

8A: Classifying and Comparing Real Numbers

Identify the following numbers as rational or irrational:

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|----|-----------------|----------|------------|----|---------------------------------------|----------|------------|
| 1. | $\frac{2}{3}$ | Rational | Irrational | 2. | $2.\overline{15}$
$2\frac{15}{99}$ | Rational | Irrational |
| 3. | $\sqrt{15}$ | Rational | Irrational | 4. | $-\frac{14}{1}$ | Rational | Irrational |
| 5. | $\frac{52}{1}$ | Rational | Irrational | 6. | $\sqrt[3]{125}$
$= 5$ | Rational | Irrational |
| 7. | $\sqrt{49} = 7$ | Rational | Irrational | 8. | π | Rational | Irrational |

Convert the following fractions to decimals: *Divide top by bottom.*

9. $\frac{5}{8} = 0.625$ (with $5 \div 8$ written above)
10. $\frac{4}{9} = 0.\overline{4}$

Convert the following decimals to fractions:

11. $0.625 = \frac{625}{1000} = \frac{5}{8}$ (with *Non-repeating put 10, 100, 1000* written below)
12. $0.\overline{24} = \frac{24 \div 3}{99 \div 3} = \frac{8}{33}$ (with *Repeats... put 9, 99, 999* written below)

Between which two consecutive integers are the following numbers?

13. $\sqrt{35}$ between 5 and 6 (with $\sqrt{25}$ and $\sqrt{36}$ written below)
14. $\sqrt[3]{81}$ between 4 and 5 (with *Perfect cubes* written to the right and a list: $2^3=8, 3^3=27, 4^3=64, 5^3=125$)

Simplify the following perfect squares and cubes:

15. $\sqrt{\frac{4}{9}} = \frac{2}{3}$
16. $\sqrt[3]{\frac{27}{64}} = \frac{3}{4}$
17. $\sqrt{121} = 11$
18. $\sqrt[3]{8} = 2$

Put the following numbers in order from least to greatest:

19. $2.45, \sqrt{6}, \frac{5}{2}, 2.1$ (with $2\frac{1}{2} = 2.5$ written below and a box containing $2.1, \sqrt{6}, \frac{5}{2}$)
20. $\frac{22}{3}, \sqrt{60}, 7.6$ (with $7.3\overline{3}$ and 7.75 written above and a box containing $\frac{22}{3}, 7.6, \sqrt{60}$)

1. Graph the following numbers on the number line. Mark intervals of $\frac{1}{10}$ on your number line.

$\sqrt{10} \approx 3.16$ $\{\sqrt{10}, \frac{7}{2}, 3.\overline{3}\}$ $\frac{7}{2} = 3.5$



