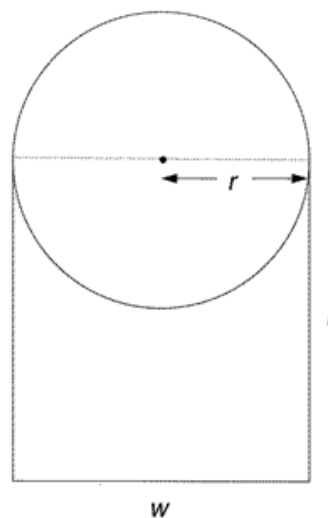


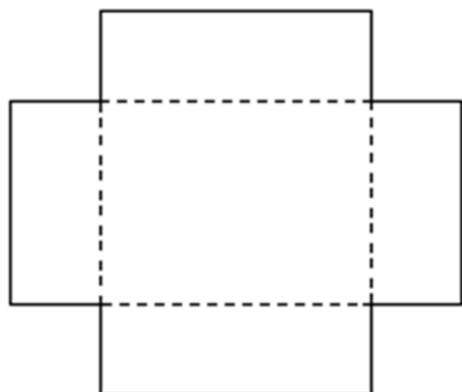
# Polynomial Word Problems

Charice is painting the lines for her own basketball court. The free throw section will be a rectangle with a semi-circle on top. The length of the rectangle will be 2.25 meters greater than the width. Using 3.14 for  $\pi$ , the area of the court is  $31.28 \text{ m}^2$ . Determine the dimensions of the free throw section.



A bicyclist is competing in a tournament. He is currently in a very hilly part of the tournament's course. For his current hill, his height in meters over time in minutes is modelled by the function  $f(x) = -0.00075x^2 - 0.5825x + 17.269$ . Estimate the bicyclist's instantaneous rate of change and give his direction at  $x = 100$ . Round your answer to two decimal places.

Nathan is designing a box to keep his pet newt in. To make the box, he's going to start with a solid rectangle and cut squares with sides  $x$  cm in length from each corner, as shown in the picture below. The dimensions of the of the solid rectangle are 51 cm by 45 cm. The volume of the box is  $7750 \text{ cm}^3$ .



- Determine an equation that models this situation.
- Choose a technique to solve this equation and give the solutions.
- What is the length of a side of the square that Nathan is going to cut from the corners of the rectangle?

Sandra is going to help her dad replace the wood trim in their living room. They're going to need 75 meters of trim and 1 box of finishing nails. The nails are \$7.00 per box.

- a) If Sandra's dad wants to spend no more than \$300 on the project, how much can he spend per meter on trim? Round the price of the trim to two decimal places and write your answer as a complete sentence.
- b) Sandra's father decides that he wants to have trim of a certain quality and decides that he wants to spend more than \$100 on the project, but still not more than \$300. Determine the new range in price per square foot for the trim.

## Task - Word Problems 3