

High Performance Math

To view the test results for Bloomington Middle School:

1. Go to www.highperformancemath.com.
2. Hold the mouse over "Math", then click on "School Events" in the drop down box.
3. Click on "Click here to see an example of a HiPerMath after school program."
4. Click on "School Post Test and Overall Results."

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Volume of a Cylinder Test Results for Bloomington Middle School

This page has results from tests taken on or before September 28, 2010 only.

Synopsis: Bloomington Middle School students were motivated to voluntarily spend time after school to learn and practice math. Many students even worked on the math when they went home! The competition ran for 6 days. Each day at school students had 90 minutes of computer lab time. Most of the time was spent scoring points on math exercises and the post-test. Students raced their cars 2 or 3 times each day. Building and modifying their cars to make them faster was also a math exercise. As you can see from the pretest scores, the students began the competition with no prior knowledge. Based on the post tests, all students learned to calculate the volume of a cylinder and some also learned to convert to liters. This can be seen by looking at "individual results" below. Take a look at problem 15 on the Pretest or Post Test and you will see how thoroughly some students learned to calculate cubic inches, convert to cubic centimeters and then convert to liters. Bloomington Middle School Speed Week was a success! HiPerMath would be happy to run a Speed Week at your school.

Summary

Total Number of Students Who Completed Pretest and Post Test: 15
Sum of Pretest Scores: 9 out of 225 possible
Average Pretest Score: 0 out of 15
Average Pretest Percent Score: 0 %
Sum of Post Test Scores: 157 out of 225 possible
Average Post Test Score: 10 out of 15
Average Post Test Percent Score: 69 %
Average Test Score Change (Average Post Test Score - Average Pretest Score): 10
Total Points Change (Sum of Post Test Scores - Sum of Pretest Scores): 157
Average Percent Score Change (Average Post Test Percent Score - Average Pretest Percent Score): 69 %

Details

Student Username	Pretest Date	Post Test Date	Pretest Score	Post Test Score	Test Score Change	Pretest Percent	Post Test Percent	Percent Score Change
See individual results	113057	2010-09-19 17:00:00	2010-09-27 17:00:00	0 out of 15	12 out of 15	0	80	80

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Pretest for BMS111 on the Volume of Cylinders and Conversion Between Cubic Inches and Liters

For all problems, use 3.14 for the value of π , give answers which are rounded to the nearest hundredth and make sure to choose the appropriate type of units.

For problems 1 - 4 use the information given to calculate the volume of a cylinder.

1. Radius = 2.3 inches Height = 2.71 inches
Enter your answer here: Select the Appropriate Units

2. Radius = 1.58 inches Height = 1.24 inches
Enter your answer here: Select the Appropriate Units

Note that problems 3, 4 and 6 give you a diameter, not a radius.

3. Diameter = 4.54 inches Height = 2.44 inches
Enter your answer here: Select the Appropriate Units

4. Diameter = 2.34 inches Height = 2.14 inches
Enter your answer here: Select the Appropriate Units

Note that in problem 5 there are 8 cylinders.

5. Diameter = 3.34 inches Height = 4.02 inches Number of Cylinders = 8
Enter your answer for the total volume of all 8 cylinders here: Select the Appropriate Units

For problems 6 - 9 use the information given to calculate the volume of a cylinder.

6. Radius = 4.36 Centimeters Height = 3.52 Centimeters
Enter your answer here: Select the Appropriate Units

7. Radius = 2.4 Centimeters Height = 9.01 Centimeters
Enter your answer here: Select the Appropriate Units

Note that problems 8, 9 and 10 give you a diameter, not a radius.

8. Diameter = 8.24 Centimeters Height = 1.27 Centimeters
Enter your answer here: Select the Appropriate Units

9. Diameter = 8.0 Centimeters Height = 5.14 Centimeters
Enter your answer here: Select the Appropriate Units

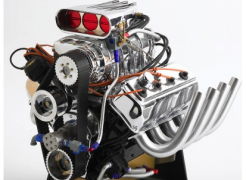
Note that in problem 10 there are 4 cylinders and you are asked to convert to liters.

10. Diameter = 5.28 Centimeters Height = 5.85 Centimeters Number of Cylinders = 4
Enter your answer for the total volume of all 4 cylinders and give that answer in Liters here: Liters

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Learn to Calculate the Volume of Cylinders for an Engine in Cubic Inches



Objectives: Learn the equation for the volume of a cylinder and apply it to the volume of a cylinder in an engine. Determine total engine volume in cubic inches. Understand the bore of an engine as diameter and convert the diameter to radius. Understand the stroke of the piston and use it to determine volume. Lesson:

Standard 2.1 Grade 7 Algebra Functions - Interpret positive whole-number powers as repeated multiplication. Simplify and evaluate expressions that include exponents.
Standard 2.1 Grade 7 Measurement and Geometry - Use formulas routinely for finding the volume of cylinders.

The equation to determine the volume of a cylinder is:

$$\text{Volume of a Cylinder} = \pi r^2 h$$

where
 $\pi = 3.14$
 $r = \text{Radius}$
 $h = \text{Height}$

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Learn to Calculate the Volume of Cylinders for an Engine in Liters and Convert Between Cubic Inches and Liters

Objectives: Determine total engine volume in liters. Convert from cubic centimeters to liters. Convert between cubic inches and liters.

Lesson - Part 3:

Standard 2.4 Grade 7 Measurement and Geometry - Relate the changes in measurement with a change of scale to the units used (e.g. cubic centimeters to liters).

Now it's time to figure out engine sizes in cubic centimeters and liters. Here's how it works:

Bore = 10 Centimeters Stroke = 10 Centimeters Number of Cylinders = 8

Remember, bore is the same as diameter and the formulas are:

$$\text{Radius} = \frac{\text{Bore}}{2}$$
$$\text{Volume of a Cylinder} = (3.14)(\text{Radius})^2(\text{Stroke})$$
$$\text{Total Volume of all Cylinders} = (\text{Number of Cylinders})(3.14)(\text{Radius})^2(\text{Stroke})$$
$$1 \text{ Liter} = 1000 \text{ Cubic Centimeters}$$

So,
 $\text{Radius} = \frac{10 \text{ Centimeters}}{2} = 5 \text{ Centimeters}$

$$\text{Total Volume of all Cylinders} = (8)(3.14)(5 \text{ Centimeters})^2(10 \text{ Centimeters})$$
$$\text{Total Volume of all Cylinders} = (8)(3.14)(5 \text{ Centimeters})(5 \text{ Centimeters})(10 \text{ Centimeters})$$
$$\text{Total Volume of all Cylinders} = 6280 \text{ Centimeters}^3$$
$$\text{Total Volume of all Cylinders} = 6280 \text{ Cubic Centimeters}$$

To convert that to liters, divide the total cubic centimeters by 1000.

$$\text{Liters} = \frac{6280 \text{ Cubic Centimeters}}{1000} = 6.280$$

In the engine world, you would call this a 6.3 liter engine.

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Post Test for BMS111 on the Volume of Cylinders and Conversion Between Cubic Inches and Liters

For all problems, use 3.14 for the value of π , give answers which are rounded to the nearest hundredth and make sure to choose the appropriate type of units.

For problems 1 - 4 use the information given to calculate the volume of a cylinder.

1. Radius = 1.24 inches Height = 3.19 inches
Enter your answer here: Select the Appropriate Units

2. Radius = 2.41 inches Height = 3.34 inches
Enter your answer here: Select the Appropriate Units

Note that problems 3, 4 and 6 give you a diameter, not a radius.

3. Diameter = 2.48 inches Height = 1.75 inches
Enter your answer here: Select the Appropriate Units

4. Diameter = 4.14 inches Height = 1.78 inches
Enter your answer here: Select the Appropriate Units

Note that in problem 5 there are 8 cylinders.

5. Diameter = 2.28 inches Height = 3.19 inches Number of Cylinders = 8
Enter your answer for the total volume of all 8 cylinders here: Select the Appropriate Units

For problems 6 - 9 use the information given to calculate the volume of a cylinder.

6. Radius = 2.24 Centimeters Height = 6.58 Centimeters
Enter your answer here: Select the Appropriate Units

7. Radius = 1.8 Centimeters Height = 9.64 Centimeters
Enter your answer here: Select the Appropriate Units

Note that problems 8, 9 and 10 give you a diameter, not a radius.

8. Diameter = 8.96 Centimeters Height = 5.68 Centimeters
Enter your answer here: Select the Appropriate Units

9. Diameter = 7.68 Centimeters Height = 2.53 Centimeters
Enter your answer here: Select the Appropriate Units

Note that in problem 10 there are 4 cylinders and you are asked to convert to liters.

10. Diameter = 10.0 Centimeters Height = 7.57 Centimeters Number of Cylinders = 4
Enter your answer for the total volume of all 4 cylinders and give that answer in Liters here: Liters