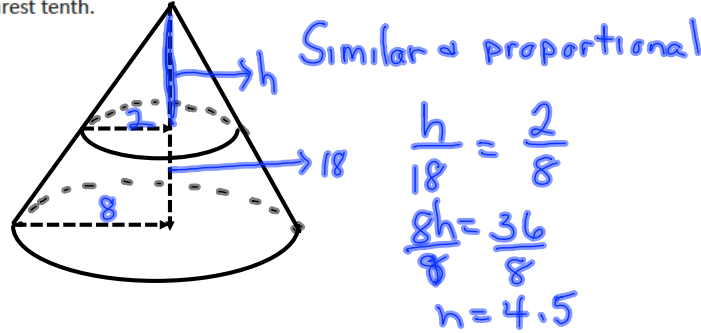
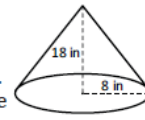


111. \_\_\_\_\_ in The height of a solid cone, shown here, is 18 in, and its radius is 8 in. A cut parallel to the circular base is made completely through the cone so that one of the two resulting solids is a smaller cone. The radius of the small cone is 2 in. What is the height of the smaller cone? Express your answer as a decimal to the nearest tenth.



112. \_\_\_\_\_ If  $a$  is the greatest common factor of 72 and 48, and if  $b$  is the greatest common factor of 108 and 144, what is the least common multiple of  $a$  and  $b$ ?


GCF of 72 & 48

$$\begin{array}{l} \uparrow \quad \uparrow \\ 9 \cdot 8 \quad 6 \cdot 8 \\ 3 \cdot 3 \cdot 8 \quad 3 \cdot 2 \cdot 8 \\ 3 \cdot 8 = 24 = a \end{array}$$



GCF 108 144

$$\begin{array}{l} \uparrow \quad \uparrow \\ 12 \cdot 9 \quad 12 \cdot 12 \\ 12 \cdot 3 \cdot 3 \quad 12 \cdot 4 \cdot 3 \\ 12 \cdot 3 = 36 = b \end{array}$$

LCM of  $a, b = \text{LCM of } 24, 36 = 72$

113. \_\_\_\_\_ arr  Some radio stations have call letters that contain 4 letters. Two examples are KTOO and WFXM. The first letter must be a K or W, and the last 3 letters can be any letter except K or W. How many different 4-letter arrangements of station call letters are possible?

$$2 \cdot 24 \cdot 24 \cdot 24 = 27,648$$

114. \_\_\_\_\_ m  A hare is running at a rate of 1 m every minute, while a tortoise is crawling at a rate of 1 cm every second. In meters, how much farther than the tortoise will the hare travel in an hour? 

r	t	d	
1 m	60	<u>60 m</u>	1 cm/sec
60 cm	60 min = 3600 cm		60 cm/min
			3600 cm/hr

$$1 \text{ m} = 100 \text{ cm}$$

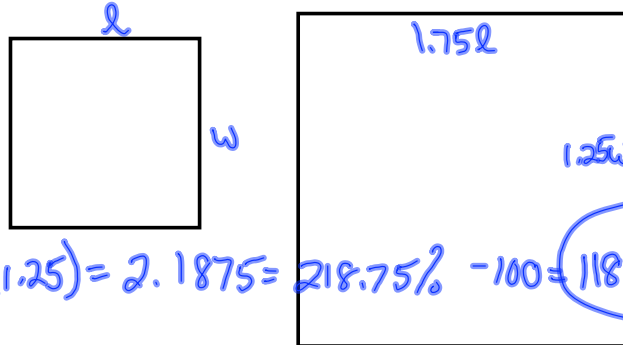
$$3600 \div 100 = 36 \text{ m}$$

$$60 - 36 = 24 \text{ m farther}$$

115. \_\_\_\_\_ ppl Each day on Earth more people are born than die. If there is a net gain of 150 living people on the planet each minute, how many more people are there on Earth every day? Express your answer in scientific notation with three significant digits.

$$150 \cdot 60 \cdot 24 = 216,000 = 2.16 \times 10^5$$

116. \_\_\_\_\_ % If the length of each longer side of a rectangle is increased by 75% and each shorter side is increased in length by 25%, what is the overall percent increase in the area of the original rectangle? Express your answer as a decimal to the nearest hundredth.



$$(1.75)(1.25) = 2.1875 = 218.75\% - 100 = 118.75\%$$

117. \_\_\_\_\_ mL A scientist has 50 mL of a 50% acid solution and wishes to create a 20% acid solution by adding a quantity of a 10% acid solution. How many milliliters of the 20% acid solution will she have after she mixes the weaker and stronger solutions?

50 mL of 50% acid = 25 mL of acid 25 mL of water.  
 10% acid = 1 mL of acid 9 mL of water  
 $n = \#$  of times to add 10 mL of 10% acid  
 acid =  $25 + n$  water =  $25 + 9n$   
 to get 20% acid need 80% water or 4x amount  
 $4(25 + n) = 25 + 9n$   
 $100 + 4n = 25 + 9n$   
 $75 = 5n$   
 $15 = n$  15 times add the amount  
 $15 \times 10 = 150 + 50$  of original = 200 mL

118. \_\_\_\_\_ mi On a county map, the distance between Tinsel Town and Emerald City measures 3.5 in. The actual distance between the two locations is 42 mi. If the distance between Emerald City and Diamond Bluff measures 2.75 in on that same map, how many miles apart are the two cities?

$$\frac{42}{3.5} = \frac{x}{2.75}$$

$$(42)(2.75) = 3.5x$$

$$\frac{(42)(2.75)}{3.5} = \textcircled{33}$$



119. \_\_\_\_\_ ft After a ball is dropped, the rebound height of each bounce is 80% of the height of the previous bounce. The height of the first bounce is 5 ft. What is the height of the sixth bounce of this ball? Express your answer as a decimal to the nearest tenth.

$$\begin{array}{c}
 \uparrow \\
 \times \uparrow \uparrow .8x \uparrow .64x \uparrow (.64)(.8) \\
 5(.8)(.8)(.8)(.8)(.8) = 5(.8)^5 = 1.6384 \\
 = 1.6
 \end{array}$$

120. \_\_\_\_\_ % If a circle with a diameter of  $8\frac{1}{2}$  in is cut from an  $8\frac{1}{2}$ -in by 11-in sheet of paper, what percent of the area of the sheet of paper is left over? Express your answer as a decimal to the nearest tenth.

$$\begin{array}{l}
 d = 8.5 \\
 r = 4.25 \\
 A = \pi(4.25)^2 \\
 = 56.75 \text{ in}^2
 \end{array}
 \quad
 \begin{array}{l}
 A \text{ of paper} = 8.5(11) \\
 = 93.5
 \end{array}$$

$$93.5 - 56.75 = 36.75$$

$$\frac{36.75}{93.5} \approx 39.3\%$$