

Question 18
Benchmark A
Spring 2003

The diameter of a pollen grain from a flower can range from 0.0000004 inches to 0.00002 inches. Which of the following would be an equivalent description of the range of the diameters of pollen grains?

- A. from $\frac{4}{100,000}$ inches to $\frac{2}{1,000}$ inches
- B. from $\frac{4}{10,000,000}$ inches to $\frac{2}{10,000}$ inches
- C. from 4×10^{-6} inches to 2×10^{-4} inches
- D. from 4×10^{-7} inches to 2×10^{-5} inches

Question 8
Benchmark A
Spring 2004

Which expression represents 270,000 written in scientific notation?

- A. 270×10^3
- B. 27×10^4
- C. 2.7×10^5
- D. 0.27×10^6

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Number, Number Sense and Operations Standard

Question 40
Benchmark A
Spring 2005

The diameter of the sun is 864,000 miles. How can this value be expressed in scientific notation?

- A. 8.64×10^5
- B. 0.864×10^5
- C. 86.4×10^3
- D. 8.64×10^{-5}

Question 11
Benchmark B
Spring 2004

Which number is irrational?

- A. -2
- B. $\sqrt{8}$
- C. 3
- D. $\frac{22}{8}$

Question 39
Benchmark C
Spring 2003

Which of these is equivalent to $\left(\frac{1}{3}\right)^3 \times \left(\frac{1}{3}\right)^4$?

- A. $\left(\frac{1}{3}\right)^7$
- B. $\left(\frac{2}{3}\right)^7$
- C. $\left(\frac{1}{3}\right)^{12}$
- D. $\left(\frac{1}{9}\right)^{12}$

Question 25
Benchmark C
Spring 2005

Under what circumstances will the product of three numbers always be negative?

- A. when at least one number is less than zero
- B. when at least one number equals zero
- C. when one number is greater than zero and the other two are less than zero
- D. when one number is less than zero and the other two are greater than zero

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Question 33
Benchmark D
Spring 2003

On the number line below, which letter best represents $\sqrt{70}$?



- A. Q
- B. R
- C. S
- D. T

Question 42
Benchmark D
Spring 2003

Let x represent any number on the real number line below.



Which of these represents the distance, in units, from x to 3?

- A. $|x|$
- B. $x - 3$
- C. $|x| - 3$
- D. $|x - 3|$

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Question 43
Benchmark D
Spring 2005

The approximate value of $\sqrt{34}$ is labeled by a point on the number line.



Which of the points correctly displays this value?

- A. P
- B. Q
- C. R
- D. S

Question 2
Benchmark D
Spring 2003

A private mint produced commemorative coins in the quantities listed.

Coin	Number Produced
Flying Eagle	270,000
Spacewalk	6,000 boxes of 24 each
Great Presidents	1.1 million
Industrial Giants	9,000 dozen

Which of the following lists the coins in order from least to greatest by the number of coins produced?

- A. Industrial Giants, Spacewalk, Flying Eagle, Great Presidents
- B. Flying Eagle, Great Presidents, Spacewalk, Industrial Giants
- C. Great Presidents, Flying Eagle, Industrial Giants, Spacewalk
- D. Industrial Giants, Flying Eagle, Spacewalk, Great Presidents

Question 18
Benchmark E
Spring 2003

The diameter of a pollen grain from a flower can range from 0.0000004 inches to 0.00002 inches. Which of the following would be an equivalent description of the range of the diameters of pollen grains?

- A. from $\frac{4}{100,000}$ inches to $\frac{2}{1,000}$ inches
- B. from $\frac{4}{10,000,000}$ inches to $\frac{2}{10,000}$ inches
- C. from 4×10^{-6} inches to 2×10^{-4} inches
- D. from 4×10^{-7} inches to 2×10^{-5} inches

Question 27
Benchmark E
Spring 2003

A dance committee surveyed some students about suggestions for the next school dance. When they analyzed the results, 45% of those surveyed were seniors, $\frac{1}{4}$ of those surveyed were juniors, 0.1 of those surveyed were sophomores, and the remainder were freshmen. What fraction of the students surveyed were freshmen?

- A. $\frac{1}{20}$
- B. $\frac{1}{5}$
- C. $\frac{3}{10}$
- D. $\frac{2}{5}$

Question 5
Benchmark E
Spring 2004

Three different opinion polls show different results for the proportion of voters expected to vote for Candidate A in an election for mayor.

Poll 1: Nine of every 20 voters are expected to vote for Candidate A.

Poll 2: The percentage of voters expected to vote for Candidate A is 52%.

Poll 3: There are 130,000 people expected to vote, and of these, 55,000 are expected to vote for Candidate A.

In your **Answer Document**, determine which of these polls shows the greatest favorable result for Candidate A. Show your work or provide an explanation for your answer.

Question 41
Benchmark E
Spring 2004

Which expression is **not** equivalent to 7?

A. $|-7|$

B. $\sqrt{49}$

C. 7^1

D. $\frac{7}{49}$

Question 13
Benchmark E
Spring 2005

Ms. Patrick wrote the fractions

$$\frac{0.75}{1}, \frac{1.5}{2}, \frac{3}{4}, \frac{9}{12}$$

on the board. Then she asked Sabrina to describe the relationship among the numbers.

Which statement describes the relationship among the numbers?

- A. The fractions are equivalent.
- B. The fractions are in ascending order.
- C. The fractions are in descending order.
- D. The fractions are doubling from left to right.

Question 15
Benchmark F
Spring 2004

The population density of a state, in people per square mile, is found by dividing the population of the state by its area in square miles. Florida has an area of 53,936 square miles. In 1998, Florida had a population of 14,915,980 and a population density of 276.5 people per square mile.

In your **Answer Document**, describe the conditions under which a different state could have a smaller population than Florida but have a greater population density.

Question 8
Benchmark G
Spring 2003

Three-fifths of a city's population is registered to vote. In the last election, 75% of the registered voters cast a ballot. What fractional part of the city's population voted in the last election?

- A. $\frac{9}{20}$
- B. $\frac{3}{4}$
- C. $\frac{4}{5}$
- D. $\frac{27}{20}$

Question 15
Benchmark G
Spring 2003

Two years ago Monique paid \$5.50 for the rookie baseball card of her favorite New York Yankees player. The card is now worth \$17.00. Sean, her brother, paid \$12.00 for his favorite card, and it has a current value of \$27.00.

Sean says that his card has increased more in value than Monique's card.

Monique says that her card has increased more in value than Sean's card.

In your **Answer Document**, show how both Monique and Sean can be correct. Support your answer by showing work or providing an explanation.

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Question 27
Benchmark G
Spring 2003

A dance committee surveyed some students about suggestions for the next school dance. When they analyzed the results, 45% of those surveyed were seniors, $\frac{1}{4}$ of those surveyed were juniors, 0.1 of those surveyed were sophomores, and the remainder were freshmen. What fraction of the students surveyed were freshmen?

- A. $\frac{1}{20}$
- B. $\frac{1}{5}$
- C. $\frac{3}{10}$
- D. $\frac{2}{5}$

Question 42
Benchmark G
Spring 2004

A DVD player is on sale for 15% off the regular price of \$135. After the price reduction, a 5% sales tax is added.

How much will a customer pay?

- A. \$141.75
- B. \$120.49
- C. \$114.75
- D. \$109.01

Question 11
Benchmark G
Spring 2005

A state game warden has been observing deer during a particularly severe winter. She recorded that 14 of the 96 deer she observed throughout the state appeared to be suffering from malnutrition. The state has an estimated deer population of 600,000.

Based on her observations, approximately how many deer would she predict are suffering from malnutrition?

- A. 14,000
- B. 72,000
- C. 88,000
- D. 96,000

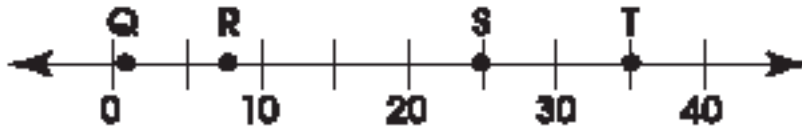
Question 18
Benchmark G
Spring 2005

An organization distributes money to various groups in the Toledo area. This organization expects to receive a gift of 15% of a \$5.8 million grant. Sixty-seven percent of this gift will be distributed to the Toledo Arts Festival.

In your **Answer Document**, compute the amount that the Toledo Arts Festival will receive. Show or explain all steps used in finding the answer.

Question 33
Benchmark H
Spring 2003

On the number line below, which letter best represents $\sqrt{70}$?



- A. Q
- B. R
- C. S
- D. T

Question 9
Benchmark H
Spring 2005

Jane has determined that $169 < x < 196$. What must be true about \sqrt{x} ?

- A. $13 < \sqrt{x} < 14$
- B. $84.5 < \sqrt{x} < 98.0$
- C. $338 < \sqrt{x} < 392$
- D. $28,561 < \sqrt{x} < 38,416$

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Question 21
Benchmark I
Spring 2005

Which expression is equivalent to $\frac{8^{12}}{8^3}$?

- A. 1^9
- B. 8^4
- C. 8^9
- D. 5^{12}