

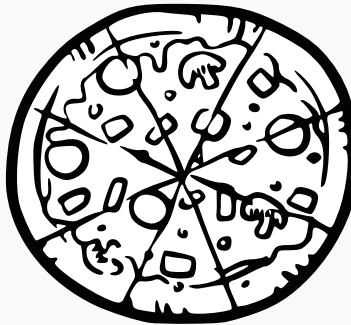


Fractions on a Line: Guided Notes and Quick Checks

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Lesson:

Every fraction in this lesson is a POINT on the number line from 0 to 1. To find a point: the bottom number tells how many equal parts the whole is split into, and the top number tells how many parts to count from 0. Watch one thing the whole way through: the line from 0 to 1 never changes size. Only the number of equal parts changes. When you answer, you can enter a fraction like $\frac{3}{4}$ or its value.



A fraction names a point between 0 and 1. The whole line from 0 to 1 stays the same size. We split that whole into equal parts.

The bottom number of a fraction tells how many equal parts the whole is split into. The top number tells how many of those parts we count, starting from 0. So for $\frac{3}{4}$: split the line into 4 equal parts, then count 3 parts from 0.

If the line is split into 2 equal parts, the point halfway from 0 to 1 is $\frac{1}{2}$. If the line is split into 3 equal parts, the points are $\frac{1}{3}$ and $\frac{2}{3}$. If the line is split into 4 equal parts, the points are $\frac{1}{4}$, $\frac{2}{4}$, and $\frac{3}{4}$.

Example 1: Split the line from 0 to 1 into 2 equal parts. The bottom number is 2, so count 1 part from 0. You land on the point $\frac{1}{2}$, exactly halfway.

Example 2: Use the SAME line from 0 to 1. Now split it into 3 equal parts. Count 1 part from 0 to land on $\frac{1}{3}$. Count 2 parts from 0 to land on $\frac{2}{3}$.

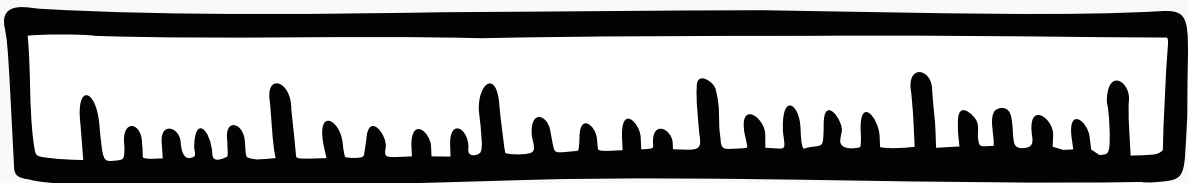
Example 3: Same line from 0 to 1, now split into 4 equal parts. To find $\frac{3}{4}$, count 3 parts from 0. Notice the whole did not change, only the number of equal parts did.

Fourths on the number line



The line from 0 to 1 is split into 4 equal parts. Each point gets a fraction name. Count 3 parts from 0 to land on $\frac{3}{4}$, the point in Example 3.

We can show the same whole on a measuring tape, a running track, or a pizza. The picture may look different, but the whole is still 1. A fraction is the point that shows a part of that whole.



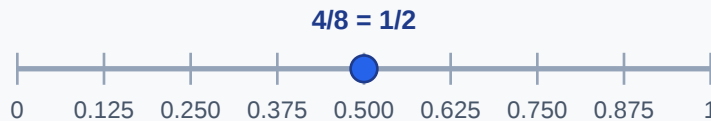
Use the same number line from 0 to 1 to see halves, thirds, fourths, sixths, and eighths. The whole does not change. Only the number of equal parts changes.

Example 4: Same line from 0 to 1, split into 6 equal parts. Count 2 parts from 0 to land on $\frac{2}{6}$. The parts are smaller now, but the whole is still exactly 1.

Example 5: Same line from 0 to 1, split into 8 equal parts. Count 4 parts from 0 to land on $\frac{4}{8}$. Look closely: $\frac{4}{8}$ sits at the very same point as $\frac{1}{2}$. Two fractions can name the same point.

Some fractions name the same point. For example, $\frac{1}{2}$ and $\frac{2}{4}$ land on the same spot. That happens because the whole is split into different equal parts, but the point stays in the same place.

Eighths: $\frac{4}{8}$ lands on $\frac{1}{2}$



Split into 8 equal parts, the point $\frac{4}{8}$ lands on the same spot as $\frac{1}{2}$. The whole never changed.

Instructions:

Read each note, then answer the number question. Use what you learned about fractions as points on a number line.

1. A number line goes from 0 to 1. What number is halfway between 0 and 1?

Answer: _____

2. A student splits the line from 0 to 1 into 3 equal parts. The first point after 0 is written as $\frac{2}{3}$. What is the correct point?

Answer: _____

3. A measuring tape from 0 to 1 is split into 4 equal parts. What number is the third point after 0?

Answer: _____

4. A pizza is one whole. If it is split into 4 equal slices, what fraction names the point at the first slice after 0 on the number line?

Answer: _____

5. A runner moves along a track from 0 to 1. The line is split into 6 equal parts. A student writes $\frac{3}{6}$ for the second point after 0. What is the correct point?

Answer: _____

6. On a track, the line from 0 to 1 is split into 8 equal parts. What is the value of the fourth point after 0?

Answer: _____

7. Use the same whole from 0 to 1. What is the fraction for the point that is 2 equal parts from 0 when the line is split into 8 equal parts?

Answer: _____

8. A runner starts at 0 on a track line from 0 to 1. Which is greater: $\frac{1}{3}$ or $\frac{2}{3}$? Enter 1 for $\frac{2}{3}$ and 0 for $\frac{1}{3}$.

Answer: _____

9. A measuring tape from 0 to 1 is split into 2 equal parts. A student says the point at the middle is $\frac{2}{2}$. What is the correct number for the middle point?

Answer: _____

10. A student says $\frac{2}{4}$ is a different point from $\frac{1}{2}$. Enter 1 if the student is wrong, or 0 if the student is right.

Answer: _____

11. On one number line from 0 to 1, which point is farthest right: $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$? Enter the number value of the fraction.

Which point is farthest right?

$\frac{1}{4}$



$\frac{1}{2}$



$\frac{3}{4}$



A longer bar means a point farther right on the line from 0 to 1. Check each bar, then place its point.

Answer: _____

12. A student says the whole line from 0 to 1 gets bigger when it is split into more equal parts. Enter 1 if that is wrong, or 0 if that is right.

Answer: _____



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(Answer Key)

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1. A number line goes from 0 to 1. What number is halfway between 0 and 1?
Hint: Halfway means the line is split into 2 equal parts.

Correct Answer: 0.5

Explanation: The point halfway from 0 to 1 is $\frac{1}{2}$, which is 0.5.

2. A student splits the line from 0 to 1 into 3 equal parts. The first point after 0 is written as $\frac{2}{3}$. What is the correct point?
Hint: Count the first point after 0.

Correct Answer: 0.3333

Explanation: The first point after 0 on a line split into 3 equal parts is $\frac{1}{3}$, which is about 0.3333.

3. A measuring tape from 0 to 1 is split into 4 equal parts. What number is the third point after 0?
Hint: Count the points: $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$.

Correct Answer: 0.75

Explanation: The third point on a line split into 4 equal parts is $\frac{3}{4}$, which is 0.75.

4. A pizza is one whole. If it is split into 4 equal slices, what fraction names the point at the first slice after 0 on the number line?

Hint: The first point in fourths is $\frac{1}{4}$.

Correct Answer: 0.25

Explanation: The first point after 0 on a line split into 4 equal parts is $\frac{1}{4}$, which is 0.25.

5. A runner moves along a track from 0 to 1. The line is split into 6 equal parts. A student writes $\frac{3}{6}$ for the second point after 0. What is the correct point?

Hint: The second point in sixths is $\frac{2}{6}$.

Correct Answer: 0.3333

Explanation: The second point after 0 on a line split into 6 equal parts is $\frac{2}{6}$, which is about 0.3333.

6. On a track, the line from 0 to 1 is split into 8 equal parts. What is the value of the fourth point after 0?

Hint: Count eighths until the fourth point.

Correct Answer: 0.5

Explanation: The fourth point on a line split into 8 equal parts is $\frac{4}{8}$, which equals 0.5.

7. Use the same whole from 0 to 1. What is the fraction for the point that is 2 equal parts from 0 when the line is split into 8 equal parts?

Hint: Count by eighths: $\frac{1}{8}$, $\frac{2}{8}$.

Correct Answer: 0.25

Explanation: The second point on a line split into 8 equal parts is $\frac{2}{8}$, which is 0.25.

8. A runner starts at 0 on a track line from 0 to 1. Which is greater: $\frac{1}{3}$ or $\frac{2}{3}$? Enter 1 for $\frac{2}{3}$ and 0 for $\frac{1}{3}$.

Hint: The fraction closer to 1 is greater.

Correct Answer: 1

Explanation: $\frac{2}{3}$ is greater than $\frac{1}{3}$ because it is farther from 0 on the number line.

9. A measuring tape from 0 to 1 is split into 2 equal parts. A student says the point at the middle is $\frac{2}{2}$. What is the correct number for the middle point?

Hint: The middle point is halfway.

Correct Answer: 0.5

Explanation: The middle point is $\frac{1}{2}$, which is 0.5. $\frac{2}{2}$ names the whole, not the middle point.

10. A student says $\frac{2}{4}$ is a different point from $\frac{1}{2}$. Enter 1 if the student is wrong, or 0 if the student is right.

Hint: Both fractions land on the same spot.

Correct Answer: 1

Explanation: The student is wrong. $\frac{2}{4}$ and $\frac{1}{2}$ are the same point on the number line.

11. On one number line from 0 to 1, which point is farthest right: $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$? Enter the number value of the fraction.

Hint: The farthest right point is the greatest fraction.

Correct Answer: 0.75

Explanation: $\frac{3}{4}$ is the farthest right because it is the greatest fraction listed. Its value is 0.75.

12. A student says the whole line from 0 to 1 gets bigger when it is split into more equal parts. Enter 1 if that is wrong, or 0 if that is right.

Hint: The whole line stays the same size.

Correct Answer: 1

Explanation: The statement is wrong. The whole from 0 to 1 stays the same size.