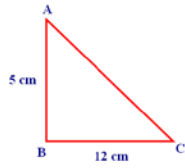


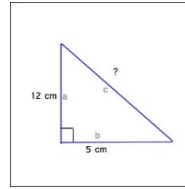
Section 2.1: The Pythagorean Theorem

Homework #1-20: Use the Pythagorean Theorem to find the missing length. Round to two decimal places when necessary. Make sure to use units in your answer when the lengths are given with units.

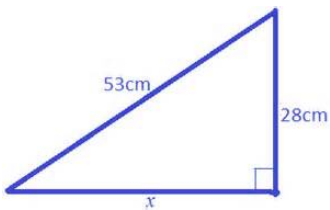
1)



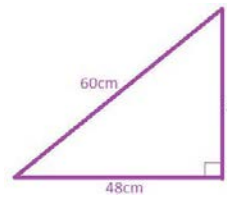
2)



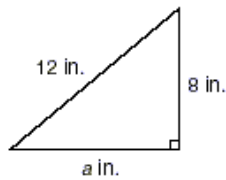
3)



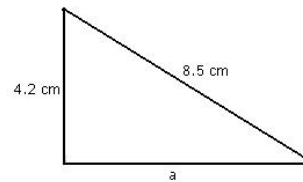
4)



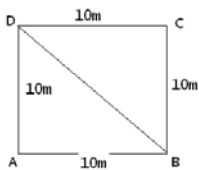
5) Round your answer to 2 decimals.



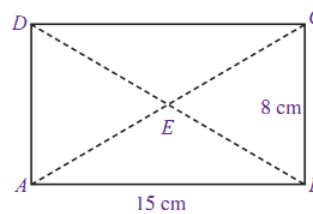
6)



7) Find the length of the diagonal. Round your answer to 2 decimals.

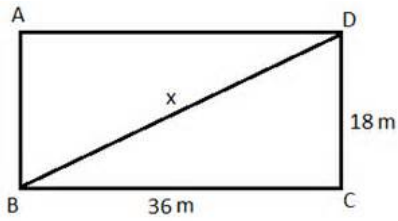


8) Find the length of the diagonal. Round to 2 decimals.

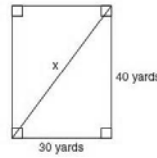


Section 2.1 continued:

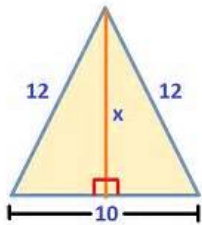
9) Find the length of the diagonal.



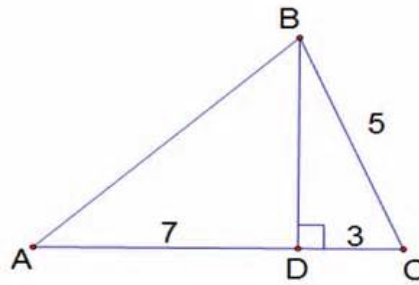
10) Find the length of the diagonal.



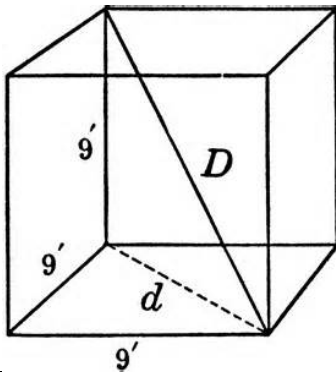
11) Solve for  $x$ . Assume the units are in meters. Round to 2 decimals.



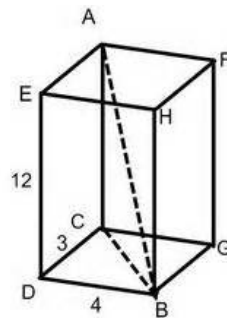
12) Find the height of the triangle. Assume the lengths are given in meters.



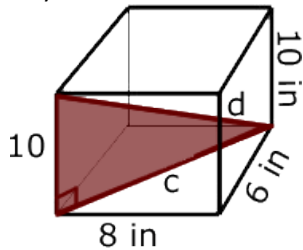
13) Find  $d$  and  $D$ . Round to 2 decimals. Hint the "''" means the units are in feet.



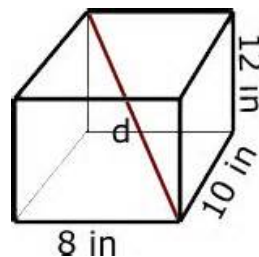
14) Find the lengths of the dashed lines. Assume sides are measured in feet.



15) Solve for  $c$  and  $d$ .



16) Find  $d$ .



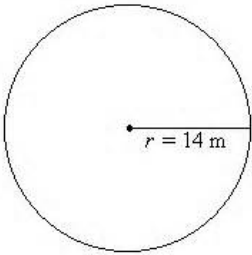
Answers:

- 1) 13 cm 3)  $x = 45$  cm 5)  $a = 8.94$  in 7) 14.14 m 9) 40.25 m 11) 10.91 m  
 13)  $d = 12.73'$   $D = 15.59'$  15)  $c = 10$  in  $d = 14.14$  in

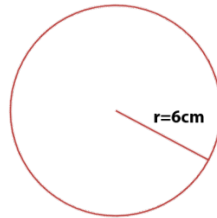
Section 2.2: Perimeter and Area

Homework #1-4: Find the circumference of each circle. Make sure to include the proper units in your answer. Leave your answer in terms of  $\pi$ .

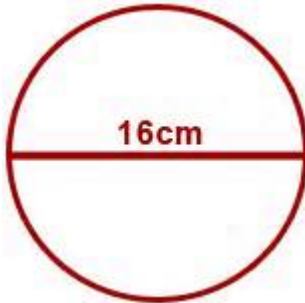
1)



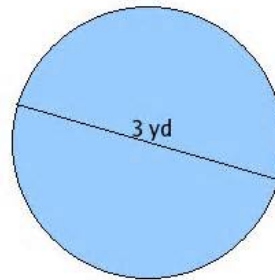
2)



3)



4)

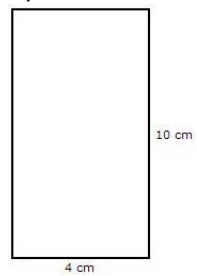


Homework #5-12: Find the perimeter.

5)

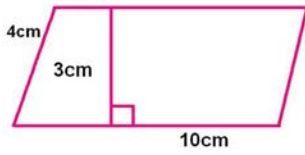


6)

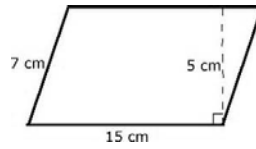


Section 2.2 Continued

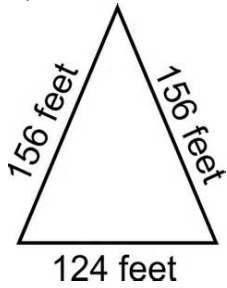
7) Assume opposite sides have equal lengths.



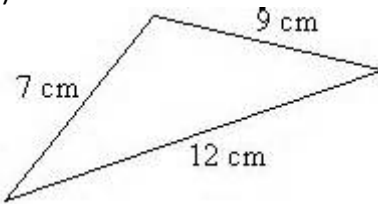
8) Assume opposite sides have equal lengths.



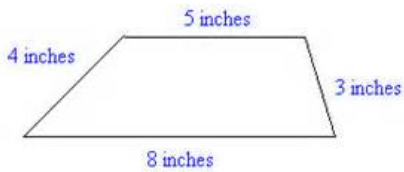
9)



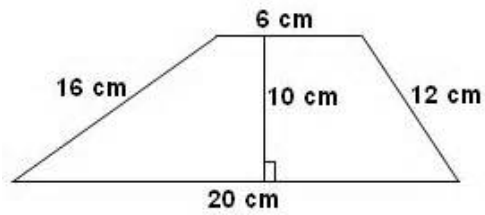
10)



11)

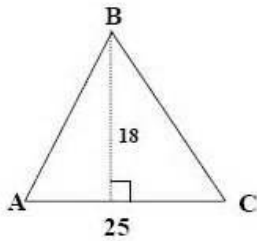


12)

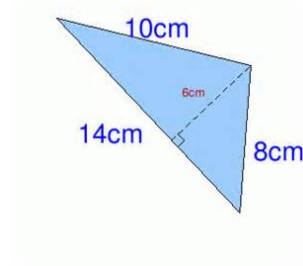


Homework: #13 – 24 Find the area of each figure. Use appropriate units.

13) Assume the lengths are in inches.

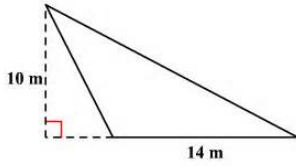


14)

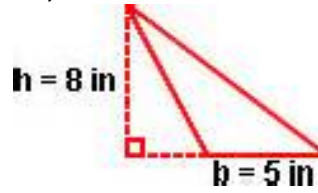


Section 2.2 Continued:

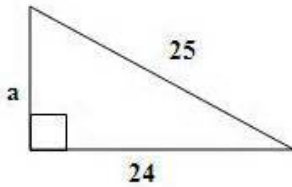
15)



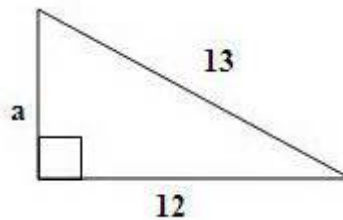
16)



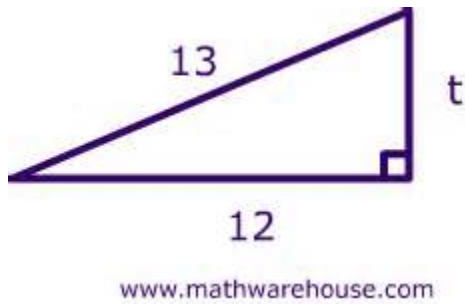
17) Find "a", then find the area of the triangle. Assume lengths are given in inches.



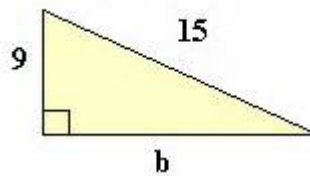
18) Find "a", then find the area of the triangle. Assume lengths are given in inches.



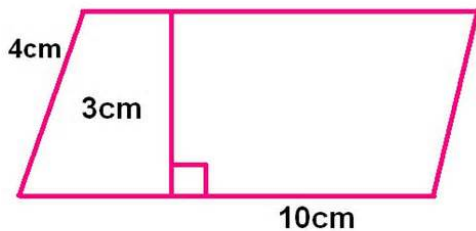
19) Find "t", then find the area of the triangle. Assume lengths are given in centimeters.



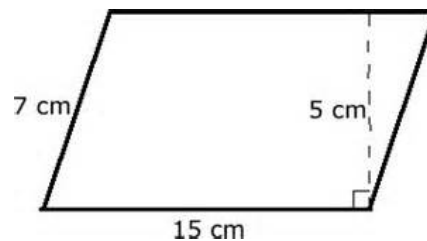
20) Find "b", then find the area of the triangle. Assume lengths are given in centimeters.



21)

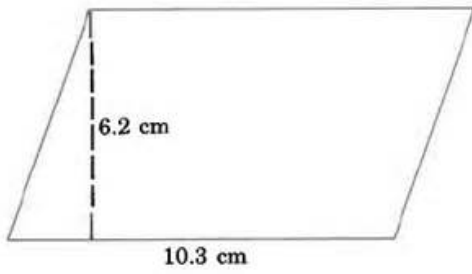


22).

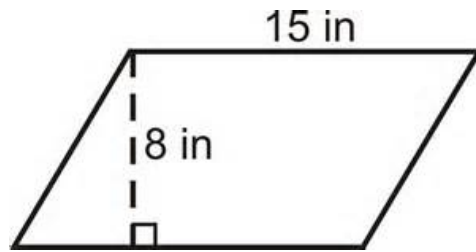


Section 2.2 Continued:

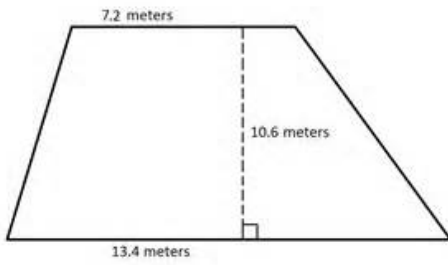
23)



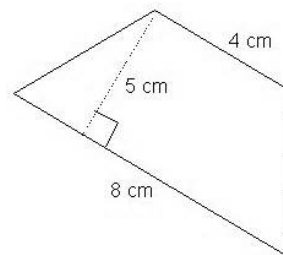
24)



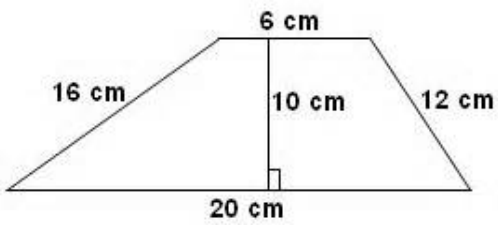
25)



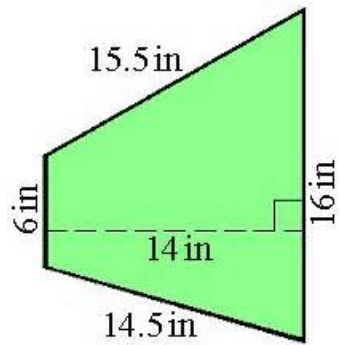
26)



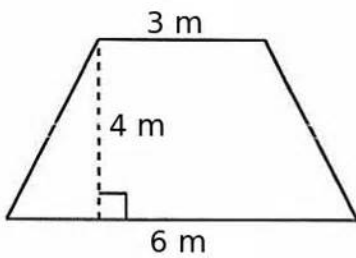
27)



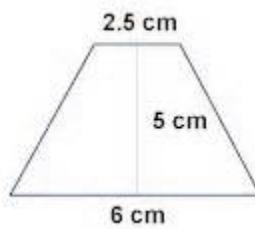
28)



29)

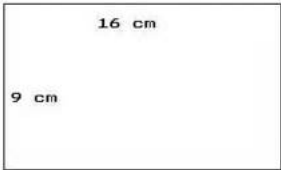


30)

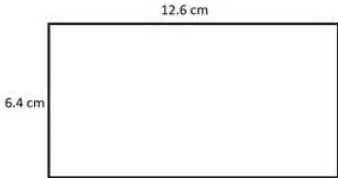


Section 2.2 Continued:

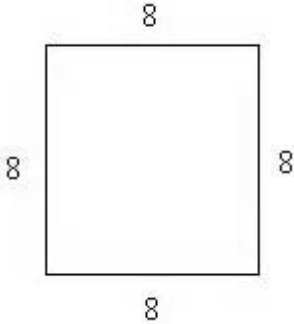
31)



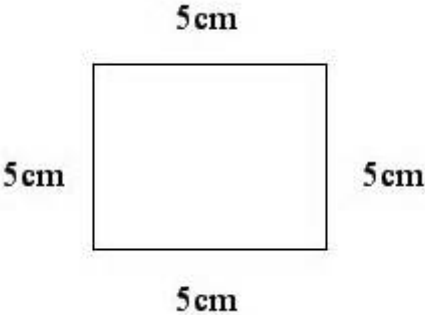
32)



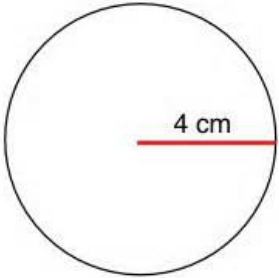
33) Assume units are given in inches.



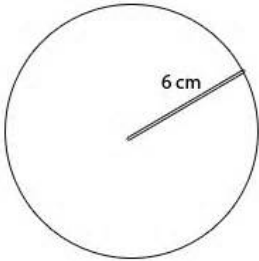
34)



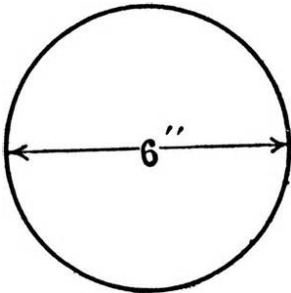
35)



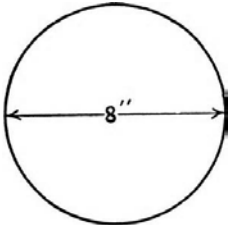
36)



37)

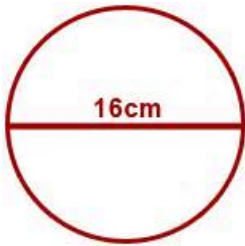


38)

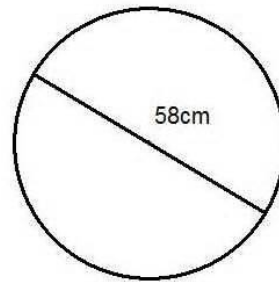


Section 2.1 Continued:

39)

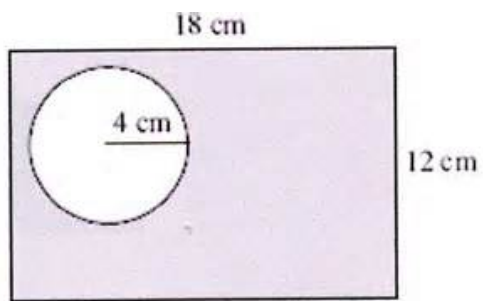


40)

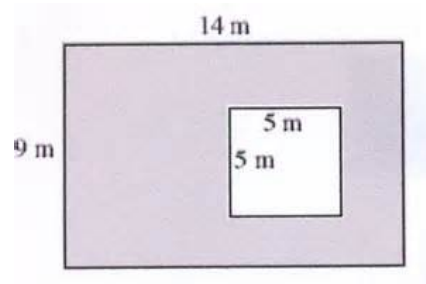


Homework #41-56: Find the area of the shaded region. Use appropriate units.

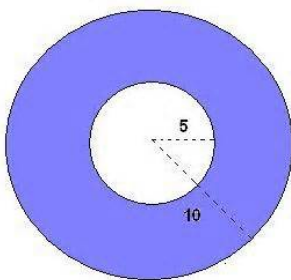
41) Use 3.14 for  $\pi$



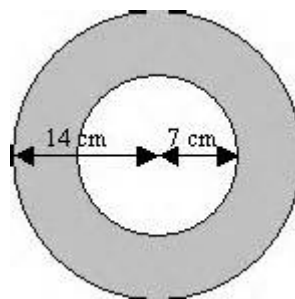
42)



43) Leave your answer in terms of  $\pi$ . Assume measurements are given in feet.



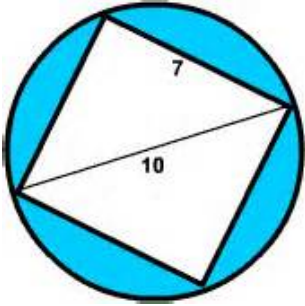
44) Leave your answer in terms of  $\pi$



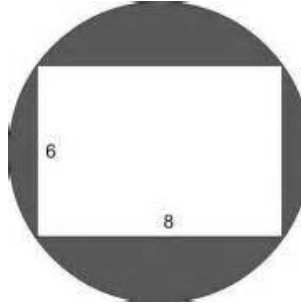


Section 2.2 Continued:

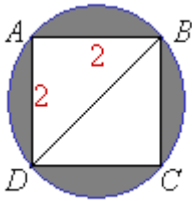
45) Use 3.14 for  $\pi$ . Assume measurements are given in meters.



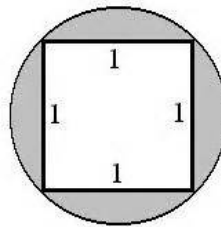
46) Find the length of the diagonal "d", then find the shaded area. Use 3.14 for  $\pi$ . Assume measurements are given in meters.



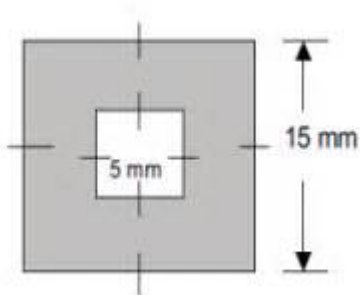
47) Find the length of the diagonal "d" rounded to 2 decimals. Use "d" to find the radius. Round the radius to 2 decimals. Then find the shaded area. Use 3.14 for  $\pi$ . Assume measurements are given in meters



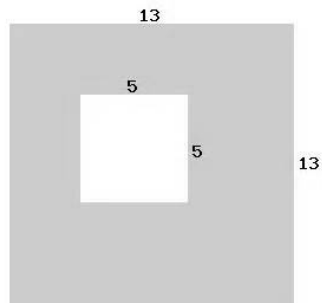
48) Find the length of the diagonal "d" rounded to 2 decimals. Use "d" to find the radius. Round the radius to 2 decimals. Then find the shaded area. Use 3.14 for  $\pi$ . Assume measurements are given in meters



49)

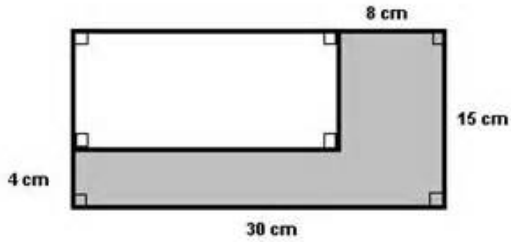


50) Assume units are in centimeters.



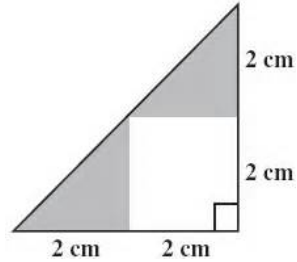
Section 2.2 Continued:

51)

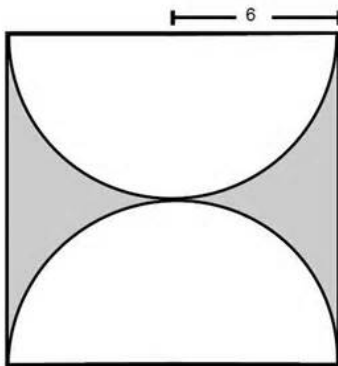


[www.analyzemath.com](http://www.analyzemath.com)

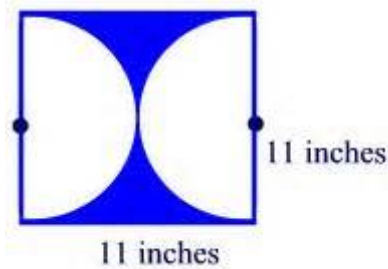
52)



53) Use 3.14 for  $\pi$ . Assume lengths are given in centimeters. Round your answer to 2 decimals.



54) Use 3.14 for  $\pi$ . Round your answer to 2 decimals.

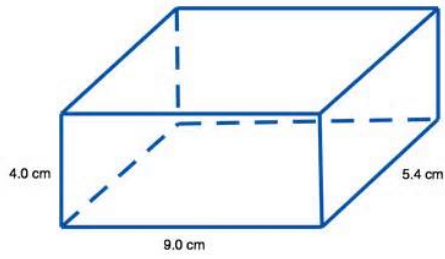


Section 2.2 Answers: 1)  $28\pi m$  3)  $16\pi cm$  5) 24 cm 7) 28 cm 9) 436 ft 11) 20 in  
 13) 225 square inches 15)  $70 m^2$  17)  $a = 7$ , area = 84 square inches 19)  $t = 5$ , area =  $30 cm^2$   
 21)  $30 cm^2$  23)  $63.86 cm^2$  25) 109.18 square meters 27)  $130 cm^2$  29)  $18 m^2$   
 31) 144 square centimeters 33) 64 square inches 35)  $16\pi cm^2$  37)  $9\pi in^2$  39)  $64\pi cm^2$   
 41)  $165.76 cm^2$  43)  $75\pi ft^2$  45)  $29.5 m^2$   
 47)  $d = 2.83 m$ ,  $r = 1.42 m$  area =  $2.33 m^2$  (your answer will be different if you round different than the instructions)  
 49)  $200 mm^2$  51)  $208 cm^2$  53)  $30.96 cm^2$

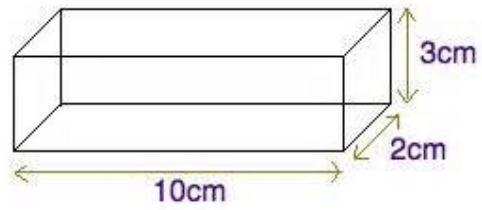
Section 2.3 Volume

Homework # 1- 30: Find the volume. Leave your answer in terms of  $\pi$  when appropriate.

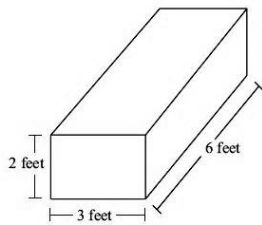
1)



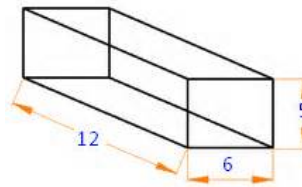
2)



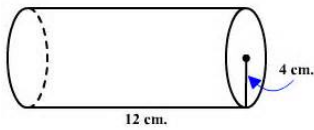
3)



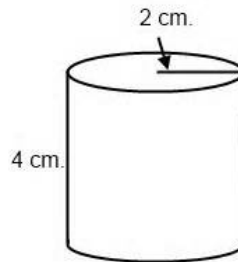
4) Assume measurements are in feet.



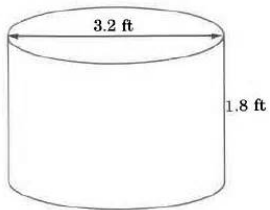
5)



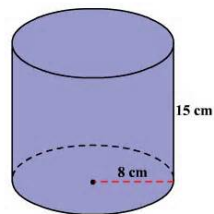
6)



7)

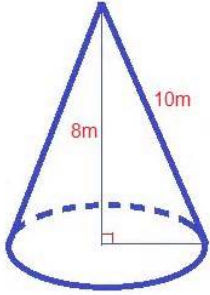


8)

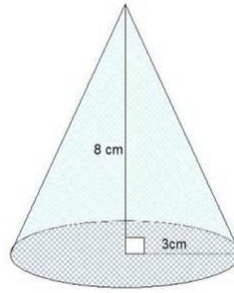


Section 2.3 Continued:

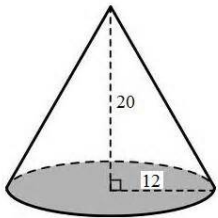
9)



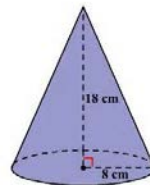
10)



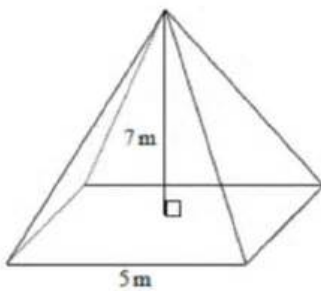
11) Assume measurements are in centimeters.



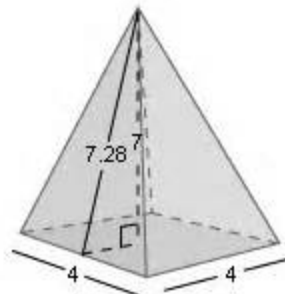
12)



13) Assume the base of the pyramid is a square. Leave your answer in fraction form.

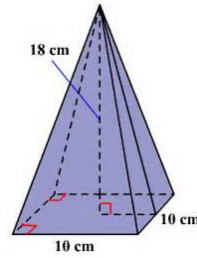
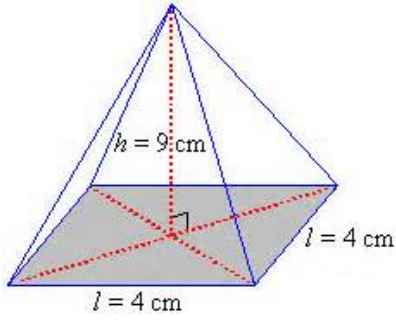


14) Assume that the units are given in meters. Round your answer to 2 decimals, if appropriate.

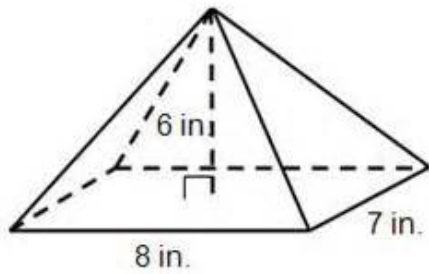


Section 2.3 Continued:

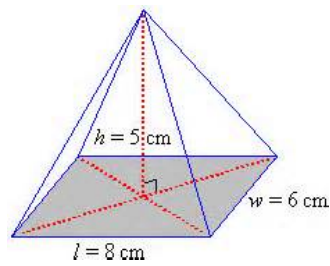
- 15) This is a square pyramid. The base is a 4 cm by 4 cm square. 16)



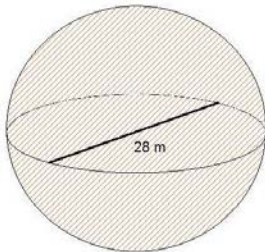
17)



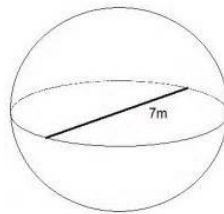
18)



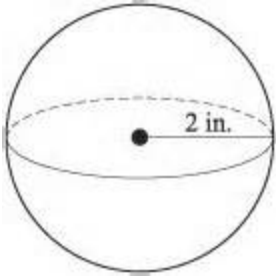
- 19) Write your answer as a fraction in terms of  $\pi$ .



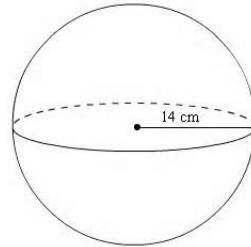
- 20) Write your answer as a fraction in terms of  $\pi$ .



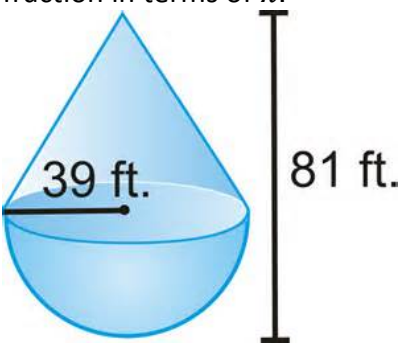
21) Write your answer as a fraction in terms of  $\pi$ .



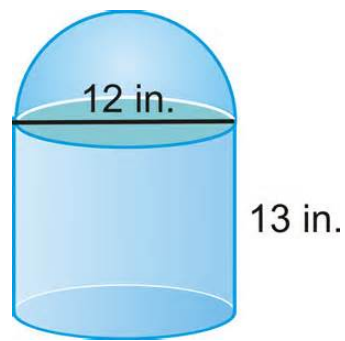
22) Write your answer as a fraction in terms of  $\pi$ .



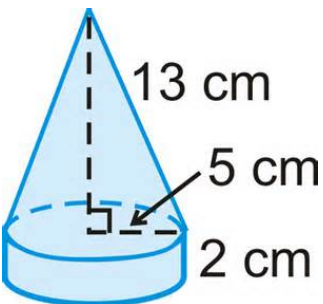
23) Hint you will need to subtract to find the height of the cone. Write your answer as a fraction in terms of  $\pi$ .



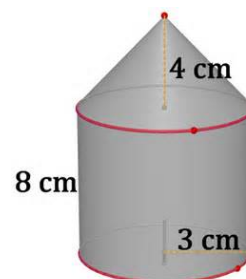
24) Write your answer as a fraction in terms of  $\pi$ .



25) Write your answer in terms of  $\pi$ .

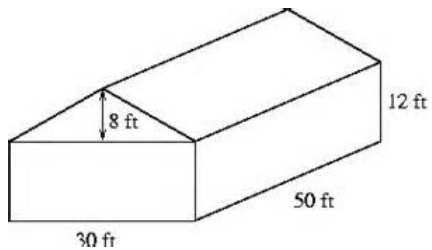


26) Write your answer as a fraction in terms of  $\pi$ .

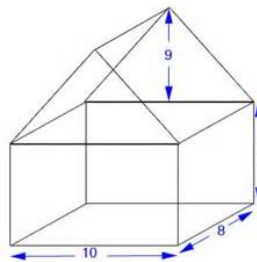


Section 2.3 Continued:

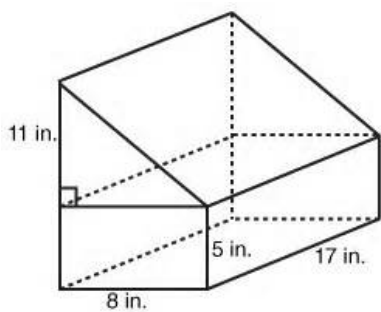
27)



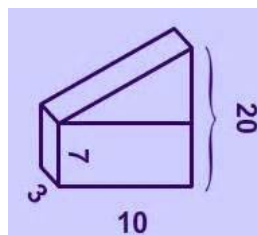
28) Assume lengths are given in feet.



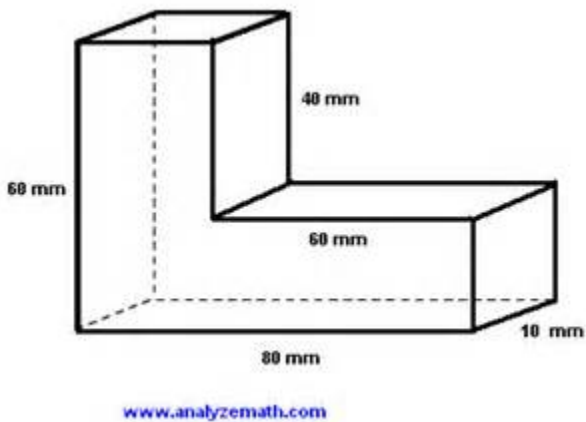
29)



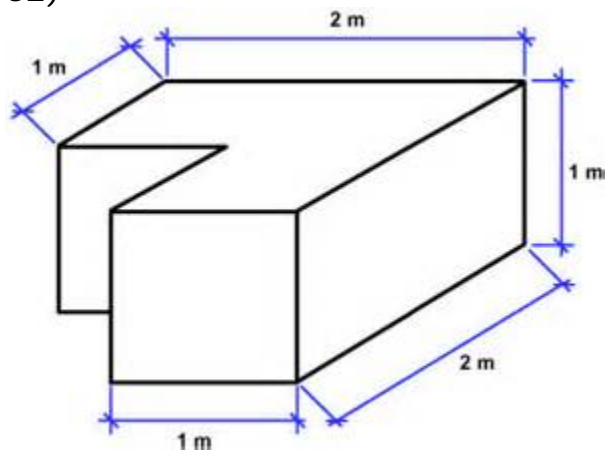
30) Assume lengths are given in inches.



31)



32)



Section 2.3 Answers: 1)  $194.4 \text{ cm}^3$  3)  $36 \text{ ft}^3$  5)  $192\pi \text{ cm}^3$  7)  $4.608\pi \text{ ft}^3$  9)  $96\pi \text{ cm}^3$  11)  $960\pi \text{ cm}^3$  13)  $\frac{175}{3} \text{ m}^3$  15)  $48 \text{ cm}^3$  17)  $112 \text{ in}^3$  19)  $\frac{10976}{3} \pi \text{ m}^3$  21)  $\frac{32}{3} \pi \text{ in}^3$  23)  $60840\pi \text{ ft}^3$  25)  $\frac{475}{3} \pi \text{ cm}^3$  27)  $24000 \text{ ft}^3$  29)  $1428 \text{ in}^3$  31)  $24000 \text{ mm}^3$

## Section 2.4 Dimensional Analysis

We will need to know a few equivalencies to do the problems in this section. I will give you all equivalencies from this list that you need on the test. There is no need to memorize these formulas.

Length	Volume	Area
1 in = 2.54 cm	1 tsp = 5 ml	1 in <sup>2</sup> = 6.5 cm <sup>2</sup>
1 ft = 30 cm	1 tbsp = 15 ml	1 ft <sup>2</sup> = 0.09 m <sup>2</sup>
1 yd = 0.9 m	1 fl oz = 30 ml	1 yd <sup>2</sup> = 0.8 m <sup>2</sup>
1 mi = 1.6 km	1 cup = 0.24 l	1 mi <sup>2</sup> = 2.6 km <sup>2</sup>
1 ft = 12 in	1 pint = 0.47 l	
1 yd = 3 ft	1 qt = 0.95 l	
1 mi = 5280 ft	1 gal = 3.8 l	
	1 ft <sup>3</sup> = 0.03 m <sup>3</sup>	Weight
	1 yd <sup>3</sup> = 0.76 m <sup>3</sup>	1 oz = 28 g
	1 cup = 8 oz	1 lb = 0.45 kg
	1 pint = 2 cups	1 Ton = 0.9 t (tonne)
	1 quart = 2 pints	1 lb = 16 oz
	7.48 gallons = 1 ft <sup>3</sup>	1 ton = 2000 lb

### Metric Length

millimeter	centimeter	decimeter	meter	dekameter	hectometer	kilometer
1000 (mm)	100 (cm)	10 (dm)	1 (m)	0.1 (dam)	0.01 (hm)	0.001 (km)

### Metric Weight

milligram	centigram	decigram	gram	dekagram	hectogram	kilogram
1000 (mg)	100 (cg)	10 (dg)	1 (g)	0.1 (dag)	0.01 (hg)	0.001 (kg)

### Metric Volume

milliliter	centiliter	deciliter	liter	dekaliter	hectoliter	kiloliter
1000 (ml)	100 (cl)	10 (dl)	1 (l)	0.1 (dal)	0.01 (hl)	0.001 (kl)

#1-30: Use dimensional analysis to find the missing quantity. Round to 2 decimals when appropriate.

- 1) 10 m = \_\_\_\_ cm
- 2) 500 ml = \_\_\_\_ l
- 3) 45 mg = \_\_\_\_ g
- 4) 20 kl = \_\_\_\_ l
- 5) 5 kl = \_\_\_\_ l
- 6) 8 kg = \_\_\_\_ g
- 7) 0.25 kl = \_\_\_\_ cl
- 8) 50 dm = \_\_\_\_ dam
- 9) 5 ft = \_\_\_\_ in
- 10) 6 ft = \_\_\_\_ cm
- 11) 3 mi = \_\_\_\_ ft
- 12) 4 yd = \_\_\_\_ m



Section 2.4 Continued:

- 13) 4 l = \_\_\_\_ cups                      14) 40 oz = \_\_\_\_ cups  
15) 3 fl oz = \_\_\_\_ l                      16) 8 fl oz = \_\_\_\_ l  
17) 400 oz = \_\_\_\_ kg                      18) 6 kg = \_\_\_\_ oz  
19) 10000 oz = \_\_\_\_ tons                      20) 300 yd = \_\_\_\_ km  
21) 2 l = \_\_\_\_ fl oz                      22) 6 l = \_\_\_\_ fl oz  
23) 10 kg = \_\_\_\_ oz                      24) 220 oz = \_\_\_\_ kg  
25) 3 tons = \_\_\_\_ oz                      26) 2 km = \_\_\_\_ yd  
27) 10 cups = \_\_\_\_ quarts                      28) 8 quarts = \_\_\_\_ cups  
29) 100 tsp = \_\_\_\_ l                      30) 2 l = \_\_\_\_ tsp

Homework # 31 – 50: Solve, round to 2 decimals when appropriate.

31) The distance from Cincinnati, Ohio to Columbus, Ohio is about 110 miles. What is the distance in kilometers?

32) The distance from Phoenix to Flagstaff is about 140 miles. What is the distance in kilometers?

33) Two cities 400 km apart. How many miles are they apart?

34) Two cities 1000 km apart. How many miles are they apart?

35) A swimming pool holds 12,500 gallons of water. How many cubic feet of water does it hold? (round to 2 decimals)

36) A bath tub holds 50 gallons of water. How many cubic feet of water does it hold? (round to 2 decimals)

37) A pool is 20 ft long, 15 ft wide and 4 ft deep.

a) What is the volume of the pool in cubic feet?

b) How many gallons of water can it hold?

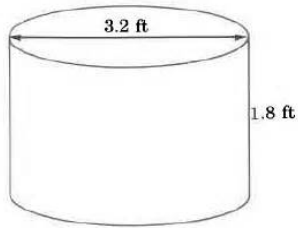
38) A pool is 25 ft long, 18 ft wide and 5 ft deep.

a) What is the volume of the pool in cubic feet?

b) How many gallons of water can it hold?

Section 2.4 Continued:

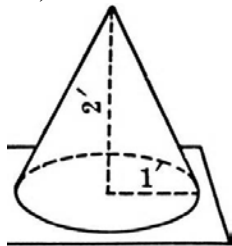
39) Consider the cylinder below.



a) What is the volume of the cylinder?

b) How many gallons of water can it hold? (Leave your answer in terms of  $\pi$ .)

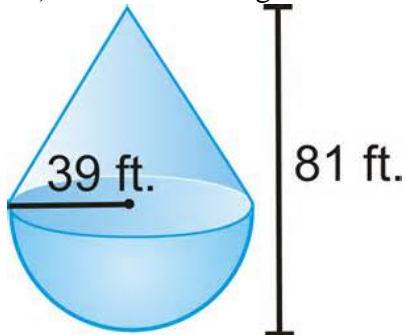
40) Consider the cone below.



a) What is the volume of the cylinder?

b) How many gallons of water can it hold?

41) Consider the figure below.

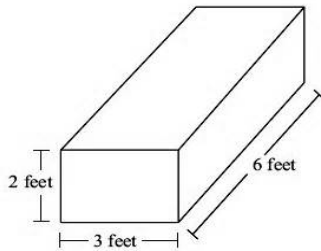


a) What is the volume of the shape?

b) How many gallons of water can it hold? (use 3.14 for  $\pi$  and round your answer to 2 decimals.)

Section 2.4 Continued:

42) Consider the figure below.



a) What is the volume of the shape?

b) How many gallons of water can it hold?

43) Part of the Queen Elizabeth Way in Canada has a speed limit of 80 kph. What is the speed limit in mph?

44) The speed limit on much of I-17 is 75 miles per hour. What is the speed in kilometers per hour?

45) One gram is the same as 5 carats. David's new ring contains a precious stone that is 2 carats. Find the weight of the stone in grams.

46) One gram is the same as 5 carats. David's new ring contains a precious stone that is 1/8 carat. Find the weight of the stone in grams.

Answers: 1) 1000 cm<sup>3</sup> 3) 0.045 g 5) 5,000 l 7) 25,000 cl 9) 60 in 11) 15,840 ft

13)  $16\frac{2}{3}$  cups 15) 0.09 l 17) 11.2 kg 19) .3125 T 21) 700 fl oz 23) 357.14 oz

25) 96,000 oz 27) 2.5 qt 29) 0.5 l 31) 176 km 33) 250 mi 35) 1671.12 ft<sup>3</sup>

37a) 1200 ft<sup>3</sup> 37b) 8976 gallons 39a)  $4.608\pi$  ft<sup>3</sup> 39b)  $34.46784\pi$  gallons

41a)  $60840\pi$  ft<sup>3</sup> 41b) 1,428,961.25 gallons 43) 50 miles 45) 2/5 gram or 0.40 gram

## Section 2.5 Roman Numerals

Homework: #1-28 Write as a Hindu Arabic numeral.

- |             |              |             |             |
|-------------|--------------|-------------|-------------|
| 1) CCXLII   | 2) DXLVI     | 3) CDXLVII  | 4) CDXXXIV  |
| 5) LXXXVI   | 6) LXXVII    | 7) CXXIII   | 8) CXXXI    |
| 9) XLIX     | 10) XLIV     | 11) DCXVI   | 12) DCCLXVI |
| 13) XXXIV   | 14) XXXIX    | 15) XCIX    | 16) XCIV    |
| 17) MCMXXX  | 18) MCMXCIII | 19) MMCMIV  | 20) MMCMXCV |
| 21) MMXIV   | 22) MMXIX    | 23) CMXCVII | 24) CMXLVII |
| 25) DCXLVII | 26) DCCXLIX  | 27) CDLVI   | 28) CDXLVII |

Homework: # 29 – 60 Write as a Roman numeral.

- |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|
| 29) 53   | 30) 57   | 31) 18   | 32) 17   | 33) 125  | 34) 131  |
| 35) 316  | 36) 722  | 37) 19   | 38) 29   | 39) 34   | 40) 24   |
| 41) 49   | 42) 44   | 43) 47   | 44) 48   | 45) 95   | 46) 98   |
| 47) 432  | 48) 446  | 49) 951  | 50) 957  | 51) 948  | 52) 941  |
| 53) 1950 | 54) 1973 | 55) 1994 | 56) 1999 | 57) 2016 | 58) 2019 |
| 59) 2024 | 60) 2043 |          |          |          |          |

Section 2.5 Answers:

- 1) 242 3) 447 5) 86 7) 123 9) 49 11) 616 13) 34 15) 99  
17) 1930 19) 2904 21) 2014 23) 997 25) 647 27) 456  
29) LIII 31) XVIII 33) CXXV 35) CCCXVI 37) XIX  
39) XXXIV 41) XLIX 43) XLVII 45) XCV 47) CDXXXII  
49) CMLI 51) CMXLVIII 53) MCML 55) MCMXCIV  
57) MMXVI 59) MMXXIV

## Section 2.6

Homework #1-20: Convert to base 10 (some of your answers may be very large)

- |               |               |              |              |
|---------------|---------------|--------------|--------------|
| 1) $213_4$    | 2) $213_5$    | 3) $31_6$    | 4) $31_4$    |
| 5) $10111_2$  | 6) $110011_2$ | 7) $1234_7$  | 8) $1234_6$  |
| 9) $413_5$    | 10) $712_8$   | 11) $1224_5$ | 12) $3215_7$ |
| 13) $11101_2$ | 14) $11101_3$ | 15) $1041_5$ | 16) $2104_6$ |
| 17) $1002_3$  | 18) $2001_3$  | 19) $2023_4$ | 20) $2031_4$ |

Homework #21 – 40: Convert to the indicated base.

- |                    |                    |                    |
|--------------------|--------------------|--------------------|
| 21) 43 to base 5   | 22) 56 to base 5   | 23) 213 to base 3  |
| 24) 315 to base 3  | 25) 73 to base 2   | 26) 53 to base 2   |
| 27) 37 to base 2   | 28) 41 to base 2   | 29) 313 to base 4  |
| 30) 72 to base 5   | 31) 49 to base 6   | 32) 5120 to base 8 |
| 33) 2143 to base 5 | 34) 3120 to base 3 | 35) 143 to base 4  |
| 36) 123 to base 2  | 37) 412 to base 2  | 38) 914 to base 3  |

Section 2.6 Answers: 1) 39 3) 19 5) 23 7) 466 9) 108 11) 189

13) 29 15) 146 17) 29 19) 139 21)  $133_5$  23)  $21220_3$

25)  $1001001_2$  27)  $100101_2$  29)  $10321_4$  31)  $121_6$

33)  $32033_5$  35)  $2033_4$  37)  $110011100_2$