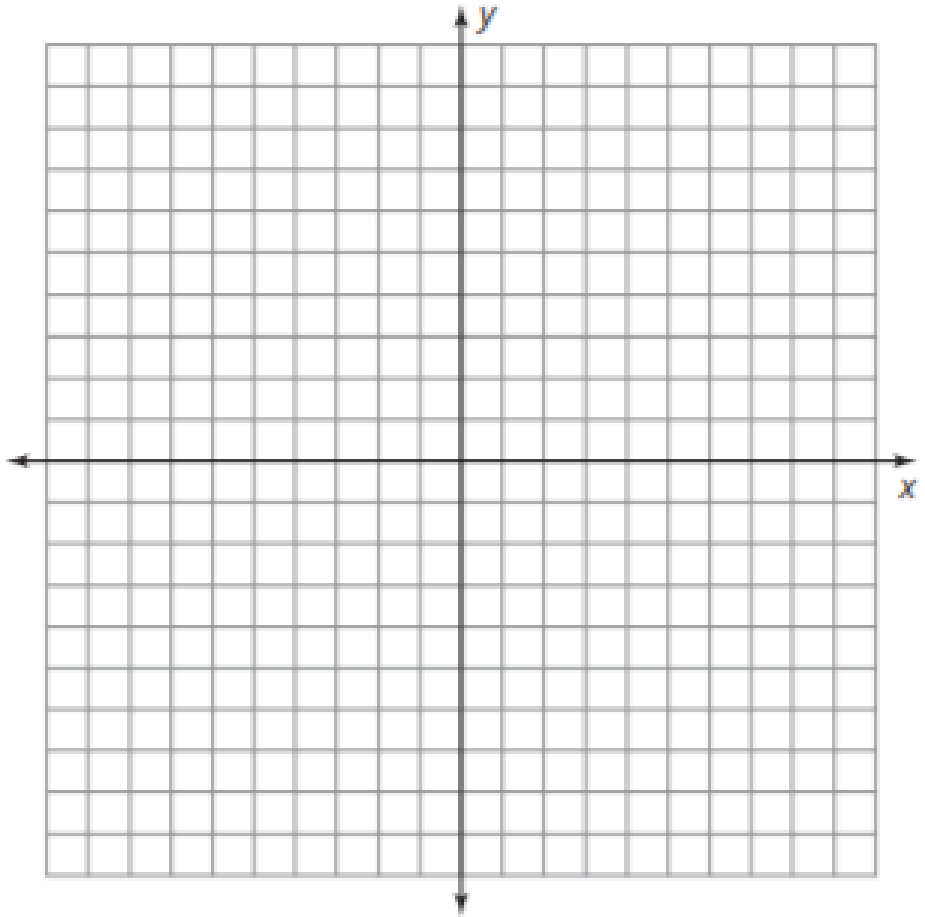
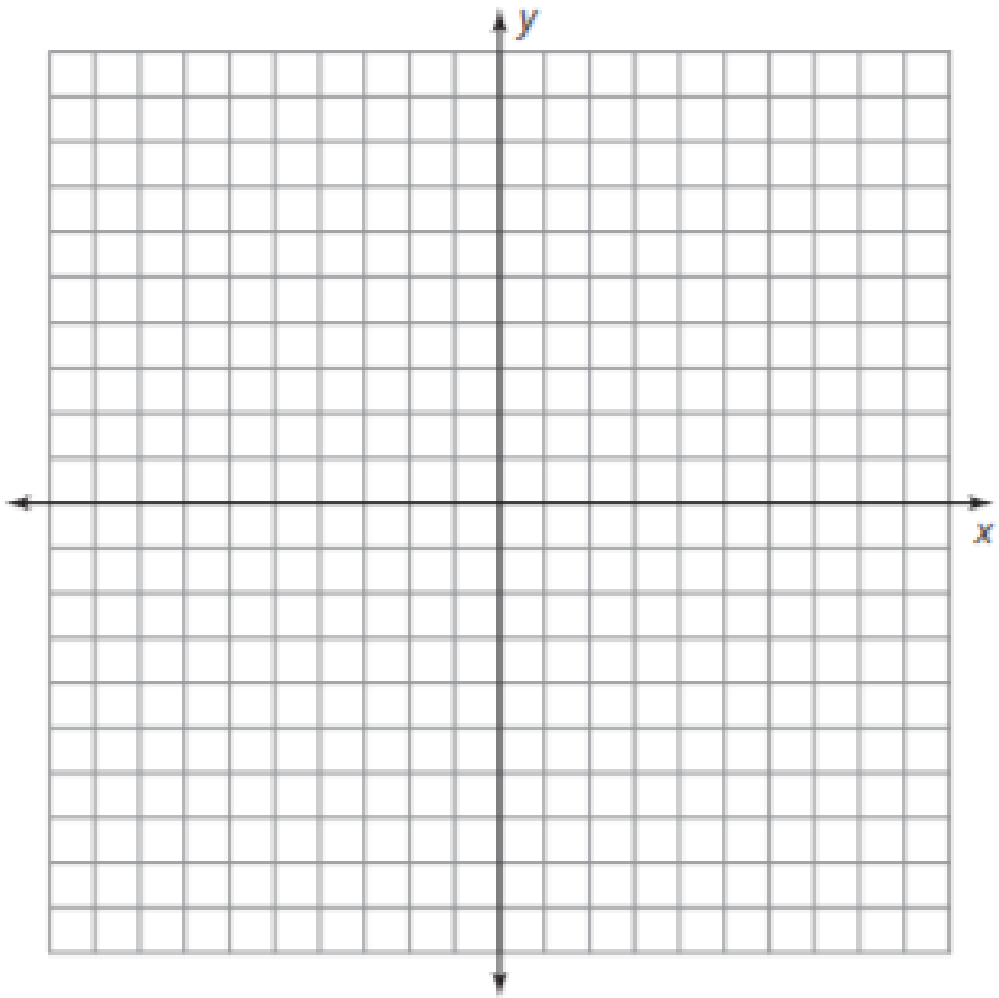
Determine each product algebraically. Show all your work and then use technology to verify your product is correct. Finally, sketch the graph and explain how the function demonstrates the Fundamental Theorem of Algebra.

$(x + 2)(5x + 1)$



d. $(x + 2)^3$



3. Max determined the product of three linear factors.

Max

The function $f(x) = (x + 2)^3$ is equivalent to $f(x) = x^3 + 8$.

a. Explain why Max is incorrect.

b. How many x-intercepts does the function $f(x) = (x + 2)^3$ have? How many zeros, counted with multiplicity? Explain your reasoning.

TALK the TALK

A Difference in Kind

In this lesson, you sketched polynomial functions using factors and rewrote them in general form.

1. **Use the factors to sketch each cubic function and label the zeros. Then rewrite the function in general form.**

   a. $f(x) = (x + 3)(-x + 5)(2 - 2x)$