Warm Up

What were the success criteria from last class?

Agenda:

1. Homework corrections (page 110 and 111)
2. Team questions
3. Volume of Cones and Pyramids
4. Practice

MATH HELP THURSDAY   TEST – TUES. FEB 23rd

World 7.3 Volume of Spheres, Prisms and Cylinders

1) Calculate the volume of each object. Remember to SHOW ALL work and include units!

a)

Radius = 17 cm

$V = \frac{4}{3}\pi r^3$
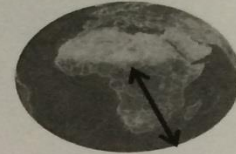
$= (\frac{4}{3})(3.14)(17)^3$

$V = 20\,569\,cm^3$

b)

$d = 32$

$r = 32 \div 2 = 16$

32 cm

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

$= \frac{4}{3}(3.14)(16)^3$

$V = 17\,148.6\,cm^3$

c)

6288 km

$V = \frac{4}{3}(3.14)(6288)^3$

$V = 1\,040\,892\,750\,317\,km^3$

d) Bowl soup with a radius 9 cm.

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

$= \frac{4}{3} \times 3.14 \times 9^3 \div 2$

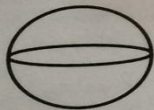$V = 1526\,cm^3$

e) The circumference of Jupiter is $.5 \times 10^5$ km. Hint: c=πd

f) How many Earths fit inside Jupiter. Keep answer in scientific notation

g)

r = 5 dm. Determine the volume in cm^3

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

$= \frac{4}{3}(3.14)(5)^3$

$= 523.3\,dm^3$

$V = 523\,333\,cm^3$ × 1000

h)

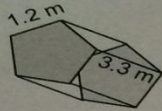a = 6 cm

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

$= \frac{4}{3}(3.14)(6)^5$

110

$V = 904.3\,cm^3$
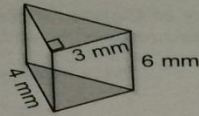
i) 12 half oranges are eaten at half-time at a soccer game.

The radius of each are 3 cm. What is the total volume of the oranges?

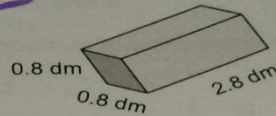2) Determine the volume of each of these prisms.

a) Apothem is 1.65 m

1.2 m

3.3 m

b)

3 mm

6 mm

4 mm

$V = A_B \times h$

$= \left(\frac{3 \times 4}{2}\right)(6)$

$V = 36 \text{ mm}^3$

c)

0.8 dm

0.8 dm

2.8 dm

$V = A_B \times h$

$= (0.8)(0.8)(2.8)$

$V = 1.79 \text{ dM}^3$

d)

2 mm

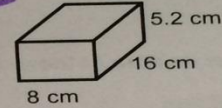3.8 mm

1.7 mm

e)

5 cm

5 cm

24.3 cm

6 cm

f)

5.2 cm

16 cm

8 cm

$V = A_B \times h$

$= 8 \times 16 \times 5.2$

$V = 665.6 \text{ cm}^3$

3) Calculate the volume of these cylinders

a)
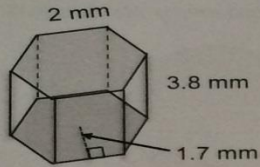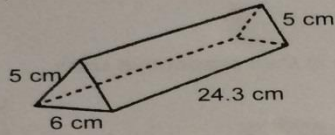
Radius = 3 dm
Height = 5 dm

$V = \pi r^2 h$

$V = 3.14 (3)^2 (5)$

$V = 141.3 \text{ dm}^3$

b)

Diameter = 6.2 cm
Height = 7.4 cm

$r = d \div 2$

$= 6.2 / 2$

$r = 3.1$

$V = \pi r^2 h$

$V = 3.14 \times (3.1)^2 \times 7.4$

$V = 223.3 \text{ cm}^3$

c)

Area of base = 314 m²
Height = ½ the radius

111

World 7.3 Volume of Spheres, Prisms and Cylinders

1) Calculate the **volume** of each object. Remember to SHOW ALL work and include units!

a)

Radius = 17 cm

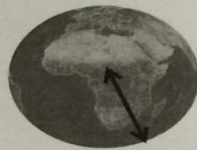$V = \frac{4}{3}\pi r^3$

$= (\frac{4}{3})(3.14)(17)^3$

$V = 20\,569\,cm^3$

b)

$d = 32$
$r = 32 \div 2 = 16$

32 cm

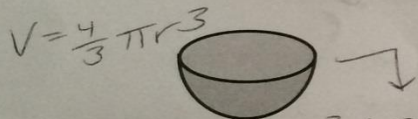$V = \frac{4}{3}\pi r^3$

$= \frac{4}{3}(3.14)(16)^3$

$V = 17\,148.6\,cm^3$

c)

6288 km

$V = \frac{4}{3}(3.14)(6288)^3$

$V = 1\,040\,892\,750\,397$
km^3

---

d) Bowl soup with a radius 9 cm.

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

$= \frac{4}{3} \times 3.14 \times 9^3 \div 2$

$V = 1526\,cm^3$

e) The circumference of Jupiter is $.5 \times 10^5$ km. Hint: $c = \pi d$

$C = \pi d$

$\frac{50\,000}{3.14} = \frac{3.14\,d}{3.14}$

$d = 15\,923.6\,km$
$r = 7\,961.8\,km$

f) How many Earths fit inside Jupiter. Keep answer in scientific notation

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

$= \frac{4}{3} \times 3.14 \times 7\,961.8^3$

$V = 2.11 \times 10^{12}$

$\div 1.04 \times 10^{12}$

2 earths fit

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g)

r = 5 dm. Determine the volume in cm^3

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

$= \frac{4}{3}(3.14)(5)^3$

$= 523.3\,dm^3$

$\times 1000$

$V = 523\,333\,cm^3$

h)

a

a = 6 cm

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

$= \frac{4}{3}(3.14)(6)^3$

110

$V = 904.3$
cm^3

i) 12 half oranges are eaten at half-time at a soccer game.

$12 \times 0.5 = 6$

The radius of each are 3 cm. What is the total volume of the oranges?
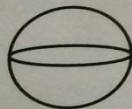
$V = \frac{4}{3}\pi r^3$

$= \frac{4}{3} \times 3.14 \times 3^3$

$V = 37.68 \times 6$

$V = 226\,cm^3$

2) Determine the volume of each of these prisms.
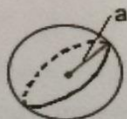
a) Apothem is 1.65 m

1.2 m 3.3 m

$V = A_B \times h$

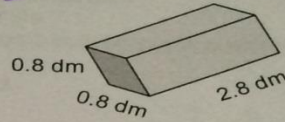$V = \left(\dfrac{1.2 \times 5 \times 1.65}{2}\right)(3.3)$

$\boxed{V = 16.3 \, m^3}$

b)

3 mm 6 mm 4 mm

$V = A_B \times h$

$= \left(\dfrac{3 \times 4}{2}\right)(6)$

$\boxed{V = 36 \, mm^3}$

c)

0.8 dm 0.8 dm 2.8 dm

$V = A_B \times h$

$= (0.8)(0.8)(2.8)$

$\boxed{V = 1.79 \, dm^3}$
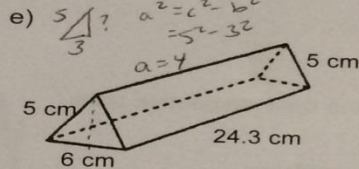
d)

2 mm 3.8 mm 1.7 mm
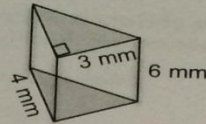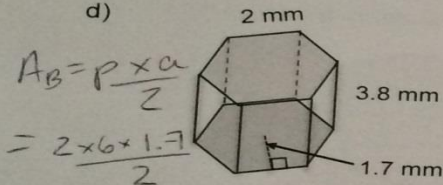
$A_B = \dfrac{p \times a}{2}$

$= \dfrac{2 \times 6 \times 1.7}{2}$

$A_B = 10.2 \, mm^2$

$V = A_B \times h$

$= 10.2 \times 3.8$

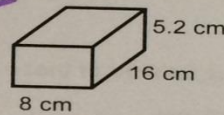$\boxed{V = 38.76 \, mm^3}$

e)

$a^2 = c^2 - b^2$
$= 5^2 - 3^2$
$a = 4$

5 cm 24.3 cm 6 cm

$V = A_B \times h$

$= \left(\dfrac{6 \times 4}{2}\right) \times 24.3$

$\boxed{V = 291.6 \, cm^3}$

f)

5.2 cm 16 cm 8 cm

$V = A_B \times h$

$= 8 \times 16 \times 5.2$

$\boxed{V = 665.6 \, cm^3}$

3) Calculate the volume of these cylinders

a)

Radius = 3 dm
Height = 5 dm

$V = \pi r^2 h$

$= 3.14(3)^2(5)$

$\boxed{= 141.3 \, dm^3}$

b)

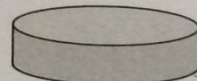Diameter = 6.2 cm
Height = 7.4 cm

$r = d \div 2$
$= 6.2/2$
$r = 3.1$

$V = \pi r^2 h$

$V = 3.14 \times (3.1)^2 \times 7.4$

$\boxed{V = 223.3 \, cm^3}$

c)

Area of base = 314 m²
Height = ½ the radius

$A = \pi r^2$

$\dfrac{314}{3.14} = \dfrac{3.14 r^2}{3.14}$

$\sqrt{100} \sqrt{r^2}$

$r = 10$

$h = \frac{1}{2} \times 10 =$

$V = \pi r^2 h$

$= 3.14 \times 10 \times 10 \times 5$

$\boxed{V = 1570 \, m^3}$

111

Today we will calculate the volume of cones, pyramids

So that we can determine space and capacity

Keys to Success:

✓ Identify the correct formula

✓ Substitute the values given

✓ Solve for the solution using correct units
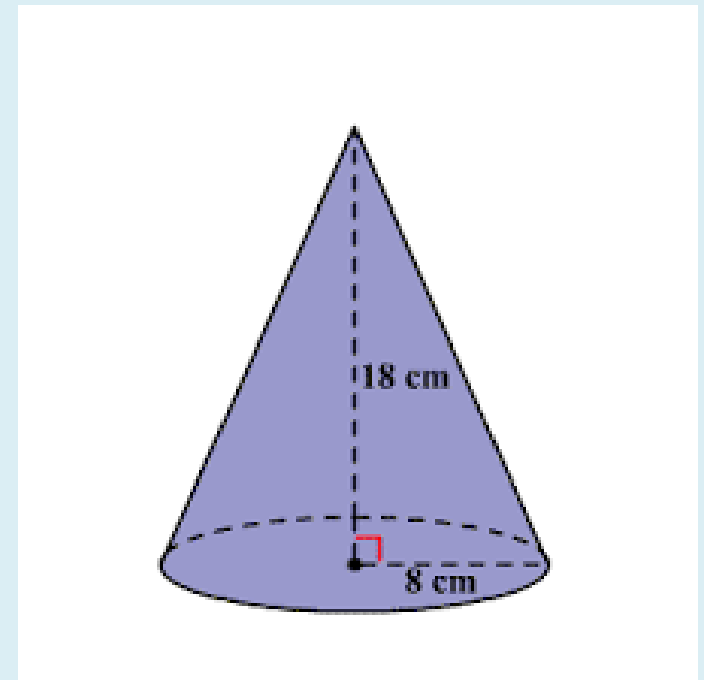
Volume of a Cone

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

Example:

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

V = 3.14 x 8x 8 x 18/3

V = 1 205.76 cm³

Volume of a Pyramid

$$V = \frac{A_B \, x \, h}{3}$$

Example:

$V = \frac{A_B \, x \, h}{3}$

$V = 6 \, x \, 6 \, x \, 15/3$

V = 180 m³

$h = 15$ m

6 m

6 m
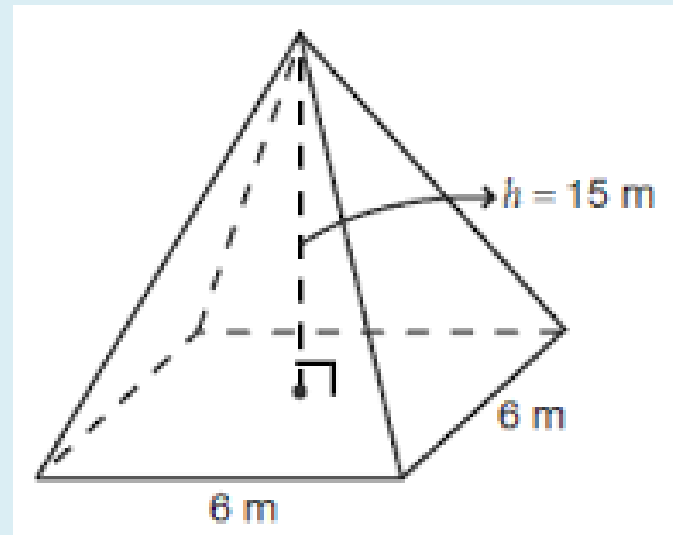
Practice

1. Workbook page 112

Test: Tuesday, February 23rd
Surface Area and Volume

Today we will determine the volume of decomposable solids, while exploring the similarities and differences between surface area and volume.

So that we can determine the space an object takes up.

Keys to Success:

1. Formula

2. Substitute

3. Solution with correct units

Warm up

Calculate the capacity in **<u>litres</u>** of a cone with a slant height of 5cm, and a radius of 3 cm.

Use pythag to find the **height**

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

$a^2 = c^2 - b^2$

$a^2 = 5^2 - 3^2$

V = 3.14 x 3 x 3 x 4/3

$a^2 = 16$

V = 37.68 cm³

a = 4 = height

37.68 cm3 ÷ 1000 = 0.0377 dm3 = 0.0377L

Practice Test – Workbook, pages 103-107

Changes to make:

Page 104 Short Answer

#1, 2, 3 – Find **surface area** **AND** **volume** of each

Page 106 Long Answer

#2. The value of the amber gem **is $100/mm³**

Finished?

Start making your memory aid…double check all formulas and include examples! ☺