

Which Fractions Go Where on the Number Line?



Proper Fractions

Proper fractions are found between zero and one on the number line. The numerator is always less than the denominator. Proper fractions show numbers less than one.

Unit fractions are a special type of proper fraction in which the numerator is a one. Unit fractions are the first number with that denominator to the right of zero. They are the standard of measure for rational numbers with that denominator.

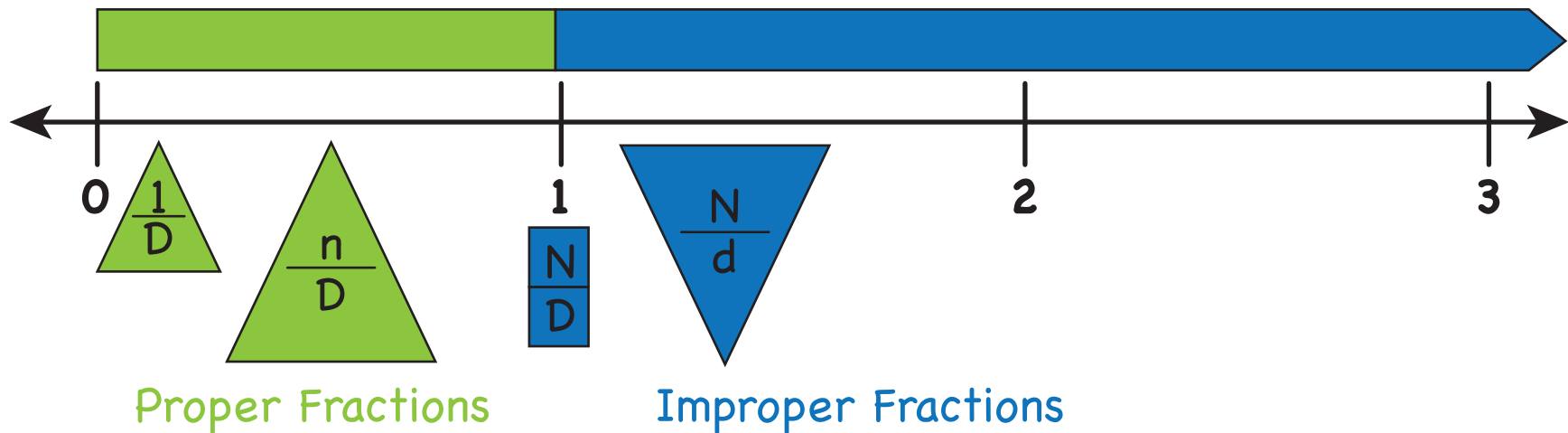
Improper Fractions

Improper fractions are greater than or equal to one. The numerator in an improper fraction is either larger than or the same number as the denominator.

Whole numbers in fractional form are a special type of improper fraction. If the numerator is a multiple of the denominator or if the denominator is a factor of the numerator then the improper fraction shows a whole number.

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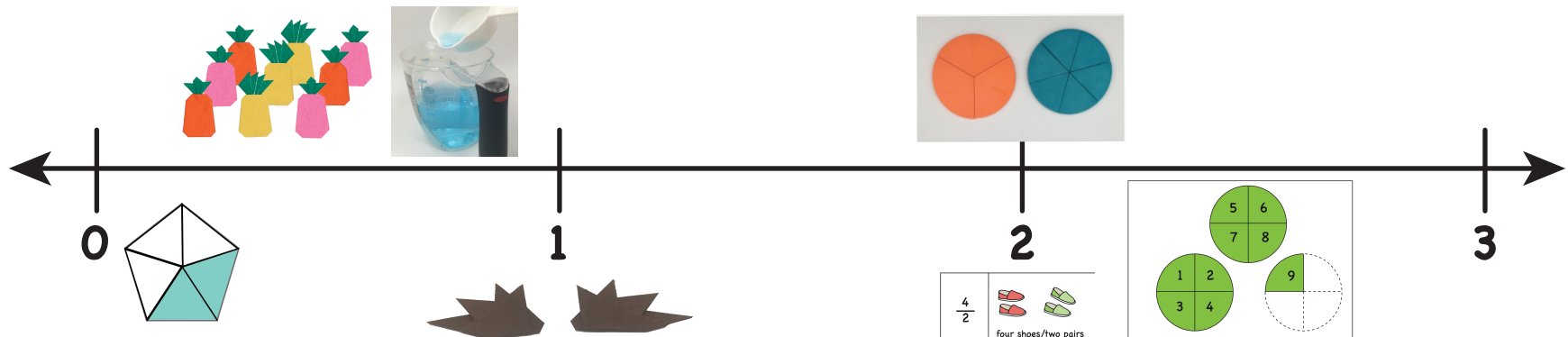
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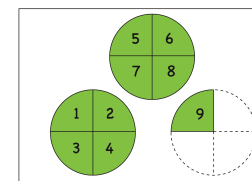
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Which Fractions Go Where on the Number Line?

name: **Teacher Tips**



Bring out photos or copies of your students' previous fraction work. Have them place their work along a number line. Let your students write explanations about proper and improper fractions including special cases such as unit fractions and whole numbers in fractional form.



Students could make their own, help with a class number line, or both.

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Reflecting on Fractions: Are Your Students Ready for Mixed Numbers?

Discussion Questions:

Where do fractions in their simplest form fit on the number line?

Where do percents fit on the number line? (Only if you taught them about percents.)

What is the simplest form for a unit fraction? (not one over one)

Where would you place the simplest form of a proper fraction on the number line?

What is the simplest form for a whole number in fractional form? Where does it belong on the number line?

What is a decimal point?

Where do numbers to the left of the decimal point go on the number line? For example if the number is 12.3 where does the 12 go?

Where do numbers to the right of the decimal point go on the number line? If the number is .5 for example?

Stellar Student Responses:

Fractions in their simplest form can be proper or improper. They can be found anywhere on the number line.

Fractions with a denominator of 100 can be proper or improper fractions - they can be found anywhere on the number line.

Unit Fractions are already in the simplest form. Unit fractions are a special form of proper fractions - they are the first number with that denominator to the right of zero.

When a proper fraction is reduced to its simplest form, it will still be a proper fraction - it will be found between zero and one on the number line.

Whole numbers in fractional form are improper fractions. They can be reduced to a whole number with a denominator of one. They can be one, or any whole number to the right of one on the number line.

The decimal point is a dot just to the right of the units' place.

Whole numbers and numbers that are larger than one are placed to the left of the decimal point.

Numbers to the right of the decimal point are less than one. They go between zero and one on the number line.

Reflecting on Fractions: Are Your Students Ready for Mixed Numbers?

Discussion Questions:

When you think of fractions as a division problem, where would you place the quotient on the number line?

Where would the quotient of a proper fraction go on the number line?

Where would the quotient for an improper number go on the number line?

What is an easy way to tell how many whole numbers are inside an improper fraction?

How could you use multiplication tables to help you reduce improper fractions to their simplest form?

What if there were a number that in its simplest form was a mix of a whole number and a proper fraction? For example: three and a half? Where would that go on the number line?

Your students' responses to these questions will tell you if they are ready to move on or not. If they are not ready, their response might give you clues about what they need to study in order to get ready for mixed numbers.

Always give examples for challenging questions.

Stellar Student Responses:

The answer when the numerator is divided by the denominator could be less than one, one, or more than one. the quotient could go anywhere on the number line.

Quotients for proper fractions would be less than one so they would be found between zero and one.

The quotient of an improper fraction could be one or more than one so it would go on one or to the right of one.

If the numerator is a multiple of the denominator then the quotient would be a whole number. Divide the numerator by the denominator.

The multiplication tables would help you figure out how many whole numbers could be subtracted out of the improper fraction.

1. Well, hmmm - great question, let's go work it out!
2. Improper fraction (Always? Every time?)
3. It can't be an improper fraction because there is a proper fraction in there. (Just because part of it is a proper fraction doesn't mean the entire number can't be an improper fraction . . .)

Listen carefully to their discussions and their reasoning. Do they own the vocabulary, skills, and concepts? If not, where is the confusion?

Reflecting on Improper Fractions



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