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| http://textbooks.cpm.org/images/cc3/chap10/CC3_10.1.3title.pngCones and pyramids are three‑dimensional objects that have only one base, and that come to a point opposite their base.  A **cone** has a circular base.  A **pyramid** has a base that is a polygon and lateral faces that are triangles.  Today you will be investigating how to use what you know about cylinders and prisms to find the volume of a cone and a pyramid.  **10-32.** HOW MUCH SHOULD IT COST?* http://textbooks.cpm.org/images/cc3/chap10/cc3_ch10_ls_10.1.3_10-32.pngYou have a choice of purchasing a small or a large serving of popcorn at the movies.  A small popcorn comes in a cone and costs $1.50, and a large popcorn comes in a cylinder that costs $3.50.  Both containers have the same height and have bases with the same circular area.  Based on their prices, discuss with your team which container of popcorn you think is a better deal.  Be prepared to share your reasons with the class.
* **10-33.** Your teacher will lead you through a demonstration about the volume of a cone.
	1. How are the radius and height of each cone related to the radius and height of each corresponding cylinder?
	2. Sketch each cone and cylinder on your paper, and estimate which cone will have a greater volume.
	3. How many cones full of rice were needed to fill each corresponding cylinder?
	4. Based on the demonstration, describe how the volume of a cone compares to the volume of a cylinder when their heights and base areas are equal.
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* **10-34.** Based on the relationship you found in problem 10‑33, determine what a fair price would be for the cylinder of popcorn in problem 10-32 if the cone of popcorn costs $1.50.  At the advertised prices, which popcorn is the better deal?
* http://textbooks.cpm.org/images/cc3/chap10/cc3_ch10_ls_10.1.3_10-35.png**10-35.** A different movie theater sells popcorn in the containers shown below.  This time, the small container is a pyramid priced at $2.50.  The large container is a prism with the same height and base as the pyramid, and it is priced at $5.50.  At this theater, which popcorn do you think is a better deal?  Be prepared to give reasons for your prediction.
* **10-36.** Your teacher will now lead you through another demonstration to help you decide if you need to adjust your thinking about the relationship between the volume of a pyramid and a prism that have the same base and the same height.  After you have seen the demonstration with the pyramid and the prism, determine which container of popcorn is a better deal.  Justify your answer.
* http://textbooks.cpm.org/images/cc3/chap10/cc3_ch10_ls_10.1.3_10-37.png**10-37.**Ann and Dan were trying to find the volume of the cone to the right.  Ann thinks that the cone is 8 inches tall, and Dan thinks that the cone is 10 inches tall.  Write them a note explaining who is correct.
* **10-38.** Ann, Dan, and Jan calculated the volumes of some shapes and got different answers.  Look at their work shown below and make a sketch of the shape that each set of calculations might represent.  Why do Dan’s and Jan’s calculations have the same result even though they look different?
* Dan's work: $V=\frac{\left(4^{2}π\right)\left(9\right)}{3}=150.8 $cm3
* Ann's work: $V=\left(4^{2}π\right)\left(9\right)=452.4$ cm3
* Jan's work: $V=\frac{1}{3}\left(4^{2}π\right)\left(9\right)=150.8$ cm3
* http://textbooks.cpm.org/images/cc3/chap10/cc3_ch10_ls_10.1.3_10-39.png**10-39.** Find the volume of the pyramid below. The hexagonal base has an area of 128 cm2.

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