Representing 1/b on a Number Line

Spot mistakes, reason, and work backward

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

To place $\frac{1}{b}$, divide the length from 0 to 1 into b equal intervals. A unit fraction ends one interval from 0, at the first new tick. Count spaces, not tick marks.

Worked example

Divide 0 to 1 into 5 equal lengths. Mark and label $\frac{1}{5}$.



1. 5 equal spaces need 4 ticks between the endpoints.

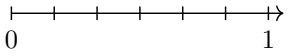
2. The first space is 1 of 5 equal lengths, so its endpoint is $\frac{1}{5}$.

Answer: Place 4 interior ticks; label the first $\frac{1}{5}$.

Practice Problems

Show your thinking.

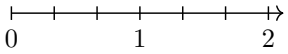
1. The line has 6 equal spaces. A student places $\frac{1}{6}$ at the second tick after 0. Show the correct tick.



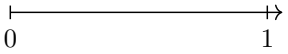
2. One step is $\frac{1}{8}$. How many equal steps reach 1? Draw those steps on the line.



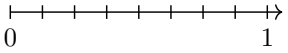
3. This line ends at 2. Mark $\frac{1}{3}$. Explain why the denominator uses the spaces in 0 to 1, not all the spaces shown.



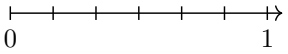
4. One step is $\frac{1}{4}$. How many equal steps reach 1? Draw those steps on the line.



5. The line has 8 equal spaces. A student places $\frac{1}{8}$ at the second tick after 0. Show the correct tick.



6. Label the first tick after 0 with its unit fraction. Explain your denominator.



Answer Key

1. Use the first tick after 0, not the second.
2. 8 steps.
3. Use the first tick after 0, at $\frac{1}{3}$.
4. 4 steps.
5. Use the first tick after 0, not the second.
6. $\frac{1}{6}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Each space is $\frac{1}{6}$. Two spaces reach $\frac{2}{6}$, not $\frac{1}{6}$.
2. Move back one space: $\frac{2}{6} - \frac{1}{6} = \frac{1}{6}$. The first tick is correct.

Problem 2

1. The denominator 8 says the unit has 8 equal lengths.
2. 8 copies of $\frac{1}{8}$ make $\frac{8}{8} = 1$, so the last of 8 steps lands at 1.

Problem 3

1. There are 3 equal intervals per whole, and $2 \times 3 = 6$ over the two-whole line.
2. One interval is still $\frac{1}{3}$ because 3, not 6, intervals make 1. Mark the first interval endpoint.

Problem 4

1. The denominator 4 says the unit has 4 equal lengths.
2. 4 copies of $\frac{1}{4}$ make $\frac{4}{4} = 1$, so the last of 4 steps lands at 1.

Problem 5

1. Each space is $\frac{1}{8}$. Two spaces reach $\frac{2}{8}$, not $\frac{1}{8}$.
2. Move back one space: $\frac{2}{8} - \frac{1}{8} = \frac{1}{8}$. The first tick is correct.

Problem 6

1. Count 6 equal intervals between 0 and 1.
2. The first tick is one interval from 0, so its number is $\frac{1}{6}$.

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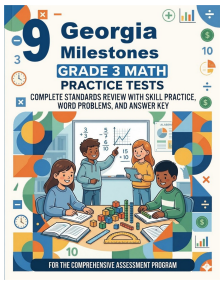

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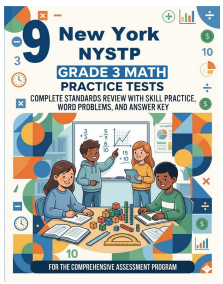

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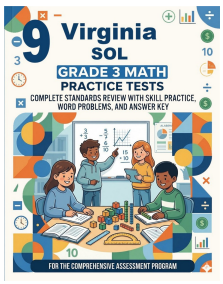

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