EXPLORING HIGH SCHOOL MATH WITH GEOGEBRA AND DESMOS

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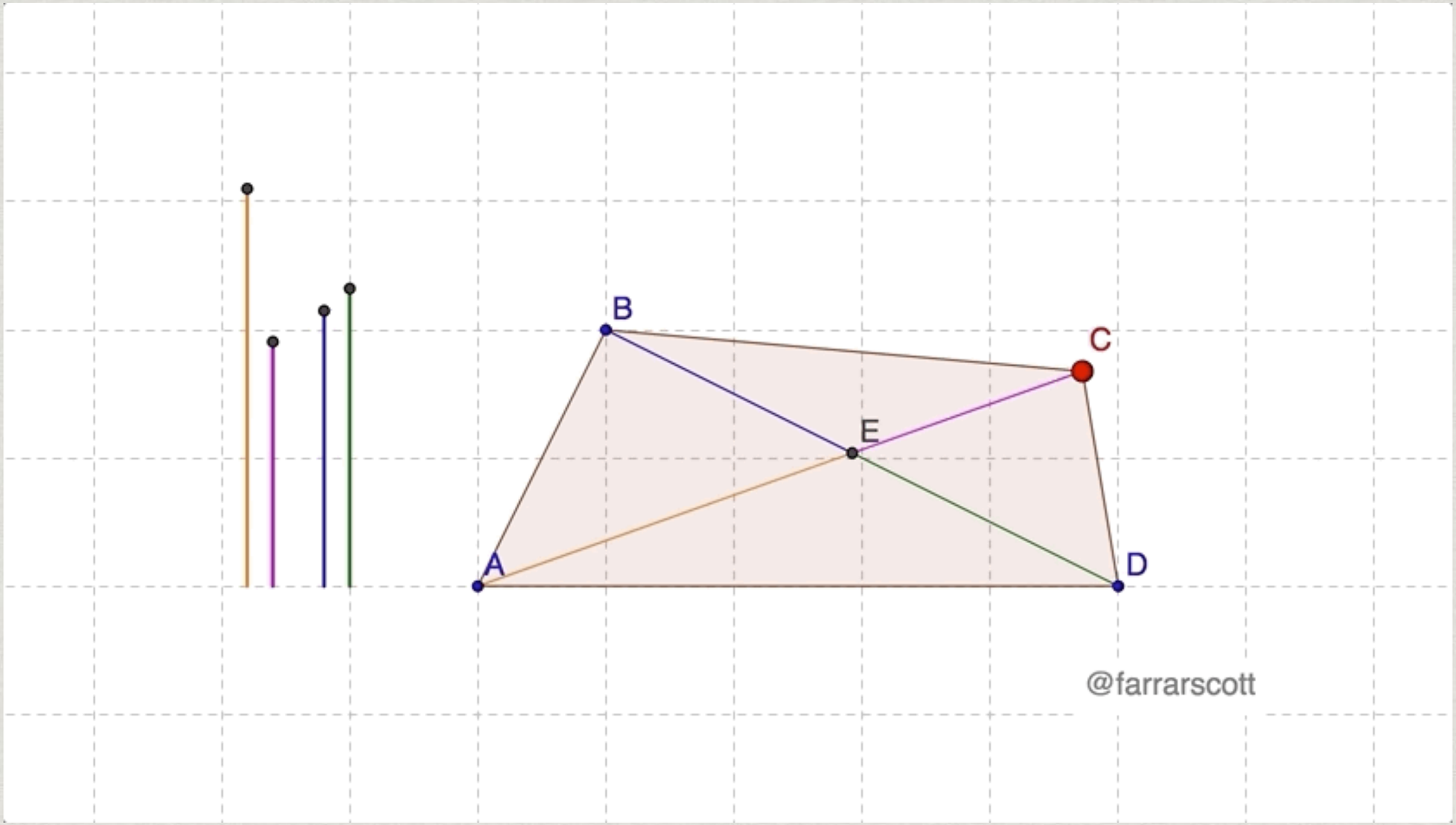
@FARRARSCOTT

EXPLORABLE EXPLANATIONS HACK-A-THON
SAN FRANCISCO 2018

DIAGONALS IN A QUAD

WHAT DO YOU NOTICE?

WHAT DO YOU WONDER?


B
C
E
A
D
@farrarscott

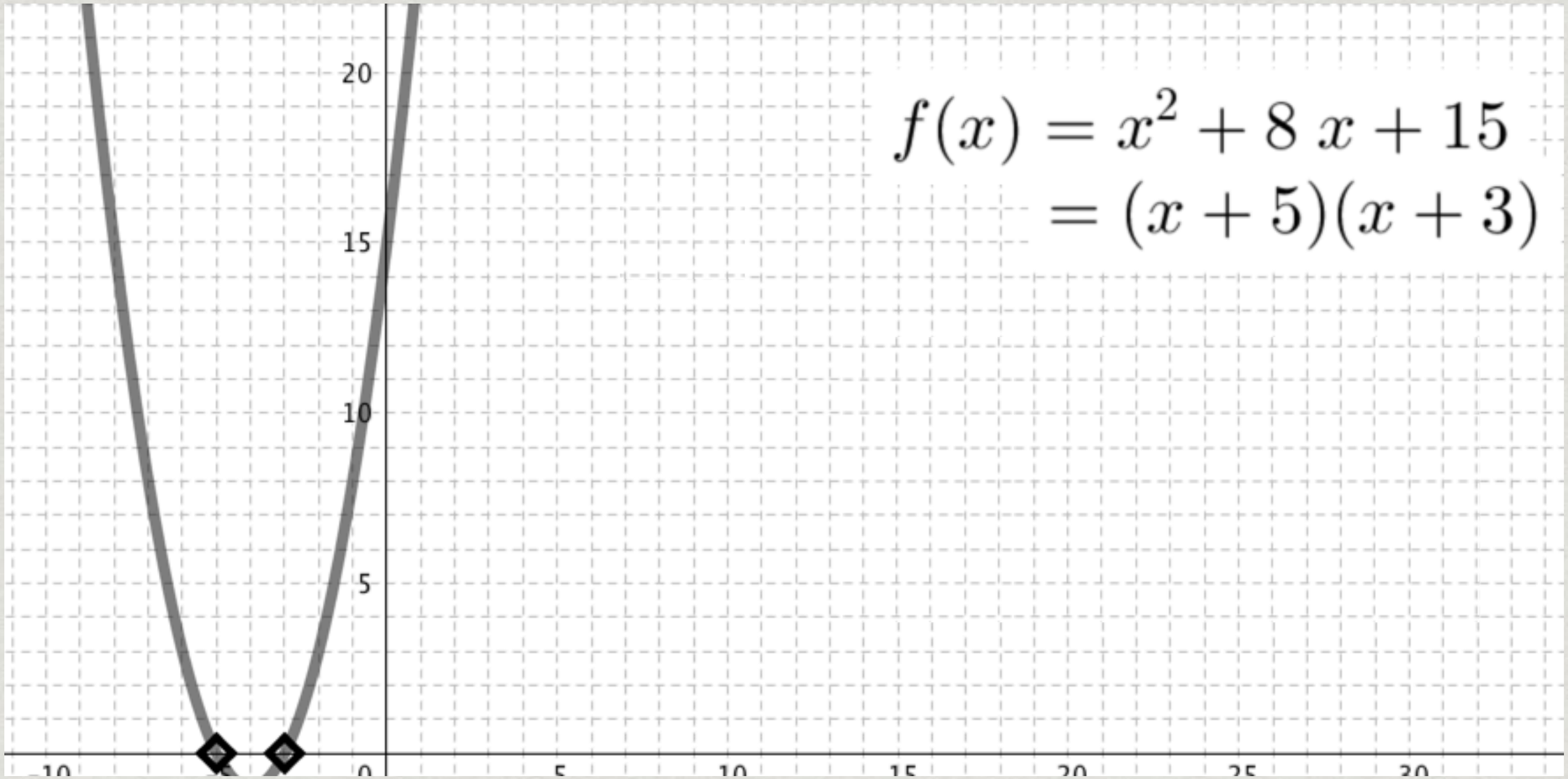
$$f(x) = x^2 + 8\,x + 15$$
$$= (x + \square)(x + \square)$$

FACTORING

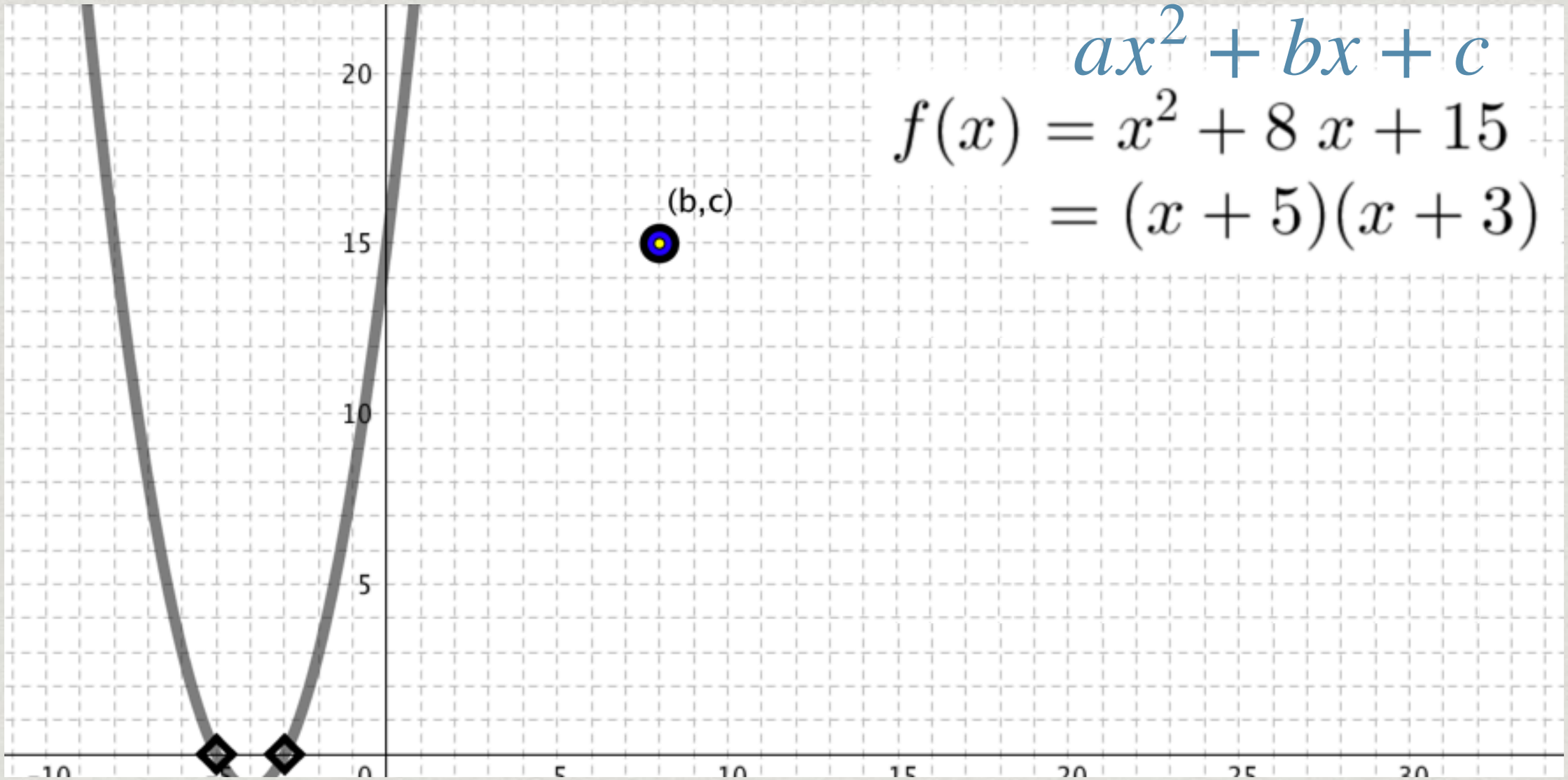
Does it factor using integers?

$$f(x) = x^2 + 8\,x + 15$$
$$= (x + \square)(x + \square)$$

Nice!



Remember that 8 and 15 worked.

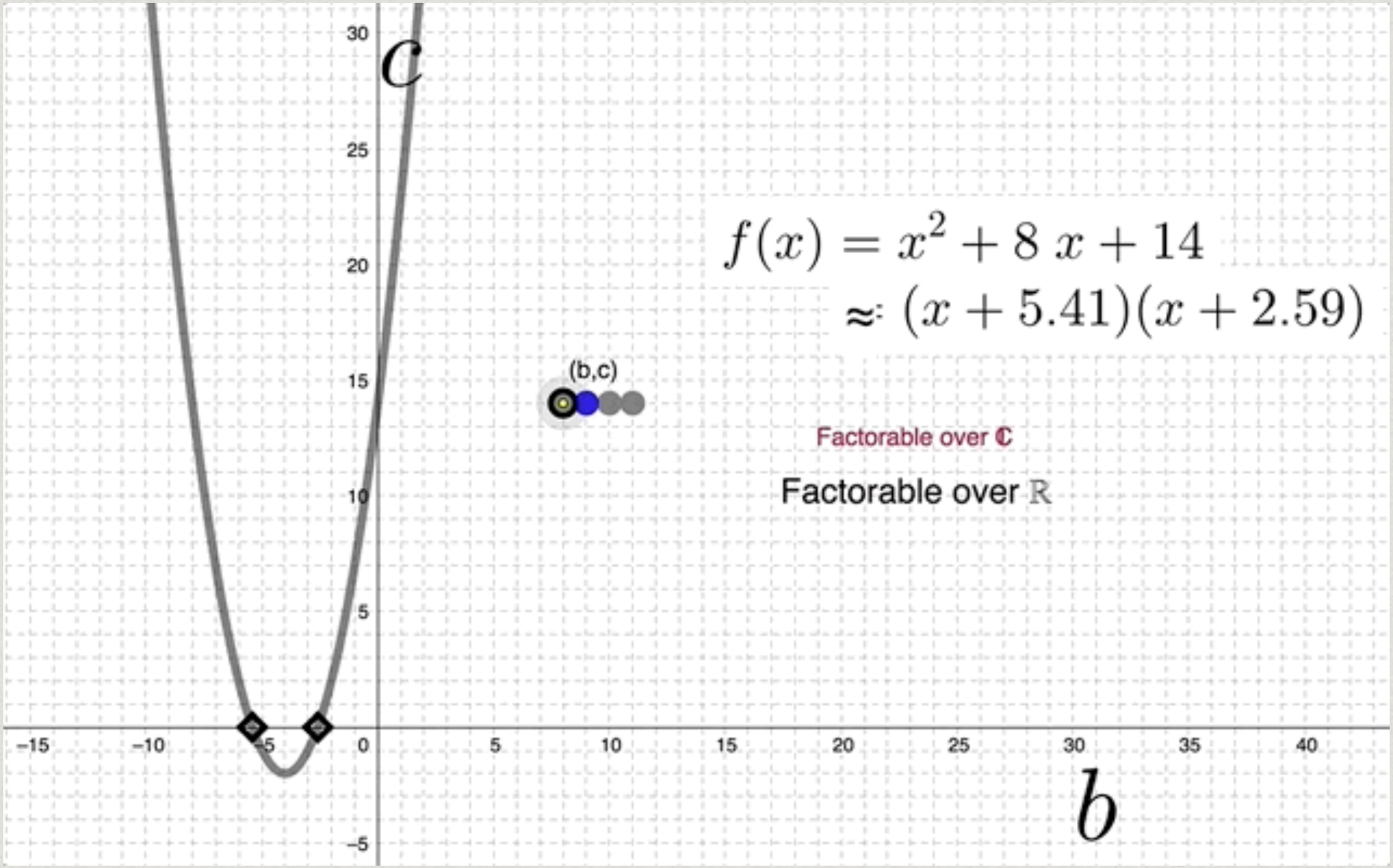


$$ax^2 + bx + c$$

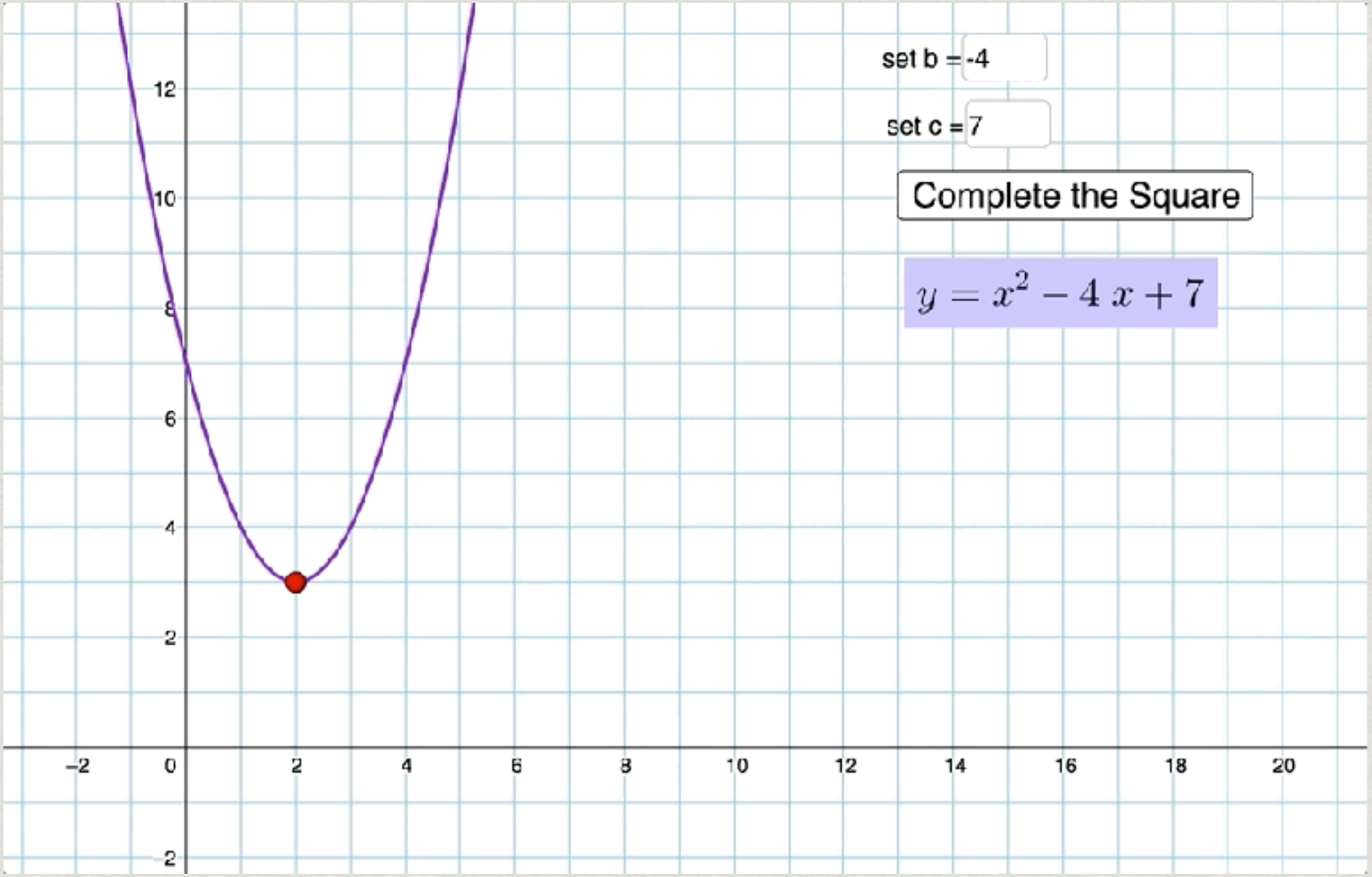
$$f(x) = x^2 + 8\,x + 15$$

$$= (x + 5)(x + 3)$$

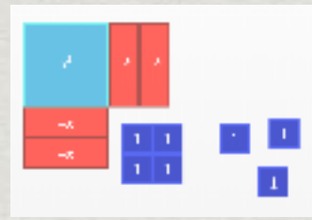
Up the ladder of abstraction



(what if it doesn't factor?
complete the square!)



(pair with the more familiar area model!)



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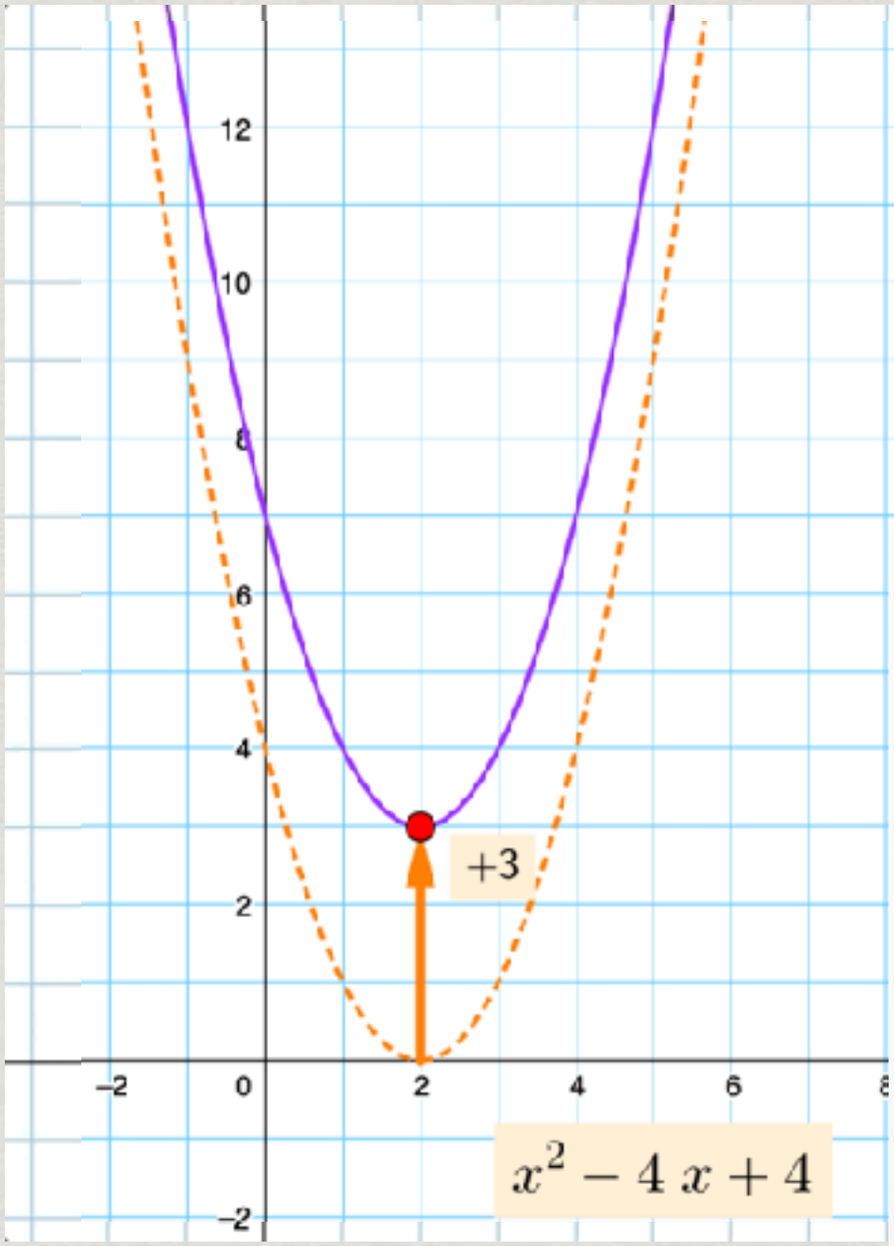
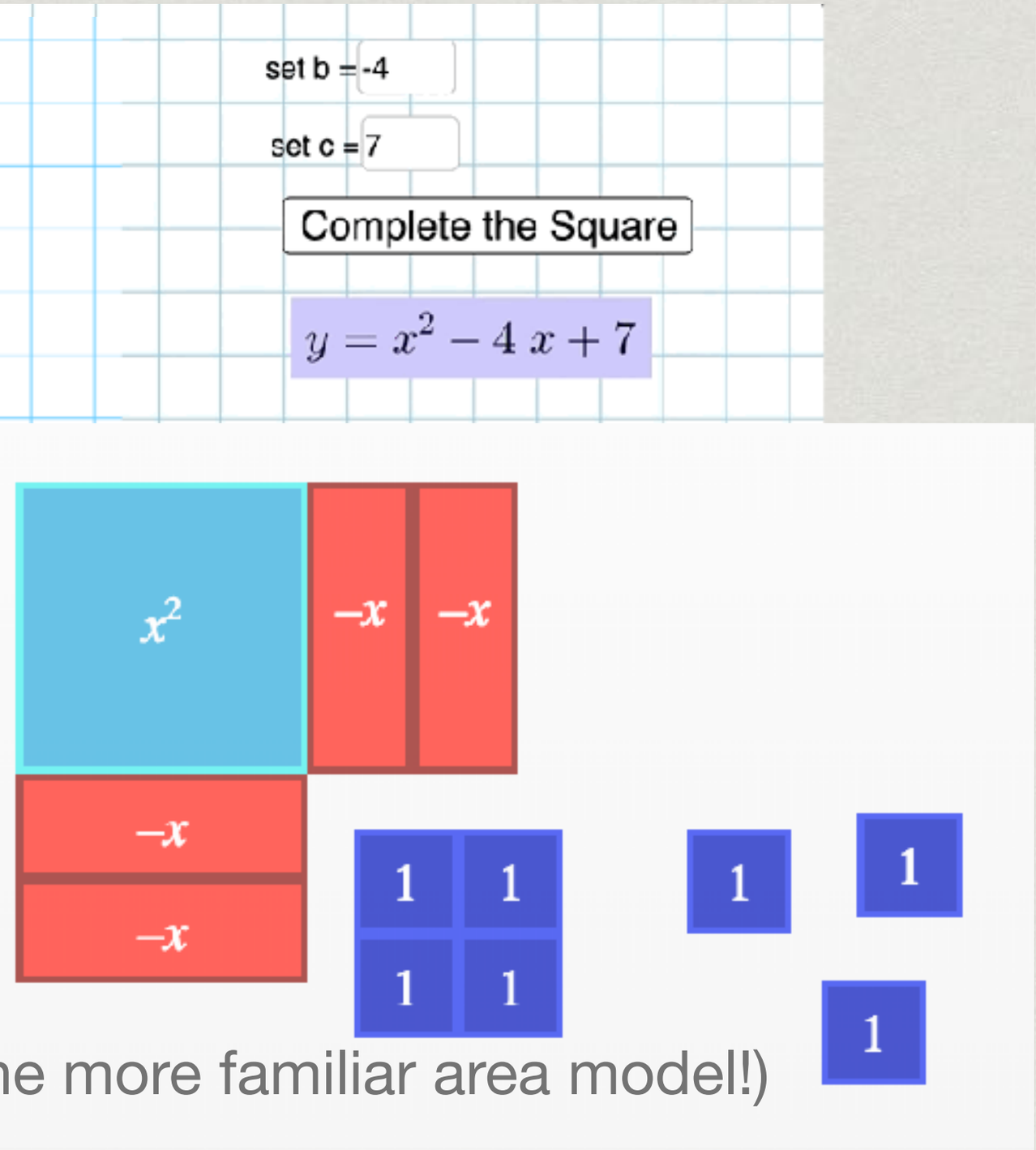
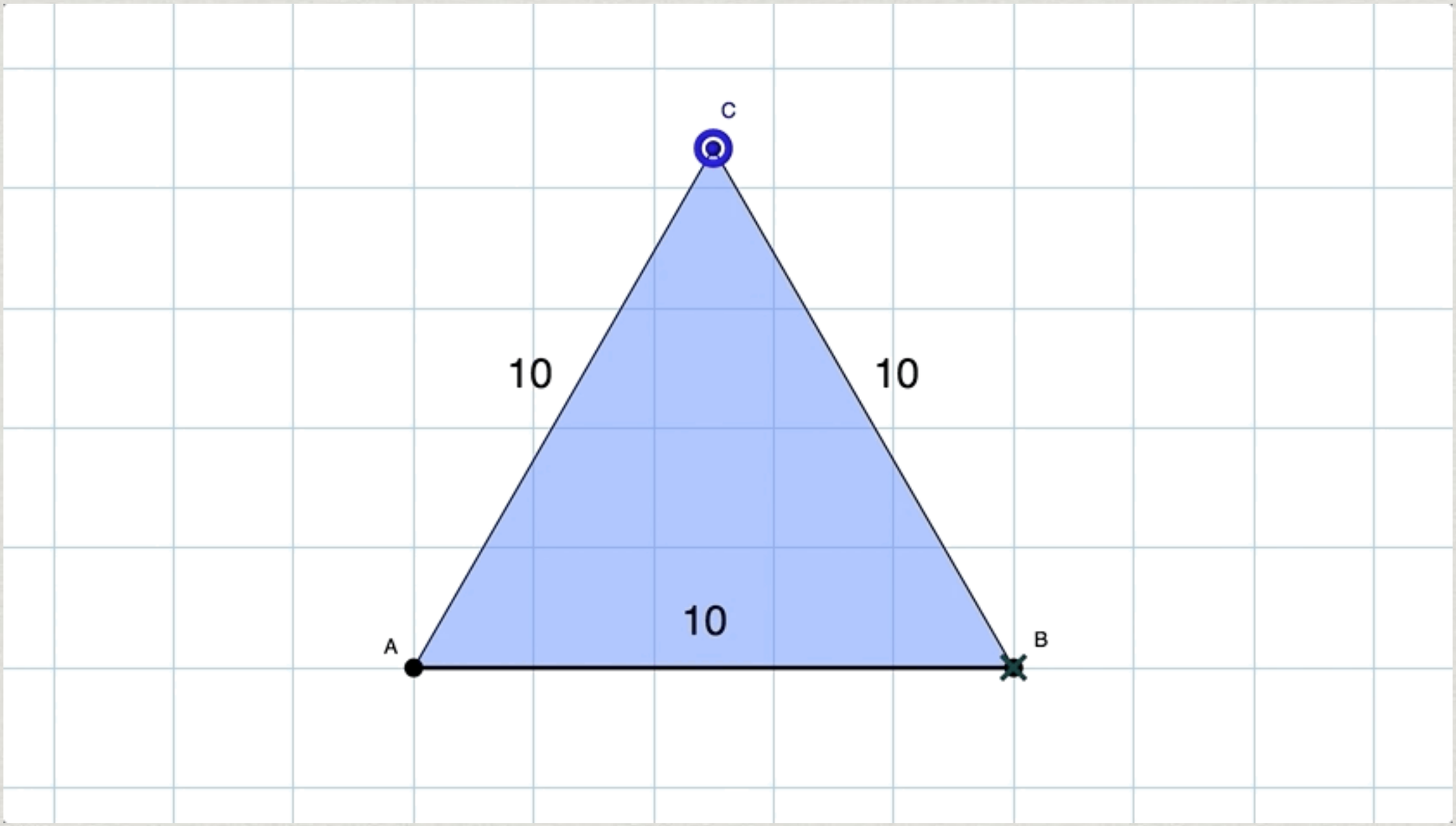




(pair with the more familiar area model!)

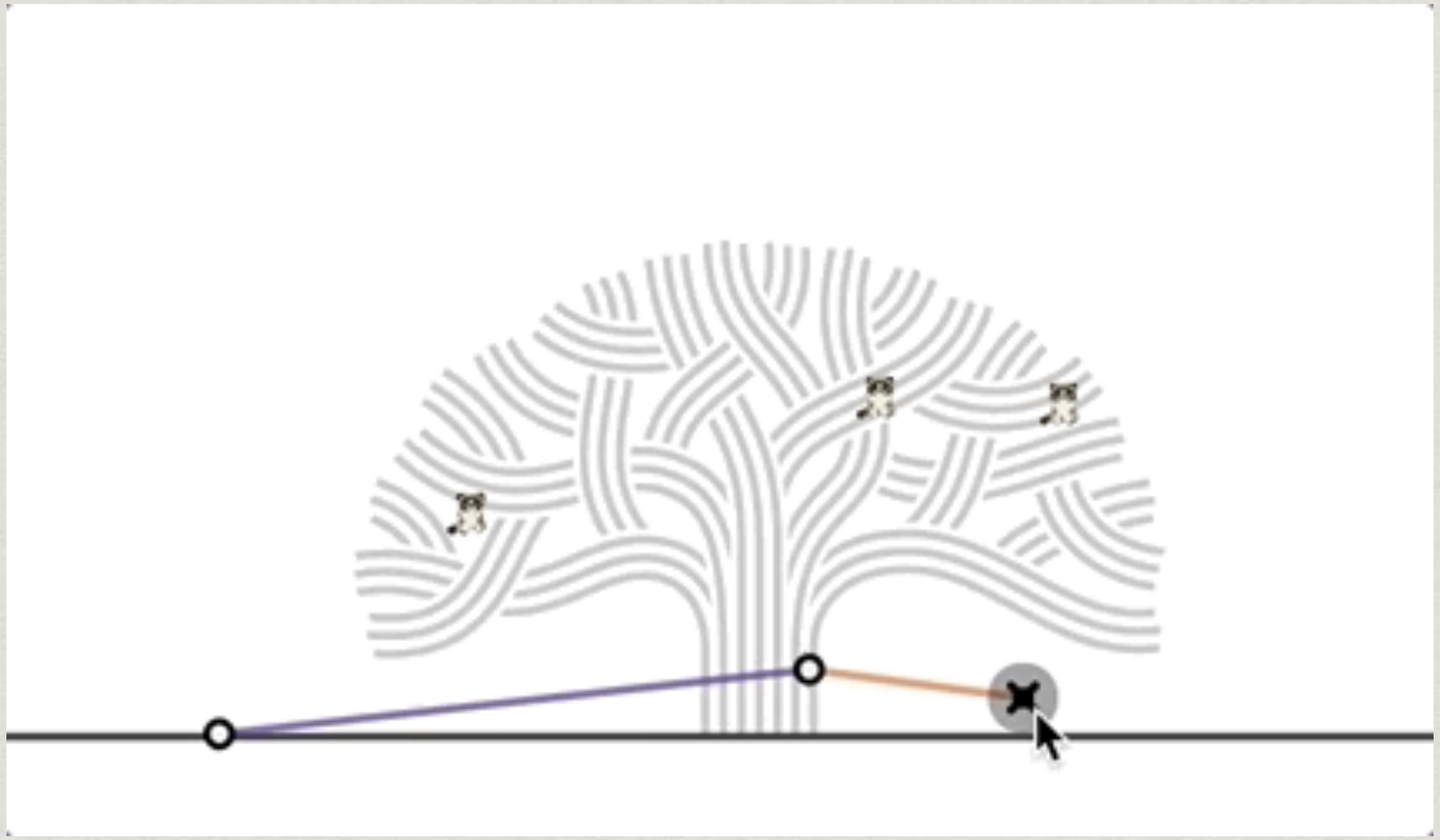
INTEGER TRIANGLES

Noticings? Wonderings?

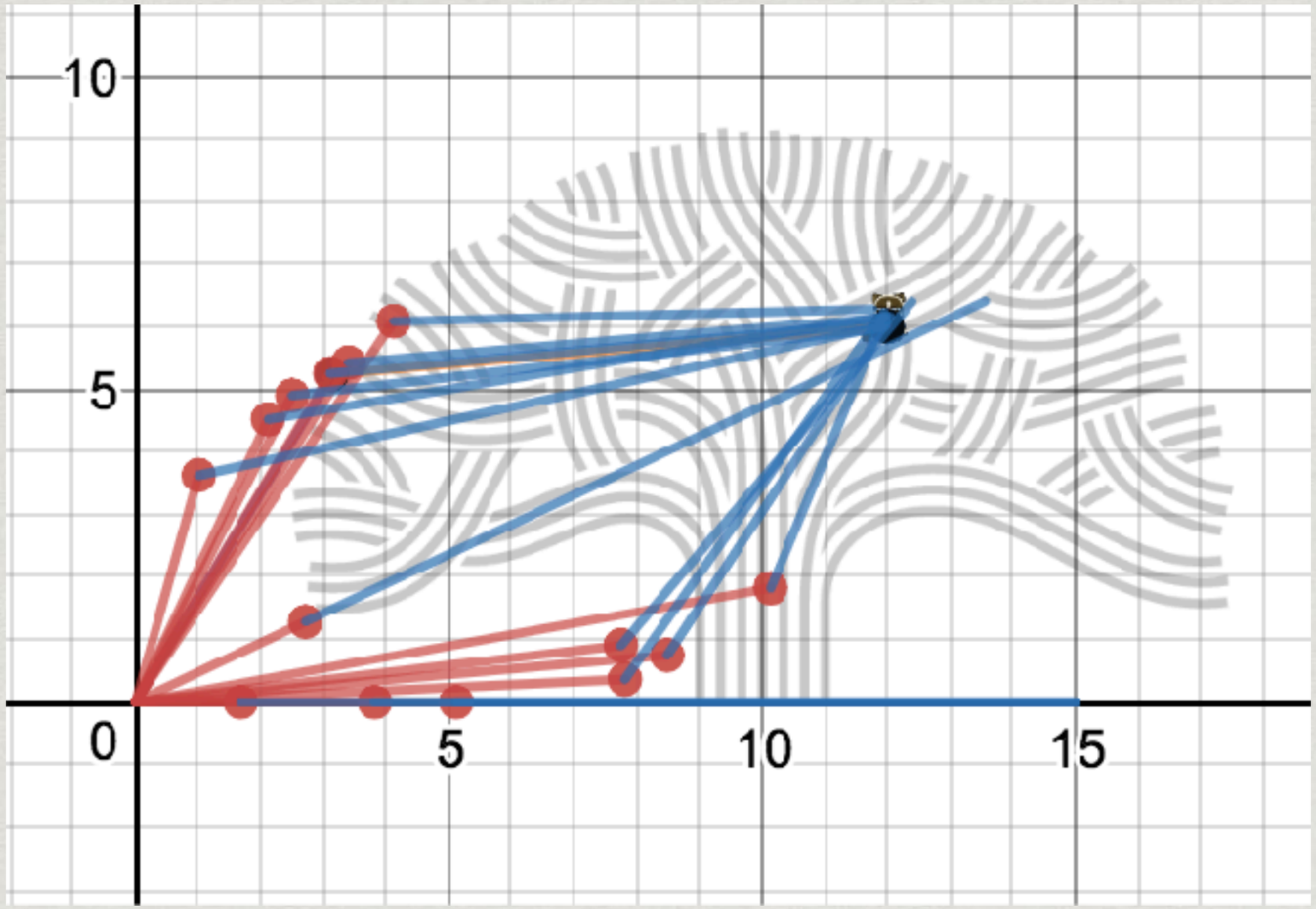


INDIVIDUAL EXPLORABLE VS. CLASSROOM ACTIVITY

Cat Rescue



Student Overlay with different hinges



LET STUDENTS BE RIGHT AND WRONG IN DIFFERENT, INTERESTING WAYS.

Desmos Activity Building Guide
http://blog.desmos.com/post/150453765267/the-desmos-guide-to-building-great-digital-math

desmos

SUPPORT EXPLORING
WITHHOLD EXPLAINING

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A LEARNER HAS A LOT OF KNOWLEDGE TO SHARE

Try it!

Hey, students!

Go to student.desmos.com

and type in:

J9K DH7

Links to interactives

- Diagonals in a Quad
  https://www.geogebra.org/m/RYEs8gH9#material/WxhmrA3H

- Factorable Quadratics
  https://www.geogebra.org/m/T5QGhqsP

- Complete the Square
  https://www.geogebra.org/m/mwf2ktdc

- Triangle Violin
  https://www.geogebra.org/m/rp3TW6K5#material/U5fZT4zd

- Grumpycat Rescue (teacher-facing link)
  https://teacher.desmos.com/activitybuilder/custom/5b5b86e2e622e30aa7412cf3

Citations

- Notice and Wonder - Annie Fetter https://twitter.com/MFAnnie
- Ladder of Abstraction - Bret Victor
- GeoGebra - www.geogebra.org
- Desmos - www.desmos.com
- Algebra Tiles - CPM Interactive https://technology.cpm.org/general/tiles/

THANKS!
@FARRARSCOTT