

Lesson 15: The Distance from a Point to a Line

Classwork

Exercise 1

A robot is moving along the line 20x + 30y = 600. A homing beacon sits at the point (35, 40).

a. Where on this line will the robot hear the loudest ping?

b. At this point, how far will the robot be from the beacon?





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Exercise 2

For the following problems, use the formula to calculate the distance between the point *P* and the line *l*.

$$d = \sqrt{\left(\frac{p + qm - bm}{1 + m^2} - p\right)^2 + \left(m\left(\frac{p + qm - bm}{1 + m^2}\right) + b - q\right)^2}$$

a. P(0,0) and the line y = 10

b. P(0,0) and the line y = x + 10

c. P(0,0) and the line y = x - 6





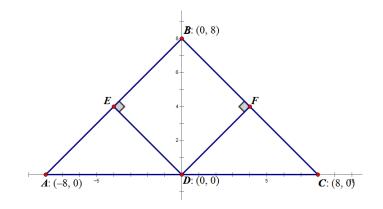
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Problem Set

- 1. Given $\triangle ABC$ with vertices A(3, -1), B(2,2), and C(5,1).
 - a. Find the slope of the angle bisector of $\angle ABC$.
 - b. Prove that the bisector of $\angle ABC$ is the perpendicular bisector of \overline{AC} .
 - c. Write the equation of the line containing \overline{AD} .
- 2. Use the distance formula from today's lesson to find the distance between the point P(-2,1) and the line y = 2x.
- 3. Confirm the results obtained in Problem 1 using another method.
- 4. Find the perimeter of quadrilateral *DEBF* shown below.





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