# Subgroups of Real Numbers

*Identify the subgroup of Real numbers a number belongs to.*

Link to section in online textbook

First, watch this video to review the different sets of Real numbers.

After watching the video, write down definitions for the following subgroups of the Real numbers. You should include examples for each (you may even want to take a sneak peak at the problems and use some of these as examples!) and descriptions of how to tell what the smallest set the number belongs to.

- Natural:
- Whole:
- Integers:
- Rational:
- Irrational:

**Question 1** *It also helps to visualize the groups in a chart. An empty chart is provided below. Fill in the subgroups and try to classify the following numbers:*

$$-\frac{21}{7}, -\frac{7}{21}, \frac{21}{7}, \frac{\pi}{4}, \frac{4}{\pi}, \frac{0}{\pi}, \frac{\pi}{0}, \sqrt{4}, \sqrt{-4}, \sqrt{21}, \sqrt{-21}$$

Learning outcomes: Understand the different sets of numbers along with the properties of these sets.

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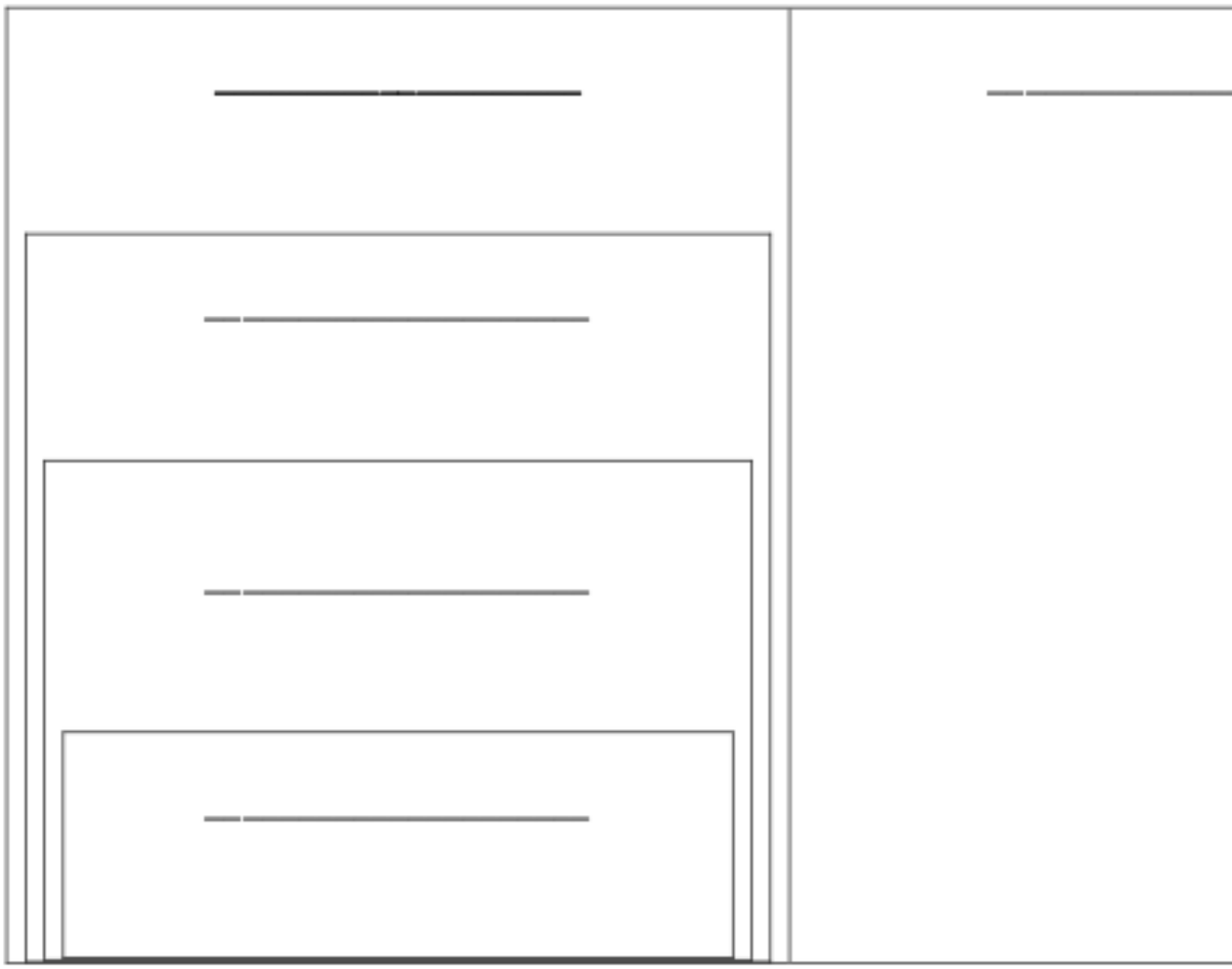

***Smallest subgroup the number belongs to:***

*Natural:* $\boxed{\frac{21}{7}}$, $\boxed{\sqrt{4}}$

*Whole:* $\boxed{\frac{0}{\pi}}$

*Integer:* $\boxed{-\frac{21}{7}}$

*Rational:* $\boxed{-\frac{7}{21}}$

*Irrational:* $\boxed{\frac{\pi}{4}}$, $\boxed{\frac{4}{\pi}}$, $\boxed{\sqrt{21}}$

*Not a Real Number:* $\boxed{\frac{\pi}{0}}$, $\boxed{\sqrt{-4}}$, $\boxed{\sqrt{-21}}$

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**Remember to reduce first, then decide the smallest subgroup the number belongs to!**

**Note: This part of the homework will change each time you click "Another". You can keep clicking "Another" to practice seeing these more difficult numbers to classify.**

**Question 2** *Which of the following is the* ***smallest*** *set of Real numbers that* $-\sqrt{\frac{24336}{144}}$ *belongs to?*

*To work around current Xronos issues, input the corresponding number for the correct set.*
*Natural - 0*
*Whole - 1*
*Integer - 2*
*Rational - 3*
*Irrational - 4*
*Not a Real Number - 5*

$\boxed{2}$

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**Question 3** *Which of the following is the* ***smallest*** *set of Real numbers that* $-\sqrt{\frac{400}{4}}$ *belongs to?*

*To work around current Xronos issues, input the corresponding number for the correct set.*
*Natural - 0*
*Whole - 1*
*Integer - 2*
*Rational - 3*
*Irrational - 4*
*Not a Real Number - 5*

$\boxed{2}$

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**Question 4** *Which of the following is the* ***smallest*** *set of Real numbers that*

$\sqrt{\frac{0}{144}}$ *belongs to?*

*To work around current Xronos issues, input the corresponding number for the correct set.*
*Natural - 0*
*Whole - 1*
*Integer - 2*
*Rational - 3*
*Irrational - 4*
*Not a Real Number - 5*

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