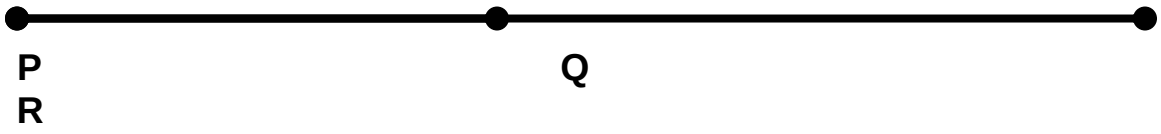
PROBLEM-OF-THE-DAY: ALGEBRA 1

WEEK: February 11 to February 14 **Day:** Tuesday

RISD Objective: Given a problem which calls for operations with polynomials, students will add, subtract, multiply, or factor the polynomial according to the context of the problem.

PROBLEM #102

In the following diagram, the length of segment PR is represented by the polynomial expression $13a^2 - 17a + 2$. The length of segment PQ is represented by the polynomial expression $8a^2 - 11a + 12$. Write a simplified expression which represents the length of segment QR. Explain your work.



MODEL SOLUTION #102

PR represents the entire length of the segment and PQ represents a part. If I subtract PQ from PR, that will leave me the length of segment QR Since the lengths are represented by polynomial expressions, I must subtract them by distributing the negative and combine like terms. Here is my work:

PR – PQ
$(13a^2 - 17a + 2) – (8a^2 - 11a + 12)$
$(13a^2 - 17a + 2) + (-8a^2 + 11a – 12)$
$(13a^2 - 8a^2) + (-17a + 11a) + (2 – 12)$
$5a^2 - 6a – 10$

So, the length of QR is represented by the polynomial expression $5a^2 - 6a – 10$.