Name Schlansky
Mr. Schlansky

Date ______________
Geometry

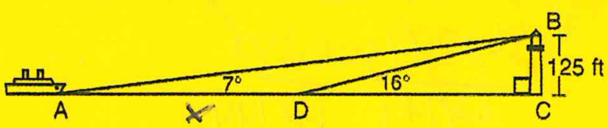
Common Core Geometry Common Part IIIs

Compound Right Triangle Problems

Procedure 1: Subtraction: Find corresponding parts of the two triangles and subtract them.

Procedure 2: Reflexive: Find a side/angle that's in both triangles. Use that new side/angle to find what you are looking for.

1. As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A, the angle of elevation from the ship to the light was 7°. A short time later, at point D, the angle of elevation was 16°. To the *nearest foot*, determine and state how far the ship traveled from point A to point D.



$\tan 7 = \frac{125}{x}$

$\frac{.1228}{1} = \frac{125}{x}$

$\frac{.1228x}{.1228} = \frac{125}{.1228}$

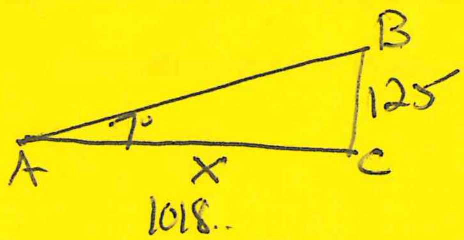
$x = 1018..$

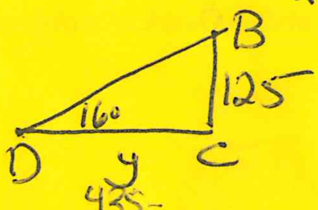
$\tan 16 = \frac{125}{y}$

$\frac{.2867}{1} = \frac{125}{y}$

$\frac{.2867y}{.2867} = \frac{125}{.2867}$

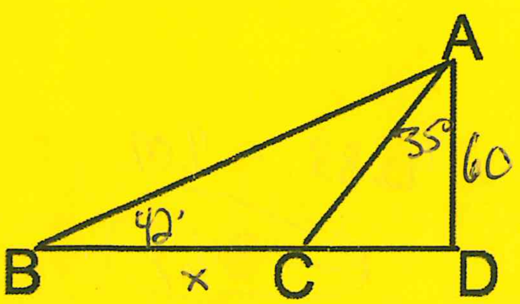
$y = 435..$





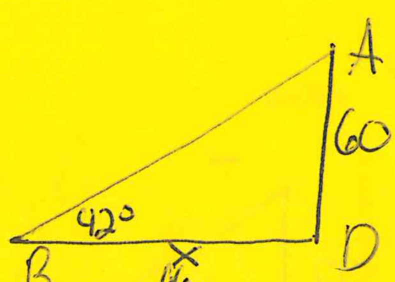
$1018.. - 435.. = 582$ ft

2. In the diagram below, $m\angle CAD = 35$, $m\angle ABD = 42$, and $m\overline{AD} = 60$. Find to the nearest tenth, $m\overline{BC}$.



$66.. - 42..$

24.6

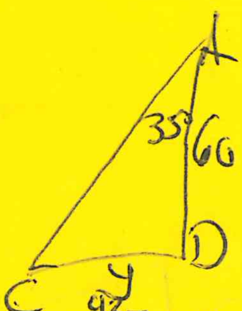


$\tan 42 = \frac{60}{x}$

$\frac{.9004}{1} = \frac{60}{x}$

$\frac{.9004x}{.9004} = \frac{60}{.9004}$

$x = 66..$



$\tan 35 = \frac{y}{60}$

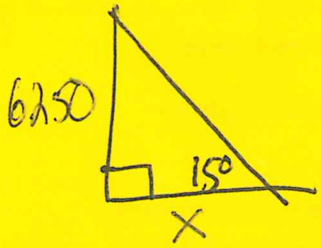
$\frac{.7002}{1} = \frac{y}{60}$

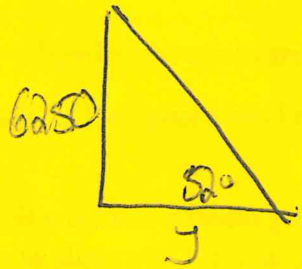
$y = 42..$

3. Freda, who is training to use a radar system, detects an airplane flying at a constant speed and heading in a straight line to pass directly over her location. She sees the airplane at an angle of elevation of 15° and notes that it is maintaining a constant altitude of 6250 feet. One minute later, she sees the airplane at an angle of elevation of 52°. How far has the airplane traveled, to the *nearest foot*?

23325.. − 4883..

18442 ft





$\tan 15 = \frac{6250}{x}$

$\cancel{.2679 = \frac{6250}{x}}$

$\frac{.2679x}{.2679} = \frac{6250}{.2679}$

$x = 23325..$

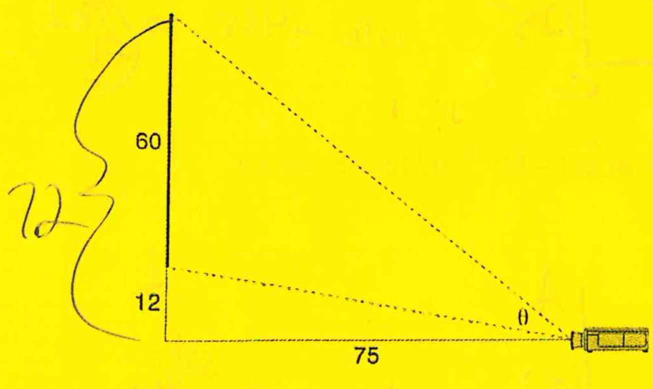
$\tan 52 = \frac{6250}{y}$

$\frac{1.2799}{1} = \frac{6250}{y}$

$\frac{1.2799y}{1.2799} = \frac{6250}{1.2799}$

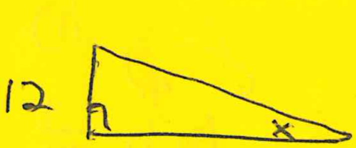
$y = 4883..$

4. As modeled below, a movie is projected onto a large outdoor screen. The bottom of the 60-foot-tall screen is 12 feet off the ground. The projector sits on the ground at a horizontal distance of 75 feet from the screen.
Determine and state, to the *nearest tenth of a degree*, the measure of θ, the projection angle.



43.83 − 9.09..

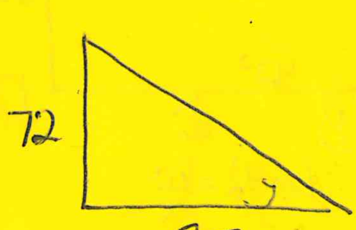
$\theta = 34.7$



$\tan^{-1} \tan x = \frac{12}{75} \tan^{-1}$

$x = \tan^{-1} \frac{12}{75}$

$x = 9.09..$

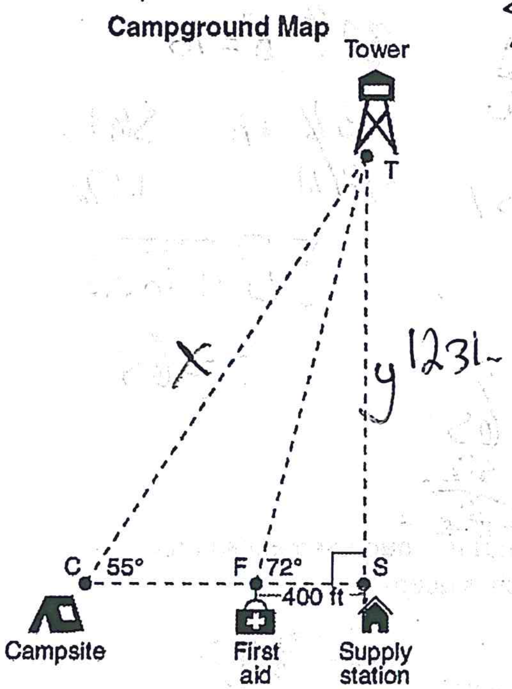


$\tan^{-1} \tan y = \frac{72}{75} \tan^{-1}$

$y = \tan^{-1} \frac{72}{75}$

$y = 43.83..$

5. The map of a campground is shown below. Campsite C, first aid station F, and supply station S lie along a straight path. The path from the supply station to the tower, T, is perpendicular to the path from the supply station to the campsite. The length of path $\overline{FS}$ is 400 feet. The angle formed by path $\overline{TF}$ and path $\overline{FS}$ is 72°. The angle formed by path $\overline{TC}$ and path $\overline{CS}$ is 55°. Determine and state, to the *nearest foot*, the distance from the campsite to the tower.



ST is a side in both triangles

$\tan 72 = \frac{y}{400}$

$\frac{3.0777}{1} = \frac{y}{400}$

$y = 1231..$

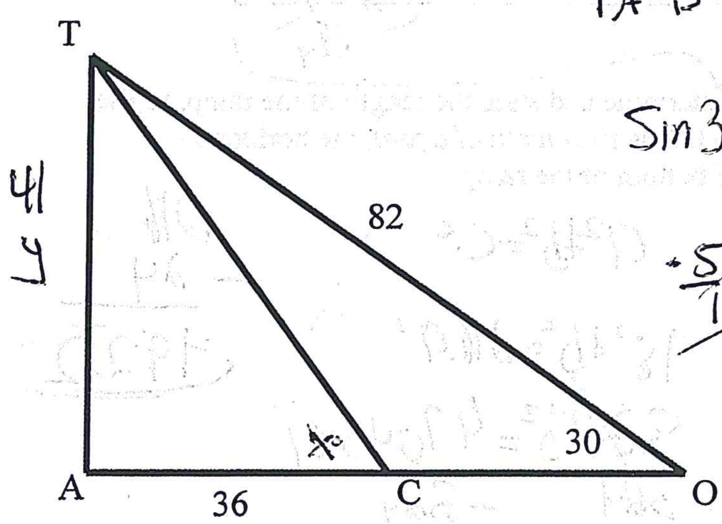
$\sin 55 = \frac{1231..}{x}$

$\frac{.8192}{1} = \frac{1231..}{x}$

$\frac{.8192x}{.8192} = \frac{1231..}{.8192}$

$x = 1503$

6. Find the measure of $\angle TCA$ in the diagram of right triangle TAO below to the nearest tenth of a degree.



TA is a side in both triangles

$\sin 30 = \frac{y}{82}$

$\frac{.5}{1} = \frac{y}{82}$

$y = 41$

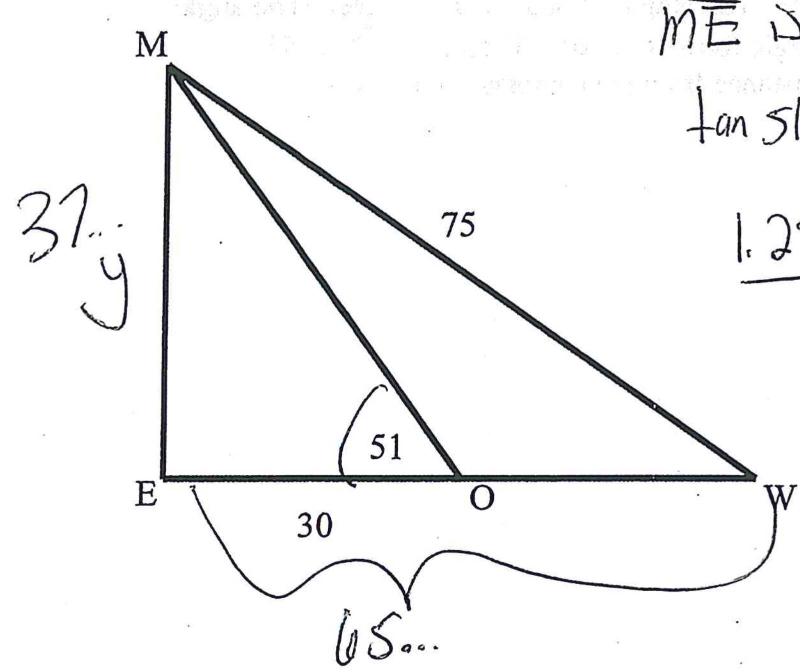
$\tan x = \frac{41}{36}$

$x = \tan^{-1} \frac{41}{36}$

$x = 48.7°$

7. Find the measure of $\overline{OW}$ in the diagram of right triangle MEW below to the nearest unit.

$\overline{ME}$ is in both triangles



$\tan 51 = \frac{y}{30}$

$\frac{1.2349}{1} = \frac{y}{30}$

$y = 37...$

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

$37..^2 + b^2 = 75^2$

$1372.. + b^2 = 5625$

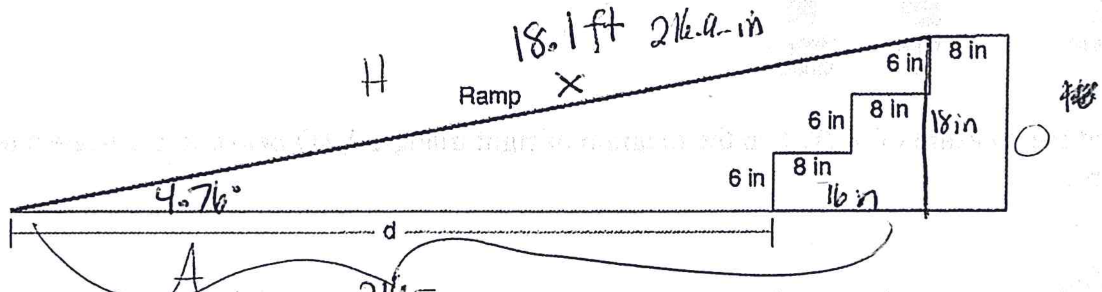
$-1372. \quad -1372.$

$\sqrt{b^2} = \sqrt{4252..}$

$b = 65...$

$65... - 30 = 35$

8. As modeled in the diagram below, an access ramp starts on flat ground and ends at the beginning of the top step. Each step is 6 inches tall and 8 inches deep.



If the angle of elevation of the ramp is 4.76°, determine and state the length of the ramp, to the *nearest tenth of a foot*. Determine and state, to the *nearest tenth of a foot*, the horizontal distance, *d*, from the bottom of the stairs to the bottom of the ramp.

$\sin 4.76 = \frac{18}{x}$

$\frac{.0830}{1} = \frac{18}{x}$

$\frac{.0830x}{.0830} = \frac{18}{.0830}$

$x = 216.9.. in \cdot \frac{1 ft}{12 in} = 18.1 ft$

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

$a^2 + 18^2 = 216.9..^2$

$a^2 + 324 = 47051...$

$-324 \quad -324$

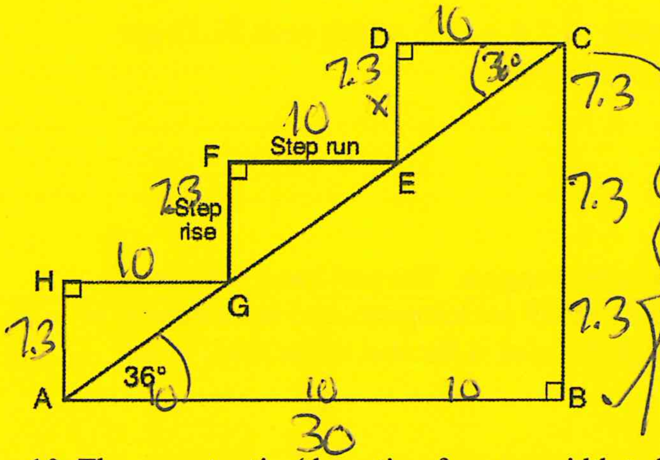
$\sqrt{a^2} = \sqrt{46727..}$

$a = 216...$

$216.. - 16 = 200.. in$

$200.. in \cdot \frac{1 ft}{12 in} = 16.7 ft$

9. A homeowner is building three steps leading to a deck, as modeled by the diagram below. All three step rises, $\overline{HA}$, $\overline{FG}$, and $\overline{DE}$, are congruent, and all three step runs, $\overline{HG}$, $\overline{FE}$, and $\overline{DC}$, are congruent. Each step rise is perpendicular to the step run it joins. The measure of $\angle CAB = 36°$ and $\angle CBA = 90°$.
If each step run is parallel to $\overline{AB}$ and has a length of 10 inches, determine and state the length of each step rise, to the *nearest tenth of an inch*. Determine and state the length of $\overline{AC}$, to the *nearest inch*.



$\tan 36 = \frac{x}{10}$

$.7265 = \frac{x}{10}$

$x = 7.3$

21.9

$30^2 + 21.9^2 = x^2$

$900 + 479.61 = x^2$

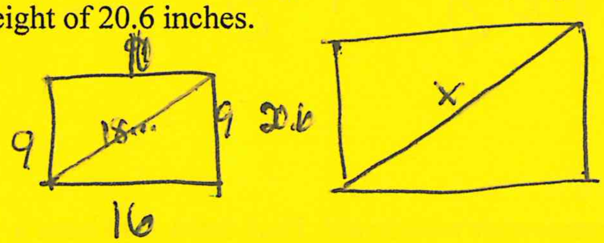
$\sqrt{1379.61} = \sqrt{x^2}$

$37 = x$

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

$12.3 = x$

10. The aspect ratio (the ratio of screen width to height) of a rectangular flat-screen television is 16:9. The length of the diagonal of the screen is the television's screen size. Determine and state, to the *nearest inch*, the screen size (diagonal) of this flat-screen television with a screen height of 20.6 inches.



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

$9^2 + 16^2 = c^2$

$81 + 256 = c^2$

$\sqrt{337} = \sqrt{c^2}$

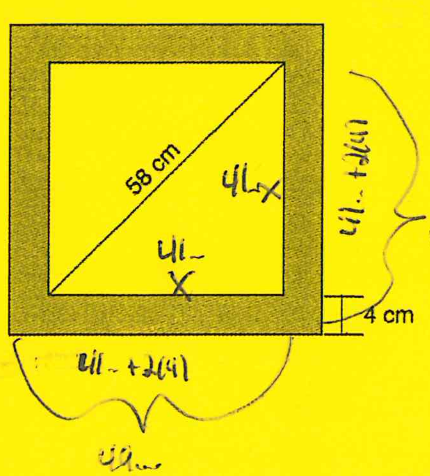
$18.357. = x$

$\frac{9}{20.6} = \frac{18...}{x}$

$\frac{9x}{9} = \frac{378..}{9}$

$x = 42$

11. Keira has a square poster that she is framing and placing on her wall. The poster has a diagonal 58 cm long and fits exactly inside the frame. The width of the frame around the picture is 4 cm.
Determine and state the total area of the poster and frame to the *nearest tenth of a square centimeter*.



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

$x^2 + x^2 = 58^2$

$\frac{2x^2}{2} = \frac{3364}{2}$

$\sqrt{x^2} = \sqrt{1682}$

$x = 41..$

$A = lw$

$A = 49..(49..)$

$A = 2402.2$

Modeling Volume

1) Check units. Convert if necessary. To convert units: Multiply to get units to cancel out.

Example: $3\ in \bullet \dfrac{2.54\ cm}{1\ in}$

2) FIND VOLUME (Likely to be compound volume (add) or displaced volume (subtract)

3) Begin unit analysis.

Example, a volume of 12 cubic inches has a density of $7.6\ g/in^3$, which costs \$1.25 per kilogram, and 50 are needed that are each filled up to 85%:

$$12\ in^3 \bullet \frac{7.6\ g}{1\ in^3} \bullet \frac{1 kg}{1000 g} \bullet \frac{\$1.25}{1\ kg} \bullet 50 \bullet .85$$

*If given volume, substitute for V and do Algebra!

1. A machinist creates a solid steel part for a wind turbine engine. The part has a volume of 1015 cubic centimeters. Steel can be purchased for \$0.29 per kilogram, and has a density of 7.95 g/cm^3. If the machinist makes 500 of these parts, what is the cost of the steel, to the *nearest dollar*?

$$1015\ cm^3 \cdot \frac{7.95\ g}{1\ cm^3} \cdot \frac{1\ Kg}{1000\ g} \cdot \frac{.29\ \$}{1\ Kg} \times 500 = \$1170$$

2. Cylindrical bricks are needed to fill a hole in a homeowner's backyard. Each brick is to have a diameter of 4 cm and a height of 2 cm. The weight of the concrete that the brick is going to be made from is 2.1 ounces per cubic centimeter. If the concrete costs \$.14 per ounce, how much would it cost to purchase four bricks? Round your answer to the *nearest cent*.

$V = \pi r^2 h$

$V = \pi (2)^2 (2)$

$V = 8\pi\ cm^3$

$$8\pi\ cm^3 \cdot \frac{2.1\ oz}{1\ cm^3} \cdot \frac{.14\ \$}{1\ oz} \times 4$$

$.3\,\text{Km} \cdot \frac{1000\,\text{m}}{1\,\text{Km}} = 300\,\text{m}$

3. A town in upstate New York keeps sand in a silo that is in the shape of a cone. They use this sand to help de-ice the roads after a snowstorm. The silo has a diameter of 18.6 meters and a height of .3 kilometers. The weight of the sand is 1.2 ounces per cubic meter. If the sand costs $.12 per ounce, how much will it cost the town to fill 80% of the silo?

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\pi (9.3)^2 (300)$

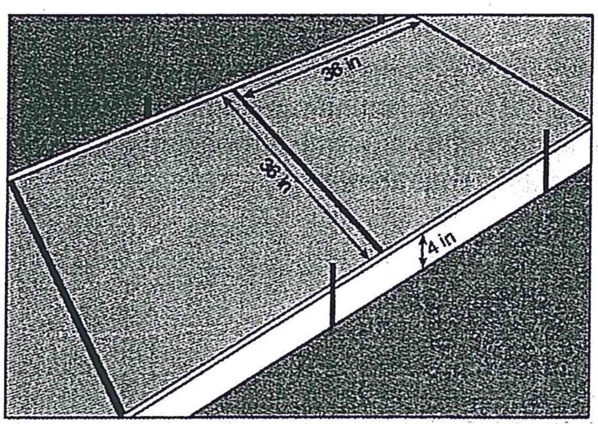
$V = 27171\,\text{m}^3$

$27171\,\text{m}^3 \cdot \frac{1.2\,\text{oz}}{1\,\text{m}^3} \cdot \frac{.12\,\$}{1\,\text{oz}} \times .8 = \$3130.17$

4. Ian needs to replace two concrete sections in his sidewalk, as modeled below. Each section is 36 inches by 36 inches and 4 inches deep. He can mix his own concrete for $3.25 per cubic foot.

$36\,\text{in} \cdot \frac{1\,\text{ft}}{12\,\text{in}} = 3\,\text{ft}$

$4\,\text{in} \cdot \frac{1\,\text{ft}}{12\,\text{in}} = \frac{1}{3}\,\text{ft}$



How much money will it cost Ian to replace the two concrete sections?

$V = lwh$

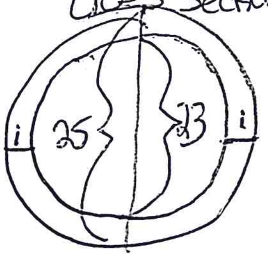
$V = 3(3)(\frac{1}{3})$

$V = 3\,\text{ft}^3$

$3\,\text{ft}^3 \cdot \frac{3.25\,\$}{1\,\text{ft}^3} \times 2 = \$19.50$

5. A cylindrical casing is to be put around a garbage can in a busy street in Manhattan. The diameter is 25 inches. The height of the case will be 40 inches and the casing will be 1 inch thick. The density of the metal is .841 grams per cubic inch. What will be the mass of the casing?

Cross Section



Whole

Inside

$3015.. \text{in}^3 \cdot \frac{.841 \text{ g}}{1 \text{ in}^3} = 2536 \text{g}$

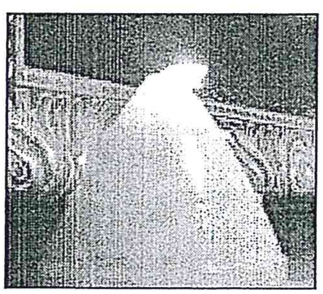
$V = \pi r^2 h$ $\quad$ $V = \pi r^2 h$

$V = \pi(12.5)^2(40)$ $\quad$ $V = \pi(11.5)^2(40)$

$V = 19634.. \text{in}^3$ $\quad$ $V = 16619.. \text{in}^3$

$19634.. - 16619.. = 3015.. \text{in}^3$

6. A candle maker uses a mold to make candles like the one shown below.
The height of the candle is 13 cm and the circumference of the candle at its widest measure is 31.416 cm. Use modeling to approximate how much wax, to the *nearest cubic centimeter*, is needed to make this candle. Justify your answer.



$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\pi(5)^2(13)$

$V = 340 \text{ cm}^3$

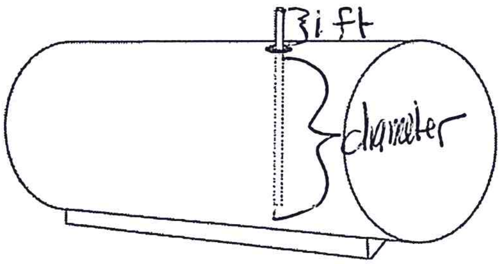
$C = \pi d$

$\frac{31.416}{\pi} = \frac{\pi d}{\pi}$

$10... = d$

volume, convert

7. A gas station has a cylindrical fueling tank that holds the gasoline for its pumps, as modeled below. The tank holds a maximum of 20,000 gallons of gasoline and has a length of 34.5 feet. A metal pole is used to measure how much gas is in the tank. To the *nearest tenth of a foot*, how long does the pole need to be in order to reach the bottom of the tank and still extend one foot outside the tank? Justify your answer. [1 ft^3=7.48 gallons]



$20000\ \cancel{gal} \cdot \frac{1\ ft^3}{7.48\ \cancel{gal}} = 2673...ft^3$

$V=\pi r^2 h$

$\frac{2673...}{34.5\pi} = \frac{\pi r^2(34.5)}{34.5\pi}$

$\sqrt{24..} = \sqrt{r^2}$

$4... = r$

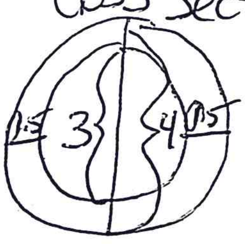
$d=2(4..)$

$d=9.. + 1 = 10.93366959$

10.9 ft

8. A bakery sells hollow chocolate spheres. The larger diameter of each sphere is 4 cm. The thickness of the chocolate of each sphere is 0.5 cm. Determine and state, to the *nearest tenth of a cubic centimeter*, the amount of chocolate in each hollow sphere. The bakery packages 8 of them into a box. If the density of the chocolate is 1.308 g/cm^3, determine and state, to the *nearest gram*, the total mass of the chocolate in the box.

Cross Section



whole | inside

$V=\frac{4}{3}\pi r^3$ | $V=\frac{4}{3}\pi r^3$

$V=\frac{4}{3}\pi(2)^3$ | $V=\frac{4}{3}\pi(1.5)^3$

$V=33... - V=14... = 19...cm^3$

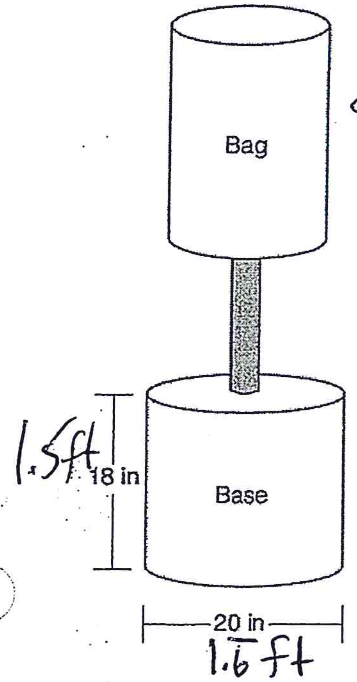
$19...\ \cancel{cm^3} \cdot \frac{1.308\ g}{\cancel{cm^3}} \times 8 = 203$ grams

$18 \text{ in} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = 1.5 \text{ ft}$ $\quad 20 \text{ in} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = 1.\overline{6} \text{ ft}$

9. Shae has recently begun kickboxing and purchased training equipment as modeled in the diagram below. The total weight of the bag, pole, and unfilled base is 270 pounds. The cylindrical base is 18 inches tall with a diameter of 20 inches. The dry sand used to fill the base weighs 95.46 lbs per cubic foot.
To the *nearest pound*, determine and state the total weight of the training equipment if the base is filled to 85% of its capacity.

weight of equipment = weight of unit + weight of sand
weight of unit = 270 pounds
weight of Sand = 265... pounds

270 + 265... = 536 pounds



$V = \pi r^2 h$
$V = \pi(.83)^2(1.5)$
$V = 3... \text{ ft}^3$

$3... \text{ ft}^3 \cdot \frac{95.46 \text{ lb}}{1 \text{ ft}^3} \cdot .85 = 265... \text{ lbs}$

10. Theresa has a rectangular pool 30 ft long, 15 ft wide, and ~~4~~ 3.5 ft deep. Theresa fills her pool using city water at a rate of \$3.95 per 100 gallons of water. Nancy has a circular pool with a diameter of 24 ft and a depth of ~~4~~ 3.5 ft. Nancy fills her pool with a water delivery service at a rate of \$200 per 6000 gallons. If Theresa and Nancy both fill their pools 6 inches from the top of the pool, determine and state who paid more to fill her pool. [1ft^3 water = 7.48 gallons]

$6 \text{ in} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = .5 \text{ ft}$

height = 4 − .5 = 3.5 ft

Nancy

$V = \pi r^2 h$
$V = \pi(12)^2(3.5)$
$V = 1583... \text{ ft}^3$

$1583... \text{ ft}^3 \cdot \frac{7.48 \text{ gal}}{1 \text{ ft}^3} \cdot \frac{200 \text{ \$}}{6000 \text{ gal}} = \$394...$

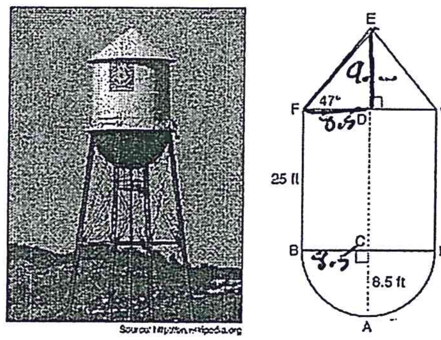
Theresa

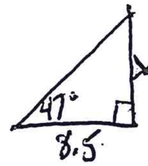
$V = lwh$
$V = 30(15)(3.5)$
$V = 1575 \text{ ft}^3$

$1575 \text{ ft}^3 \cdot \frac{7.48 \text{ gal}}{1 \text{ ft}^3} \cdot \frac{3.95 \text{ \$}}{100 \text{ gal}} = \$465...$

Theresa paid more

11. The water tower in the picture below is modeled by the two-dimensional figure beside it. The water tower is composed of a hemisphere, a cylinder, and a cone. Let C be the center of the hemisphere and let D be the center of the base of the cone.





$\tan 47 = \frac{x}{8.5}$

$\frac{1.0724}{1} = \frac{x}{8.5}$

$x = 9.1...$

If $AC = 8.5$ feet, $BF = 25$ feet, and $m\angle EFD = 47°$, determine and state, to the *nearest cubic foot*, the volume of the water tower. The water tower was constructed to hold a maximum of 400,000 pounds of water. If water weighs 62.4 pounds per cubic foot, can the water tower be filled to 85% of its volume and *not* exceed the weight limit? Justify your answer.

don't care

Cone	Cylinder	Hemisphere
$V=\frac{1}{3}\pi r^2 h$	$V=\pi r^2 h$	$V=\frac{1}{2}\left(\frac{4}{3}\pi r^3\right)$
$V=\frac{1}{3}\pi(8.5)^2(9.1...)$	$V=\pi(8.5)^2(25)$	$V=\frac{1}{2}\left(\frac{4}{3}\pi(8.5)^3\right)$
$V=689...$ +	$V=5674...$ +	$V=1286... = 7650\ ft^3$

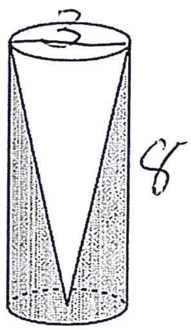
$7650\ ft^3 \cdot \frac{62.4\ \text{pounds}}{1\ ft^3} \times .85 = 405756\ \text{pounds}$

$405756 > 400000$

No!

12. Walter wants to make 100 candles in the shape of a cone for his new candle business. The mold shown below will be used to make the candles. Each mold will have a height of 8 inches and a diameter of 3 inches. To the *nearest cubic inch*, what will be the total volume of 100 candles?

Walter goes to a hobby store to buy the wax for his candles. The wax costs \$0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles? If Walter spent a total of \$37.83 for the molds and charges \$1.95 for each candle, what is Walter's profit after selling 100 candles?



$$1885\ \text{in}^3 \cdot \frac{.52\ \text{oz}}{1\ \text{in}^3} \cdot \frac{.10\ \$}{1\ \text{oz}} = 98.02$$

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\pi(1.5)^2(8)$

$V = 18..$

$18..(100) = 1885\ \text{in}^3$

Profit = amount made − amount spent

amount made = 1.95(100) = 195

amount spent = 98.02 + 37.83 = ~~13~~ 135.85

195 − 135.85 = \$59.15

13. Jasmine and Nicole are third grade teachers and decided they were going to throw their classes an ice cream party. Jasmine is going to get her students cones while Nicole is going to get her students cups in the shape of cylinders.

The cones have a height of 4 inches and a diameter of 1 inch. The cones will be completely full of ice cream with a hemispherical scoop on top, which has the same diameter as the cone. The ice cream weighs 0.7 ounces per cubic inch and costs \$.20 per ounce. She must also pay \$.20 for each cone. Jasmine has 24 students in her class.

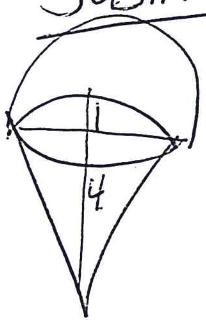
The cups have a height of 2 inches and a diameter of 8 centimeters. The cups will be 90% full of ice cream and there is no cost for the actual cup. This ice cream also weights 0.7 ounces per cubic inch and costs \$.22 per ounce. Nicole has 21 students in her class.

must convert

Assuming that every student in the class gets ice cream, which teacher will spend more money and by how much. Round your answer to the *nearest cent.*

$8\text{ cm} \cdot \frac{1\text{ in}}{2.54\text{ cm}} = 3.\text{.. in}$

Jasmine



$V=\frac{1}{3}\pi r^2 h \quad V=\frac{1}{2}(\frac{4}{3}\pi r^3)$

$V=\frac{1}{3}\pi(.5)^2(4) \quad V=\frac{1}{2}(\frac{4}{3}\pi(.5)^3)$

$V=1.. \quad V=.2..$

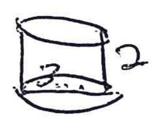
$1.. + .2.. = 1.3... \text{ in}^3$

$1.3..\text{ in}^3 \cdot \frac{0.7\text{ oz}}{1\text{ in}^3} \cdot \frac{.20\,\$}{1\text{ oz}} \times 24$

$4.. + .20(24) = 9.20$

the cones

Nicole



$V=\pi r^2 h$

$V=\pi(1.57..)^2(2)$

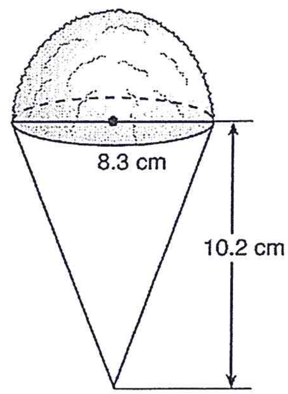
$V=15.... \text{ in}^3$

$15...\text{ in}^3 \cdot \frac{0.7\text{ oz}}{1\text{ in}^3} \cdot \frac{.22\,\$}{1\text{ oz}} \times .9 \times 21$

\$45.35

Nicole will spend more money. \$36.15

14. A snow cone consists of a paper cone completely filled with shaved ice and topped with a hemisphere of shaved ice, as shown in the diagram below. The inside diameter of both the cone and the hemisphere is 8.3 centimeters. The height of the cone is 10.2 centimeters.



The desired density of the shaved ice is 0.697 g/cm^3, and the cost, per kilogram, of ice is \$3.83. Determine and state the cost of the ice needed to make 50 snow cones.

cone

$V=\frac{1}{3}\pi r^2 h$

$V=\frac{1}{3}\pi(4.15)^2(10.2)$

$V=183...$

hemisphere

$V=\frac{1}{2}(\frac{4}{3}\pi r^3)$

$V=\frac{1}{2}(\frac{4}{3}\pi(4.15)^3)$

$V=149..$

$183... + 149.. = 333...cm^3$

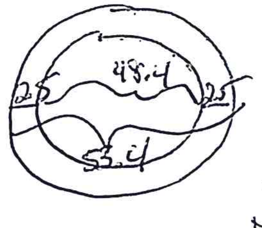
$333...\cancel{cm^3} \cdot \frac{.697\ \cancel{g}}{1\ \cancel{cm^3}} \cdot \frac{1\ \cancel{kg}}{1000\ \cancel{g}} \cdot \frac{3.83\ \$}{1\ \cancel{kg}} \times 50 = \$44.53$

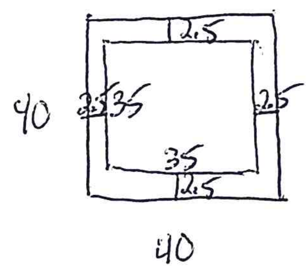
must convert $7.5 m \cdot \frac{100 cm}{1 m} = 750 cm$

ollow
ake
cross
ection

15. New streetlights will be installed along a section of the highway. The posts for the streetlights will be 7.5 m tall and made of aluminum. The city can choose to buy the posts shaped like cylinders or the posts shaped like rectangular prisms. The cylindrical posts have a hollow core, with aluminum 2.5 cm thick, and an outer diameter of 53.4 cm. The rectangular-prism posts have a hollow core, with aluminum 2.5 cm thick, and a square base that measures 40 cm on each side. The density of aluminum is 2.7 g/cm^3, and the cost of aluminum is \$0.38 per kilogram. If all posts must be the same shape, which post design will cost the town less? How much money will be saved per streetlight post with the less expensive design?

$53.4 - 2(2.5) = 48.4$ $\qquad$ $40 - 2(2.5) = 35$





whole $\qquad$ inside

$V = \pi r^2 h$ $\qquad$ $V = \pi r^2 h$

$= \pi (26.7)^2 (750)$ $\qquad$ $V = \pi (24.2)^2 (750)$

$V = 1679707.49$ $\qquad$ $V = 1379881.741$

$1679707.49 - 1379881.741$

$V = 299825.749 cm^3$

whole $\qquad$ inside

$V = lwh$ $\qquad$ $V = lwh$

$V = 40(40)(750)$ $\qquad$ $V = 35(35)(750)$

$V = 1200000$ $\qquad$ $V = 918750$

$1200000 - 918750$

$V = 281250 cm^3$

$299825.749 - 281250$

$18575.749 cm^3 \rightarrow$ Difference in volume for 1 post

$18575.749 \cancel{cm^3} \cdot \frac{2.7 \cancel{g}}{1 \cancel{cm^3}} \cdot \frac{1 \cancel{kg}}{1000 \cancel{g}} \cdot \frac{.38 \$}{1 \cancel{kg}} = \$19.06$

Rectangular posts