

6.13 Density applications

1. Do Now: Find the area of a triangle with base $b = 12.5$ and height $h = 8.4$. Use the Graspable Math activity linked above. Paste a cropped screenshot of the first problem here. It should look like the modelled solution below.

- ☐ Copy expressions (drag the handle on the left of the formula)
- ☐ Substitute values (drag the variable onto the formula)
- ☐ Show/hide steps (show the substitution, final line, and key steps)
- ☐ Copy/paste screenshot: command-control-shift-4 (Mac)

The image shows a handwritten solution for finding the area of a triangle. On the left, the given values are listed: $b = 12.5$, $h = 8.4$, and the formula $A = \frac{1}{2}bh$. To the right, the formula is substituted with the values: $A = \frac{1}{2}(12.5)(8.4)$. Below this, the result is shown: $A = 52.5$. An arrow points from the text "Show substitution step in copy of formula." to the substituted formula. A small dash is visible at the bottom right.

$$\begin{array}{l} b = 12.5 \\ h = 8.4 \\ A = \frac{1}{2}bh \end{array} \quad \begin{array}{l} A = \frac{1}{2}(12.5)(8.4) \\ A = 52.5 \end{array}$$

Show substitution step in copy of formula.

2. Find the area of a semi-circle with radius $r = 7.5$. Paste a cropped screenshot of the Graspable Math. Compare your format to the model solution.

$$A_{\text{semi-circle}} = \frac{1}{2} \pi r^2$$

$$r = 7.5$$

$$\pi = 3.14$$

$$A_{\text{semi-circle}} = \frac{1}{2} (3.14) (7.5)^2$$

$$A_{\text{semi-circle}} = 88.313$$

3.

4. Find the population density of Queens, New York. Paste a cropped screenshot of the Graspable Math. Make a copy of the formula and show the substitution step.

Find the density of Queens given its area and population.
(Drag values to substitute)

$$A = 108.1 \quad P = 2358582$$

$$D = \frac{P}{A} \quad D = \frac{(2358582)}{(108.1)}$$

$$D = 21818.52$$

5. A building wall must be painted. Each gallon of paint covers 250 square feet and costs \$25. If the wall measures 100 feet wide by 50 feet tall, how much will the paint cost?