Rational Numbers on the Number Line

Name: _____	Date: _____	Score: _____ / 24

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

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
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. $-2\frac{1}{4}$

Step-by-Step Explanations

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.
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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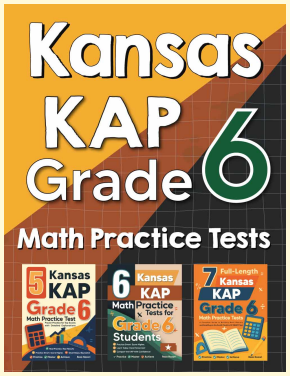

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