Grade 7/8 Math

Volume Practice Test 2024

* The real test will be about half this length.

Name : Key Class: _____ Date: ____________

1/10

For use on this test, here are the common conversions table.

Units	To units	Linear Conversion factor	Square Conversion Factor	Cubic Conversion Factor
Centimetres	Inches	2.54 cm/in	6.4516 cm^2/in^2	16.3871 cm^3/in^3
Yard	Metre	0.9144 yd/m	0.8361 yd^2/m^2	0.7646 yd^3/m^3
Inches	Feet	12 in/ft	144 in^2/ft^2	1728 in^3/ft^3
Feet	Yard	3 ft/yd	9 ft^2/yd^2	27 ft^3/yd^3
Metre	Feet	0.3048 m/ft	0.0929 m^2/ft^2	0.02832 m^3/ft^3
Centimetres	Metres	100 cm/m	10000 cm^2/m^2	1000000 cm^3/m^3

Make sure that you have your formula sheet for the test too. I will not be handing out copies.

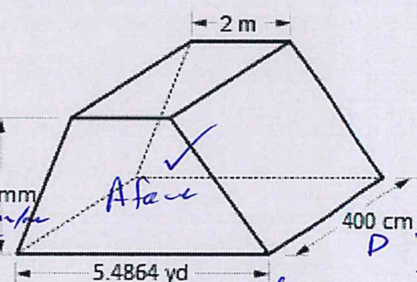
16

1. Find the volume of this trapezoidal prism.

$V = A_{face} \times D$ ✓

$= 16m^2 \times 4m$ ✓

$= 64m^3$ ✓



$A_{face} = \frac{T+B}{2} \times H$ ✓

$= \frac{2m + 6m}{2} \times 4m$ ✓

$= \frac{8m}{2} \times 4m$

$= 4m \times 4m$

$= 16m^2$ ✓

∴ The volume of this right trapezoidal prism is $64m^3$.

13

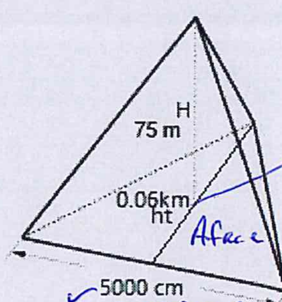
2. Find the volume of this triangular-based pyramid.

$V = \frac{A_{face} \times H}{3}$ ✓

$= \frac{1500m^2 \times 75m}{3}$ ✓

$= \frac{112\,500m^3}{3}$ ✓

$= 37500m^3$ ✓



0.06km × 1000
= 60m ✓

$A_{face} = \frac{B \times H}{2}$

$= \frac{50 \times 60m}{2}$

$= \frac{3000m^2}{2}$ ✓

$= 1500m^2$ ✓

∴ The volume of this triangular-based right pyramid is $37500m^3$.

3. Find the volume of this composite shape. **Don't Round.**

14

$V_T = V_1 + V_2 + V_3$

$= 1.1775\,cm^3 + 8.83125\,cm^3 + 0.58875\,cm^3$

$= 10.5975\,cm^3$

$V_1 = \frac{A_1 \times H}{3}$

$= \frac{1.76625\,cm^2 \times 2\,cm}{3}$

$= 1.1775\,cm^3$

$V_2 = A_1 \times H$

$= 1.76625\,cm^2 \times 5\,cm$

$= 8.83125\,cm^3$

$V_3 = \frac{A_1 \times H}{3}$

$= \frac{1.76625\,cm^2 \times 1\,cm}{3}$

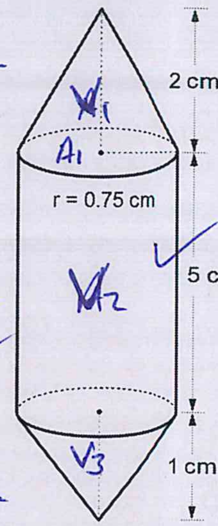
$= \frac{1.76625\,cm^3}{3}$

$= 0.58875\,cm^3$

$A_1 = \pi r^2$

$= 3.14 \times .75\,cm \times .75\,cm$

$= 1.76625\,cm^2$



∴ The total volume of this right composite shape is $10.5975\,cm^3$

4. If the Volume of this L-Block is 108 yd³, what is the height?

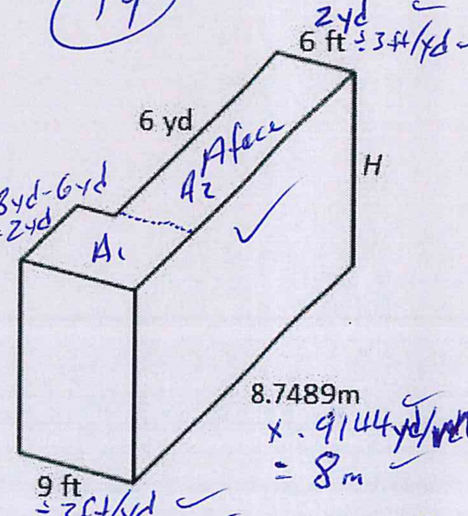
19

$V = A_{face} \times H$

$\frac{108\,yd^3}{18\,yd^2} = \frac{18\,yd^2 \times H}{18\,yd^2}$

$6\,yd = H.$

∴ The height is 6 yd of this right L-Block. The volume is $2916\,ft^3$ or $5038848\,in^3$



$8.7489\,m \times .9144\,yd/m = 8\,m$

$9\,ft \div 3\,ft/yd = 3\,yd$

$A_{face} = A_1 + A_2 = 6\,yd^2 + 12\,yd^2 = 18\,yd^2$

$A_1 = L \times W = 3\,yd \times 2\,yd = 6\,yd^2$

$A_2 = L \times W = 6\,yd \times 2\,yd = 12\,yd^2$

What is the volume of this L-Block in cubic feet (ft³)?

$108\,yd^3 \times 27\,ft^3/yd^3$

$= 2916\,ft^3$

4

What would it be in cubic inches (in³)?

$2916\,ft^3 \times 1728\,in^3/ft^3$

$= 5038848\,in^3$

4

5. An rectangular underground bunker is 12 yd wide, 7 yd long and 3 yd high. What is the volume of this space?

3yd

Aface

3yd

3yd

12yd

7yd

$V = A_{face} \times H$ ← depth in this case

$= 21 yd^2 \times 12 yd$

$= 252 yd^3$

9

$A_{face} = L \times W$

$= 3yd \times 7yd$

$= 21 yd^2$

∴ The volume of this rectangular right prism bunker is $252 yd^3$

If each person needs 54 cubic feet of space, how many people can fit in the bunker?

$252 yd^3 \div 54 ft^3/person$

$252 yd^3 \div 2 yd^3/person$

$= 126$ people

$54 ft^3 \div 27 ft^3/yd^3$

$= 2 yd^3$

6

∴ 126 people can fit in this bunker.

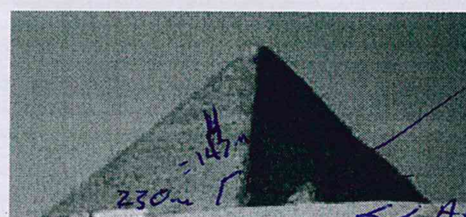
6. The Great Pyramid is the only one of the Seven Wonders of the World left standing today. As perhaps the largest single building ever constructed, it is a wonder mainly because of its scale and because of the incredible precision with which the work was executed. The pyramid originally stood about 482 feet (147 m) high with four equal sides each measuring about 755 feet (230 m). What is the volume of the pyramid in cubic metres?

9

$V = A_{base} \times H$

$= 52900 m^2 \times 147 m$

$= 7776300 m^3$



← Abase

https://www.britannica.com/place/Great-Pyramid-of-Giza

∴ The volume of this right square-based pyramid is $7776300 m^3$

$A_{base} = L \times W$

$= 230m \times 230m$

$= 52900 m^2$

What is the volume in km³? **Don't Round.**

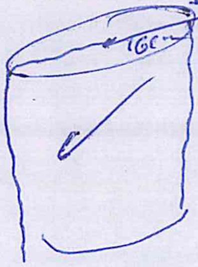
$7776300 m^3 \div 1000000000 m^3/km^3 = 0.00777 63 km^3$

4

∴ The volume of the pyramid of Giza (right square based pyramid) is $0.0077763 km^3$

7. A large cylindrical can of tomatoes holds 4019.2 mL and has a diameter of 16 cm. What is the height to the nearest cm?

12



$D = 16\,cm$

$r = \frac{1}{2} D$

$= 8\,cm$

$V = 4019.2\,mL$

$= 4019.2\,cm^3$

$(1\,mL = 1\,cm^3)$

$V = A_{base} \times H$

$$\frac{4019.2\,cm^3}{200.96\,cm^2} = \frac{200.96\,cm^2 \times H}{200.96\,cm^2}$$

$20\,cm = H$

$A_{base} = \pi r^2$

$= 3.14 \times 8\,cm \times 8\,cm$

$= 200.96\,cm^2$

$\therefore$ The height of this right cylinder can is 20 cm.

8. If you have time, come up with your own volume/conversion question based on a famous structure or shape.

Answers will vary