# BAD PENGUIN

The Challenge Zone

Beatrice and Max designed this penguin sculpture which is to be welded together and installed in Penguin Park. Not everyone is happy with this design. Can you see a penguin here?

ACDB is a parallelogram, *CFEB* is a rectangle. *CIHF* is a trapezoid, *HKLF* is an isosceles trapezoid, *MNLK* is a kite, *OPKN* is a trapezoid, and $\overline{OK} \cong \overline{NK}$. Find the missing sides indicated to the nearest tenth of an inch.
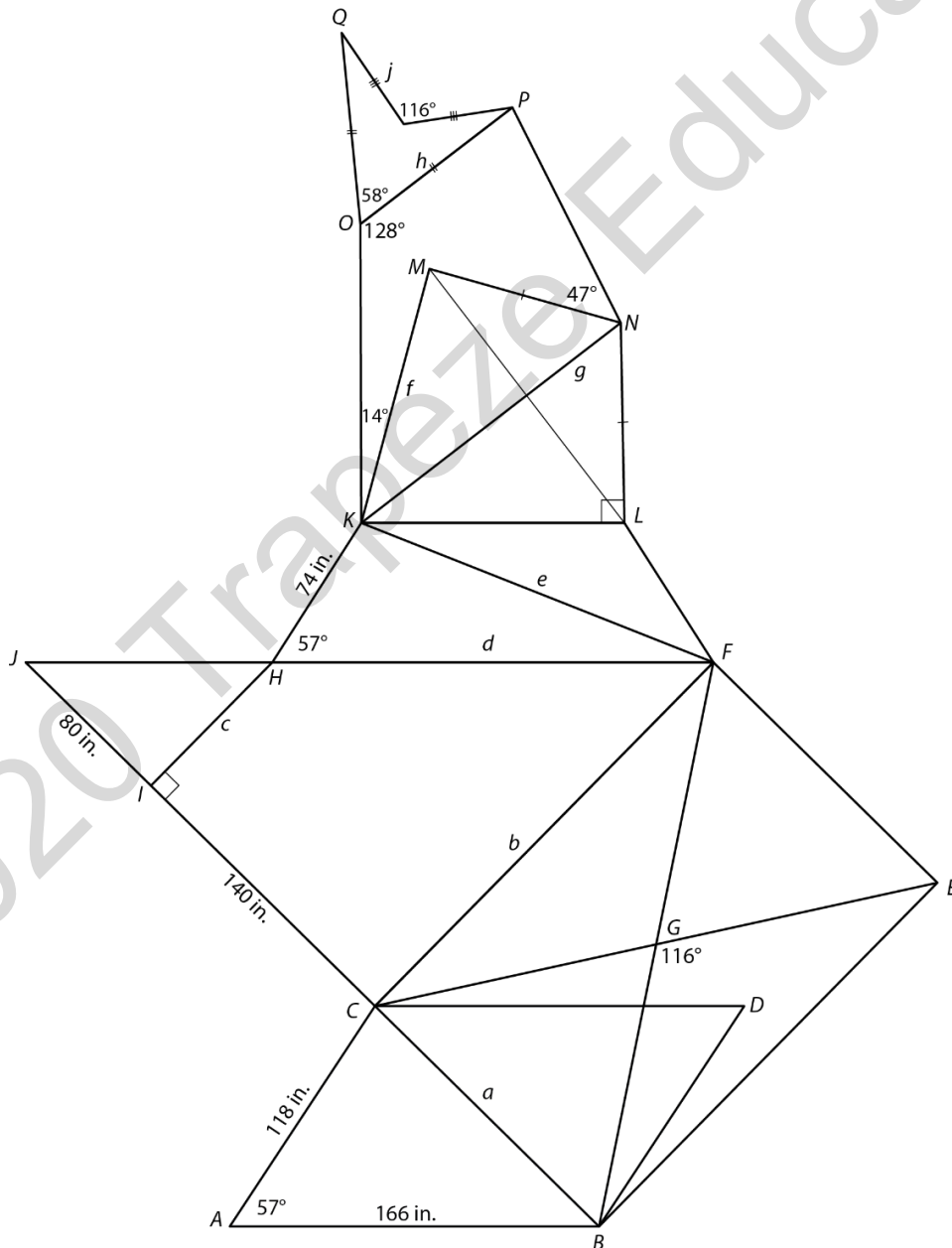
A WRINKLE IN MATH

What's a Tesseract?

In Madeline L'Engle's book "A Wrinkle in Time" Mrs. Who and Mrs. Whatsit demonstrate to Meg how a tesseract makes traveling to a far-way place a piece of cake. Mrs. Who holds a piece of her skirt stretched in her hands while Mrs. Whatsit explains that it would be a very long walk for an insect to travel from Mrs. Who's right hand to her left hand. Mrs. Who quickly brings the fabric in her two hands together, and Mrs. Whatsit explains how this make's the insect's journey much simpler.

> "Now you see," Mrs. Whatsit said, "he would be there, without that long trip. That is how we travel."

Mini Wrinkles

If you find out how to actually do this, please contact us and let us know. We'd like to go to New Zealand, but the 22-hour travel time is somewhat daunting. In the meantime, you can try some mini paper-folding tesseracts in class.

1. The paper that this assignment is printed on is 8.5" x 11" (if you're in the United States). Imagine folding point *A* on the page so that it meets point *B*. Find the length of the crease that is left in the paper.
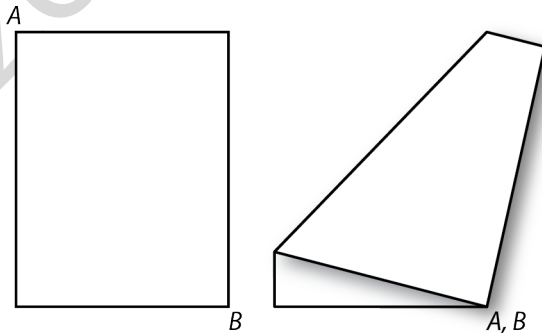
2. Now let the width and height of the paper be represented by *a* and *b*. Derive an equation showing how the length of the crease depends on these two variables.

3. On the 8.5" x 11" sheet of paper, point *C* is the midpoint of the long edge. Fold the paper so that point *A* meets point *C*. What is the length of the crease?