Representing 1/b on a Number Line

Explore ideas and representations

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 $\frac{1}{5}$.

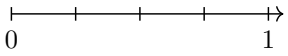
Practice Problems

Show your thinking.

1. Divide 0 to 1 into 3 equal lengths. Mark and label $\frac{1}{3}$.



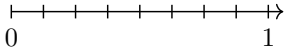
2. Label the first tick after 0 with its unit fraction. Explain your denominator.



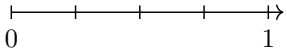
3. Divide 0 to 1 into 6 equal lengths. Mark and label $\frac{1}{6}$.



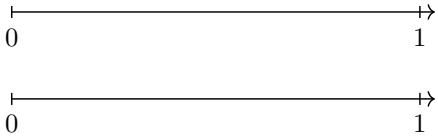
4. Label the first tick after 0 with its unit fraction. Explain your denominator.



5. The line has 4 equal spaces. A student places $\frac{1}{4}$ at the second tick after 0. Show the correct tick.



6. Partition the top line into 2 spaces and the bottom into 4 spaces. Mark $\frac{1}{2}$ and $\frac{1}{4}$. Which is farther from 0?



Answer Key

1. Place 2 interior ticks; label the first $\frac{1}{3}$.
2. $\frac{1}{4}$.
3. Place 5 interior ticks; label the first $\frac{1}{6}$.
4. $\frac{1}{8}$.
5. Use the first tick after 0, not the second.
6. $\frac{1}{2}$ is farther from 0.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. 3 equal spaces need 2 ticks between the endpoints.
2. The first space is 1 of 3 equal lengths, so its endpoint is $\frac{1}{3}$.

Problem 2

1. Count 4 equal intervals between 0 and 1.
2. The first tick is one interval from 0, so its number is $\frac{1}{4}$.

Problem 3

1. 6 equal spaces need 5 ticks between the endpoints.
2. The first space is 1 of 6 equal lengths, so its endpoint is $\frac{1}{6}$.

Problem 4

1. Count 8 equal intervals between 0 and 1.
2. The first tick is one interval from 0, so its number is $\frac{1}{8}$.

Problem 5

1. Each space is $\frac{1}{4}$. Two spaces reach $\frac{2}{4}$, not $\frac{1}{4}$.
2. Move back one space: $\frac{2}{4} - \frac{1}{4} = \frac{1}{4}$. The first tick is correct.

Problem 6

1. The bottom spaces are half as long: two of $\frac{1}{4}$ fit one $\frac{1}{2}$ space.
2. Mark the first tick after 0 on each line. The top mark is farther right because $\frac{1}{2} = \frac{2}{4} > \frac{1}{4}$.

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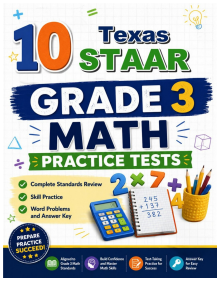

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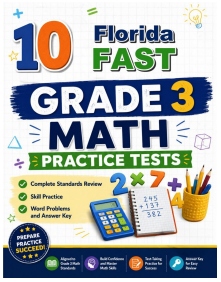

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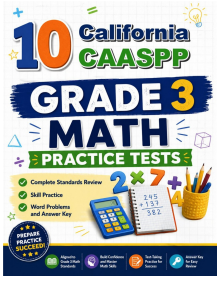

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