

Rational Numbers on the Number Line

Name: _____ Date: _____ Score: _____ / 24

Q Quick Review

A **rational number** is any number that can be written as a fraction — this includes whole numbers, fractions, decimals, and their negatives. Every rational number has a home on the **number line**. Positive numbers sit to the right of 0 and negative numbers to the left. To plot a fraction like $\frac{3}{4}$, split the space between 0 and 1 into 4 equal parts and count 3 of them. For $-\frac{3}{4}$, count 3 parts the same way but to the *left* of 0. The farther right a number is, the greater it is.

◇ **Example:** Plot $-\frac{5}{2}$ on a number line.

⇒ First rewrite $-\frac{5}{2}$ as a mixed number: $\frac{5}{2} = 2\frac{1}{2}$, so $-\frac{5}{2} = -2\frac{1}{2}$. That tells us the point sits between -2 and -3 , since it is more negative than -2 . Split the space between -2 and -3 into two equal halves and land on the mark exactly halfway — that is $-2\frac{1}{2}$. So $-\frac{5}{2}$ is plotted halfway between -2 and -3 on the number line.

Answer: halfway between -2 and -3

PRACTICE

Describe where each number sits on the number line.

- | | | | |
|---------------------------|-------|---------------------------|-------|
| 1. Locate $\frac{1}{2}$ | _____ | 11. Locate 0.75 | _____ |
| 2. Locate $-\frac{1}{2}$ | _____ | 12. Locate -0.25 | _____ |
| 3. Locate $\frac{3}{4}$ | _____ | 13. Locate $\frac{4}{3}$ | _____ |
| 4. Locate $-\frac{3}{4}$ | _____ | 14. Locate $-\frac{4}{3}$ | _____ |
| 5. Locate $\frac{5}{2}$ | _____ | 15. Locate 3 | _____ |
| 6. Locate $-\frac{7}{2}$ | _____ | 16. Locate -3 | _____ |
| 7. Locate 1.5 | _____ | 17. Locate $\frac{7}{4}$ | _____ |
| 8. Locate -2.5 | _____ | 18. Locate $-\frac{9}{4}$ | _____ |
| 9. Locate $\frac{1}{4}$ | _____ | 19. Locate 2.25 | _____ |
| 10. Locate $-\frac{1}{4}$ | _____ | 20. Locate -1.75 | _____ |

◆ Word Problems

21. On a number line, point *A* is at $-\frac{3}{2}$ and point *B* is at $\frac{3}{2}$. Describe where each point sits. _____
22. A thermometer reading is -2.5 degrees. Between which two whole-number marks does it fall? _____
23. A frog sits at $\frac{7}{4}$ on a number line. Write this as a mixed number and describe its location. _____
24. A diver descends to $-\frac{9}{4}$ meters. Write this as a mixed number and describe its position. _____



Answer Keys

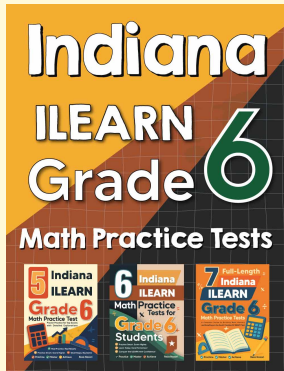
- | | |
|--|--|
| <ol style="list-style-type: none"> 1. halfway between 0 and 1 2. halfway between 0 and - 1 3. three-fourths from 0 toward 1 4. three-fourths from 0 toward - 1 5. halfway between 2 and 3 6. halfway between - 3 and - 4 7. halfway between 1 and 2 8. halfway between - 2 and - 3 9. one-fourth from 0 toward 1 10. one-fourth from 0 toward - 1 11. three-fourths from 0 toward 1 12. one-fourth from 0 toward - 1 | <ol style="list-style-type: none"> 13. one-third past 1 toward 2 14. one-third past - 1 toward - 2 15. three units right of 0 16. three units left of 0 17. three-fourths past 1 toward 2 18. one-fourth past - 2 toward - 3 19. one-fourth past 2 toward 3 20. three-fourths past - 1 toward - 2 21. A at $-1\frac{1}{2}$, B at $1\frac{1}{2}$ 22. between -2 and -3 23. $1\frac{3}{4}$ 24. $-2\frac{1}{4}$ |
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Step-by-Step Explanations

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| <ol style="list-style-type: none"> 1. $\frac{1}{2}$ is one of two equal parts between 0 and 1, so it lands halfway. 2. $-\frac{1}{2}$ is halfway between 0 and -1, to the left of zero. 3. Split 0 to 1 into 4 parts and count 3 of them. 4. Split 0 to -1 into 4 parts and count 3 to the left. 5. $\frac{5}{2} = 2\frac{1}{2}$, so it is halfway between 2 and 3. 6. $-\frac{7}{2} = -3\frac{1}{2}$, halfway between -3 and -4. 7. 1.5 sits exactly halfway between 1 and 2. 8. -2.5 sits halfway between -2 and -3. 9. Split 0 to 1 into 4 parts and count 1. 10. Split 0 to -1 into 4 parts and count 1 to the left. 11. $0.75 = \frac{3}{4}$, three-fourths of the way to 1. 12. $-0.25 = -\frac{1}{4}$, one-fourth of the way to -1. 13. $\frac{4}{3} = 1\frac{1}{3}$, just past 1 by one-third. | <ol style="list-style-type: none"> 14. $-\frac{4}{3} = -1\frac{1}{3}$, just past -1 to the left. 15. The whole number 3 sits 3 units to the right of zero. 16. The integer -3 sits 3 units to the left of zero. 17. $\frac{7}{4} = 1\frac{3}{4}$, three-fourths past 1. 18. $-\frac{9}{4} = -2\frac{1}{4}$, one-fourth past -2 toward -3. 19. $2.25 = 2\frac{1}{4}$, one-fourth of the way from 2 to 3. 20. $-1.75 = -1\frac{3}{4}$, three-fourths from -1 toward -2. 21. $\frac{3}{2} = 1\frac{1}{2}$, so B is halfway between 1 and 2, and A is halfway between -1 and -2. 22. -2.5 is halfway between -2 and -3, so the reading falls between those two marks. 23. $\frac{7}{4} = 1\frac{3}{4}$, so the frog is three-fourths of the way from 1 toward 2. 24. $-\frac{9}{4} = -2\frac{1}{4}$, so the diver is one-fourth of the way from -2 down toward -3. |
|--|---|



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