

Rational and Irrational Numbers: math test, Grade 8

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Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Classify the numbers

/ 4 pts

Calculator not allowed. Classify each number as rational or irrational: $-\frac{9}{4}$, $\sqrt{64}$, $\sqrt{45}$, $0.\overline{27}$, 5π , $0.3030030003\dots$ (one more zero each time). Then explain in one sentence why $\sqrt{45}$ is not an integer.

2 Repeating decimals

/ 4 pts

Write as fractions in lowest terms, showing the subtraction: a) $0.\overline{15}$ b) $0.\overline{72}$

3 Roots and equations

/ 4 pts

Calculator not allowed. a) $\sqrt{169}$ b) $\sqrt[3]{-216}$ c) $\sqrt{\frac{49}{64}}$ d) Solve $x^2 = 121$. e) Solve $x^3 = 0.027$.

4 Estimating a root

/ 3 pts

a) Between which two consecutive integers is $\sqrt{57}$? b) Use squares to decide whether $\sqrt{57}$, rounded to the nearest tenth, is 7.5 or 7.6.

5 Order the numbers

/ 3 pts

Calculator allowed. Order from least to greatest: $-\sqrt{10}$, -3.2 , $-\pi$, $-\frac{10}{3}$, -3.1 .

6 The rug

/ 2 pts

Calculator allowed. A square rug has an area of 30 square feet. a) Find its side length to the nearest tenth of a foot. b) Is the exact side length rational or irrational? Explain.



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