

Teaching Notes for Geometry

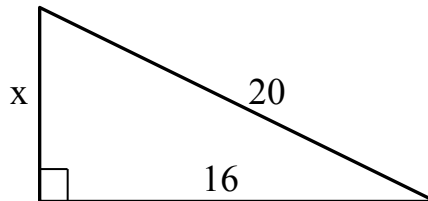
Homework #4

Overview: In this lesson, students will learn about quadrilaterals and how to identify them, the Pythagorean theorem, and parallel lines cut by a transversal.

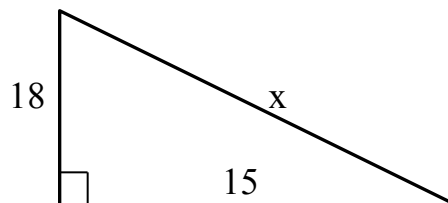
Preparation: Watch video on “Pythagorean theorem,” “Parallel lines cut by a transversal,” and “how to identify quadrilaterals.”

Classroom Examples:

- 1) If you ask someone for directions from your present location to a particular hotel and they tell you to walk 6 miles due east and then turn right and walk 8 miles due south, how far are you from the hotel?
- 2) If the following triangle is a right triangle, find x exactly.



- 3) If the following triangle is a right triangle, find x exactly.



$$a^2 + b^2 = c^2$$

$$18^2 + 15^2 = c^2$$

$$324 + 225 = c^2$$

$$549 = c^2$$

$$\sqrt{549} = \sqrt{c^2}$$

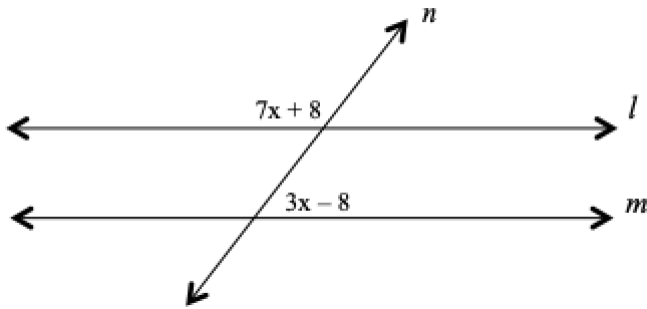
$$3\sqrt{61} = c$$

$$\underline{549}$$

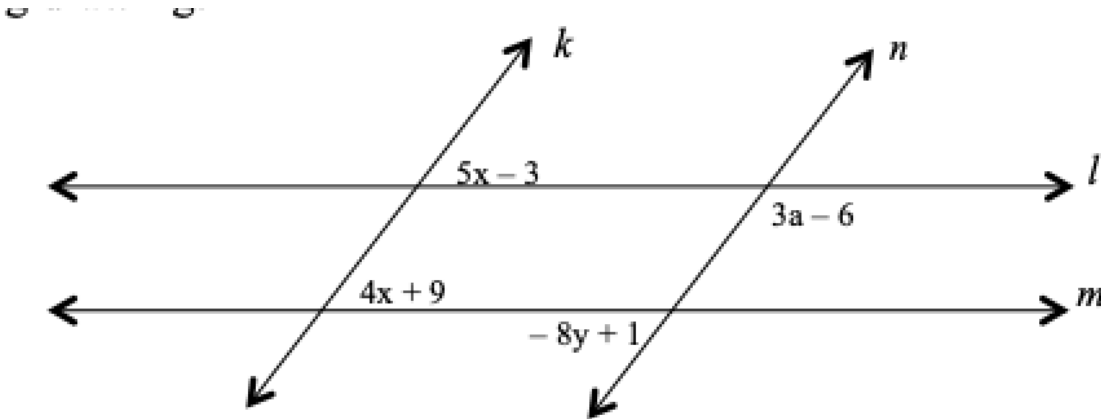
$$3 \cdot 3 \cdot 61$$

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- 4) If $l \parallel m$, find x and the size of both angles in the following drawing:



- 5) If $l \parallel m$ and $k \parallel n$, find the size of the four angles and find the values of x , y and a in the following drawing:



- 6) Plot the points A (-11,3), B (-5,-6), C (7,3), and D (1,12) all on the same graph. Find the midpoint, distance, and slope between points A and B, B and C, C and D, and D and A. Use this information to determine the exact geometric shape of ABCD.
Parallelogram
- 7) Plot the points A (-1,-10), B (-10,2), C (-1,5), and D (2,1) all on the same graph. Find the midpoints between points A and B, B and C, C and D, and D and A. Plot these midpoints on the same graph and call them E, F, G, and H, respectively. Find the distance and slope between each of these midpoints and use this information to determine the exact geometric shape of ABCD and EFGH.
Trapezoid and Quadrilateral
- 8) Plot the points A (13,-11), B (-7,-7), and C (-11,9), and determine the exact geometric shape of ABC. Find the midpoints between points A and B, and B and C and plot these midpoints on the same graph, calling them D and E, respectively. Find the

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distance and slope between A and D, D and E, E and C, and C and A and then use this information to determine the exact geometric shape of ADEC.

*****Obtuse Triangle & Trapezoid*****

- 9) Plot the points A (-9,4), B (-5,10), C (7,2), and D (3,-4) all on the same graph. Find the midpoint, distance, and slope between points A and B, B and C, C and D, and D and A. Use this information to determine the exact geometric shape of ABCD.

*****Parallelogram*****