

Mathematics Released Test Questions 2010



5-8.M.1.8.02 Measurement: Benchmark M.1: Understand measurable attributes of objects and the units, systems, and processes of measurement. Performance Standard 2: Use changes in measurement units (e.g., square inches, cubic feet) to perform conversions from one-, two-, and three-dimensional shapes.

1. A daycare center has a sandbox that is shaped like a rectangular prism. The sandbox has a width of 9 feet and a length of 12 feet and will be filled with sand to a depth of 12 inches.

If sand is ordered by the cubic yard, how many cubic yards of sand are needed to fill the sandbox to a depth of 12 inches? Use words, numbers, or diagrams to justify your answer.

5-8.A.1.8.01 Algebra: Benchmark A.1: Understand patterns, relations, and functions. Performance Standard 1: Move between numerical, tabular, and graphical representations of linear relationships.

2. Omar started a CD music collection. The table below shows the number of CDs he has in his collection at the end of each month.

Number of Months	Number of CDs
1	16
2	21
3	26
4	31

Omar's CD Music Collection

- A. Write an equation that represents the relationship between the number of CDs Omar had in his collection and the number of months. Be sure to identify your variables. Use words, numbers, or diagrams to justify your answer.
- B. Use the equation you wrote for Part A to determine by the end of which month Omar will first have over 100 CDs in his collection. Use words, numbers, or diagrams to justify your answer.

5-8.N.2 Numbers and Operations: Benchmark N.2: Understand the meaning of operations and how they relate to one another.

3. California has recorded temperatures from 134 °F in the desert to -45 °F in the mountains. North Dakota has recorded temperatures from 120 °F to -60 °F.

Which state had the greater range of temperatures? Use words, numbers, or diagrams to justify your answer.

5-8.D.3.8.04 Data Analysis and Probability: Benchmark D.3: Develop and evaluate inferences and predictions that are based on data. Performance Standard 4: Compare expected results with experimental results and information used in predictions and inferences.

4. Tricia used a spinner that has five congruent sections, as shown below, for a probability experiment. She spun the arrow a total of 80 times. The table shows the number of times the arrow stopped on each of the five sections.



Spinner Results

Spinner Section	Number of Times
1	23
2	7
3	18
4	21
5	11

Which spinner section had an experimental probability that was closest to the theoretical probability of the arrow stopping on that section? Use words, numbers, or diagrams to justify your answer.

5-8.G.4.8.04 Geometry: Benchmark G.4: Use visualization, spatial reasoning, and geometric modeling to solve problems. Performance Standard 4: Develop and use formulas for area, perimeter, circumference, and volume.

5. Eldon is making candles as gifts. The first candle he made is shaped like a square pyramid and the second candle is shaped like a cube. The pyramid candle has a height of 4 inches and a 3-inch-by-3-inch square base, as shown below.



- A. What is the volume, in cubic inches, of the pyramid-shaped candle? Use words, numbers, or diagrams to justify your answer.
- B. The cube-shaped candle Eldon made has edges that are 3 inches in length. What is the volume, in cubic inches, of this candle? Use words, numbers, or diagrams to justify your answer.
- C. Eldon wants to make two more candles with the following conditions.
 - The volume of each of the candles should be approximately 64 cubic inches.
 - One of the candles will be shaped like a rectangular prism, and the other will be shaped like a cylinder.

What could be the dimensions, in inches, of these two candles Eldon wants to make? Use words, numbers, or diagrams to justify your answer.