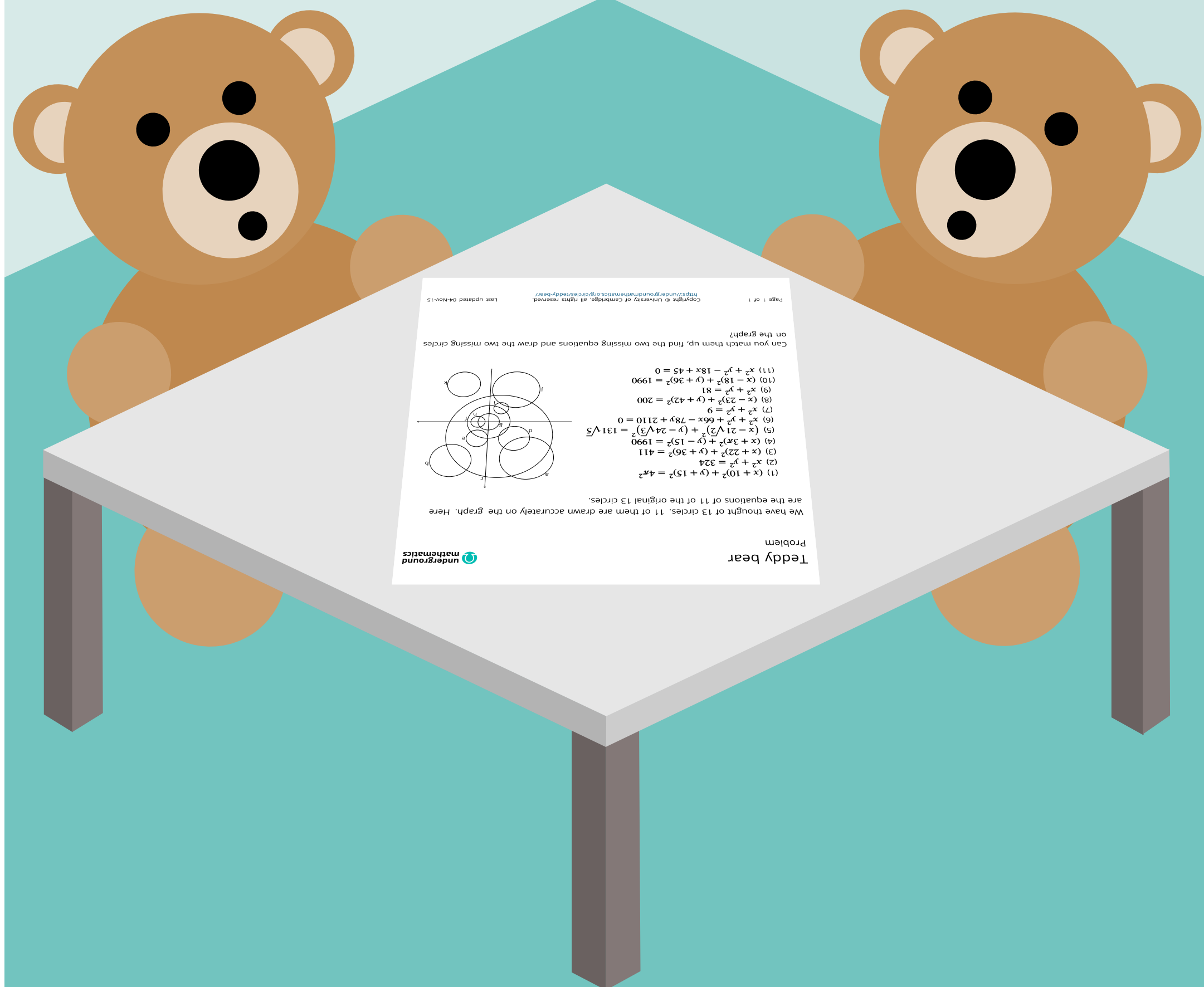


Talking and collaboration



Teddy bear Problem

We have thought of 13 circles. 11 of them are drawn accurately on the graph. Here are the equations of 11 of the original 13 circles.

(1) $(x + 10)^2 + (y + 15)^2 = 4\pi^2$
(2) $x^2 + y^2 = 324$
(3) $(x + 22)^2 + (y + 36)^2 = 411$
(4) $(x + 3\pi)^2 + (y - 15)^2 = 1990$
(5) $(x - 21\sqrt{2})^2 + (y - 24\sqrt{3})^2 = 131\sqrt{5}$
(6) $x^2 + y^2 + 66x - 78y + 2110 = 0$
(7) $x^2 + y^2 = 9$
(8) $(x - 23)^2 + (y + 42)^2 = 200$
(9) $x^2 + y^2 = 81$
(10) $(x - 18)^2 + (y + 36)^2 = 1990$
(11) $x^2 + y^2 - 18x + 45 = 0$

Can you match them up, find the two missing equations and draw the two missing circles on the graph?

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<https://undergroundmathematics.org/circles/teddy-bear/>
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underground mathematics

For more information on developing a mathematical classroom, see undergroundmathematics.org/bundles

Artwork inspired by the resource Teddy bear