

Grade 8 · Rational and Irrational Numbers · Test

Common Core 8.NS.A.1, 8.NS.A.2 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This test has 9 questions worth 20 points on rational and irrational numbers (8.NS.A.1 and 8.NS.A.2). Calculators are not needed. Show the work for every question, and write approximations with the symbol for approximately equal.

Test information

- **Grade:** Grade 8
- **Chapter:** Rational and Irrational Numbers
- **Common Core:** 8.NS.A.1, 8.NS.A.2
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 3 pts; Question 4: 3 pts; Question 5: 2 pts; Question 6: 2 pts; Question 7: 2 pts; Question 8: 2 pts; Question 9: 2 pts)

Question 1: Classify and justify (2 points)

Tell whether each number is rational or irrational. Justify each answer.

- a. $\sqrt{64}$ (1 point)
- b. $\sqrt{27}$ (1 point)

Question 2: Fractions as decimals (2 points)

Write each fraction as a decimal.

- a. $\frac{9}{16}$ (1 point)
- b. $\frac{4}{15}$ (1 point)

Question 3: Repeating decimals to fractions (3 points)

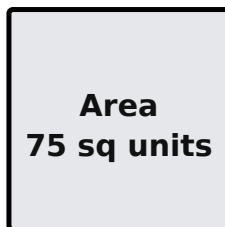
Write each repeating decimal as a fraction in simplest form.

- a. $0.\overline{18}$ (1 point)

b. $0.4\bar{3}$ (2 points)

Question 4: Square root of 75 (3 points)

Consider $\sqrt{75}$.



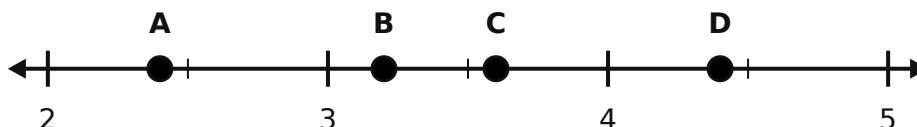
side = ?

A square with area 75.

- a. Between which two consecutive integers is $\sqrt{75}$? (1 point)
- b. Estimate $\sqrt{75}$ to the nearest tenth. (2 points)

Question 5: Match points on a number line (2 points)

Points A, B, C and D are on the number line.



Four points on a number line.

- a. Which point best represents $\sqrt{10}$? (1 point)
- b. Which point best represents $\sqrt{13}$? (1 point)

Question 6: Compare numbers (2 points)

Compare each pair using $<$, $>$ or $=$.

- a. $\sqrt{20}$ and 4.5 (1 point)
- b. π and $\frac{22}{7}$ (1 point)

Question 7: Order from least to greatest (2 points)

Write in order from least to greatest: $\sqrt{5}$, 2.2, $\frac{9}{4}$, $2.\bar{3}$.

Question 8: Patio side length (2 points)

A square patio has an area of 55 square feet. Find the side length to the nearest tenth of a foot.



side = ?

The patio.

Question 9: Pattern decimal (2 points)

Sofia says that $0.121221222122221\dots$ (one 2 more each time after each 1) is rational because it follows a pattern. Is she correct? Explain.