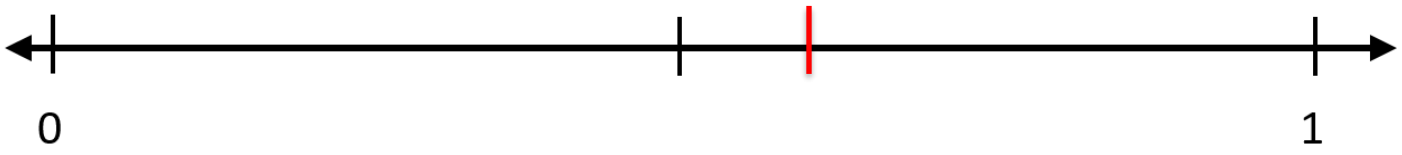
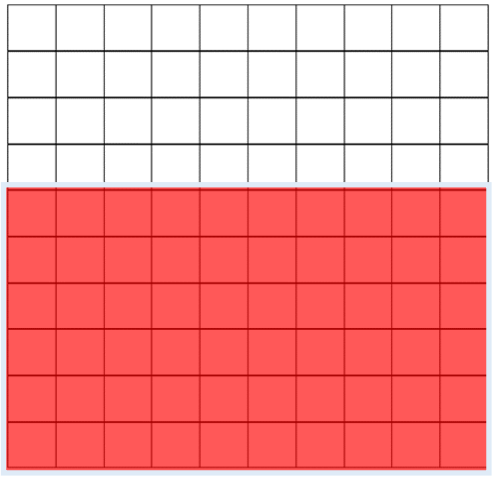
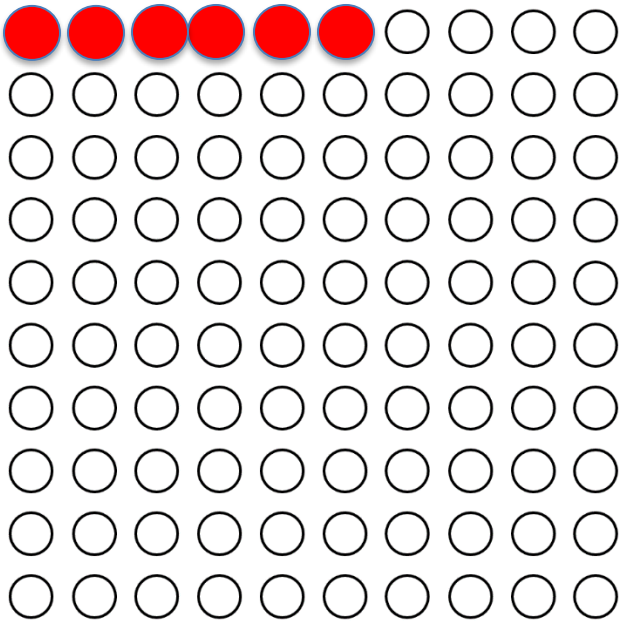
Grade 4+: Number Sense B

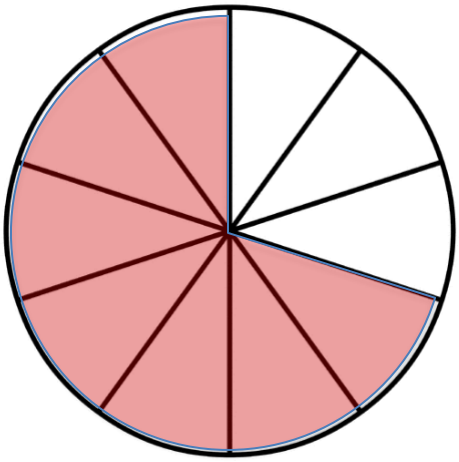
Collaborative Task:

Represent each of 0.6 and 0.06 in more than one way using any of the models shown below.









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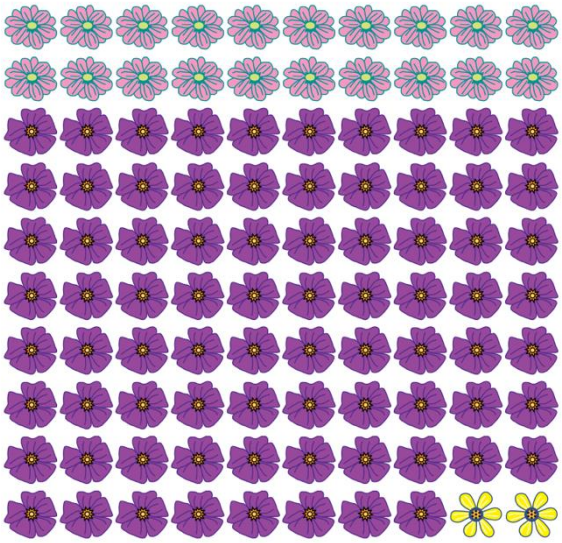
Collaborative Task: *(teacher projects large image below)*, student pairs will need 1 student response sheet with questions.

Image can also be accessed through link:
https://www.tcpress.com/filebin/PDFs/9780807753910_35.pdf

Describe how 0.2 and 0.02 are shown in this arrangement of flowers.



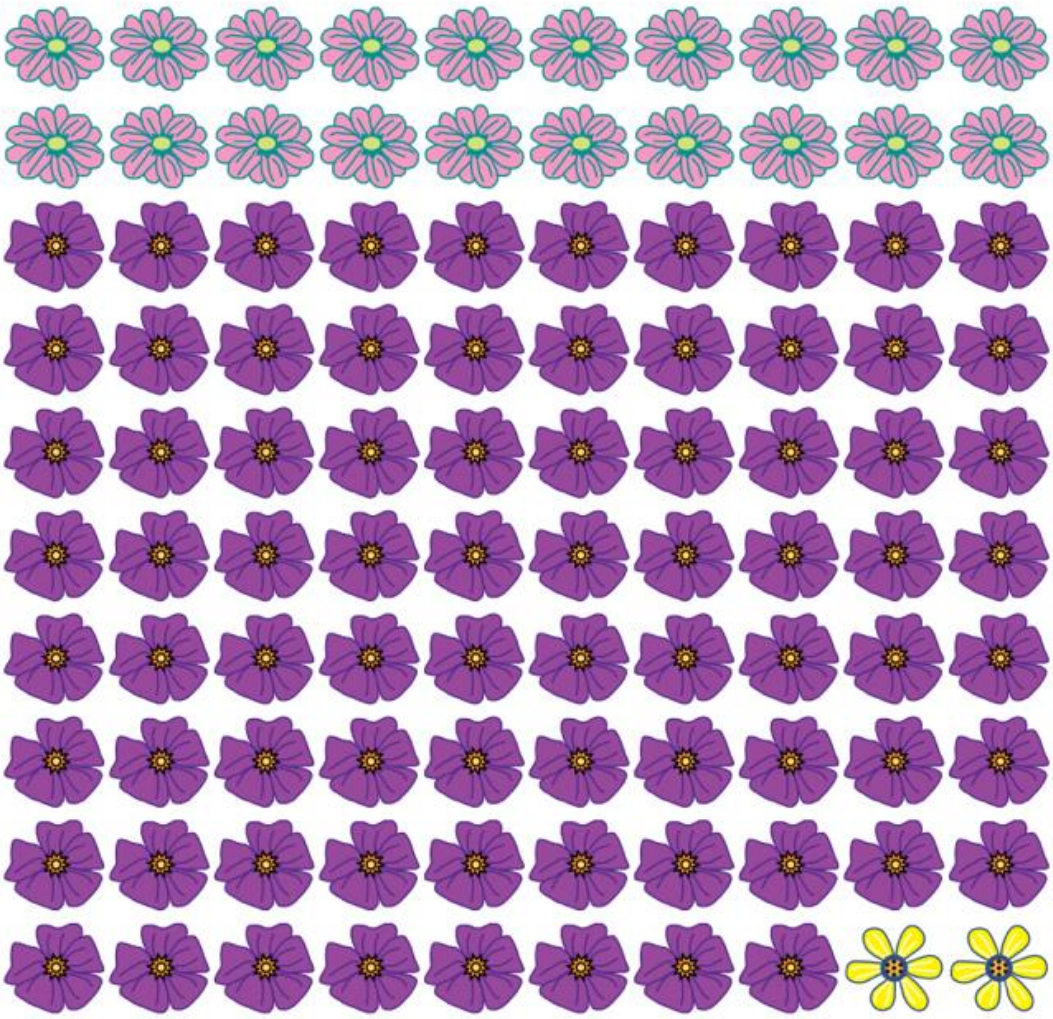
Why are there two ways to use decimals to describe the light pink flowers? Two rows out of 10 is the same as 20 flowers out of 100., the decimal 0.2 = 0.20

Are there two ways to use decimals to describe the two yellow flowers? It is not possible to write 0.02 as tenths, however 0.02 can be written as 0.020.

What other decimal numbers can you use to describe the flower arrangement?

What decimals can describe parts of the picture? 0.5 and 0.05 , 0.02 Which can't? Decimal tenths or hundredths could describe the picture. Students are also likely to realize that decimals greater than 1 are unlikely to be used to describe the picture. It is possible, however, if for example, the students suggested that 2.0 could describe twice as much as half the flowers.

Marion Small, Eyes on Math, (2013) , page 120-21



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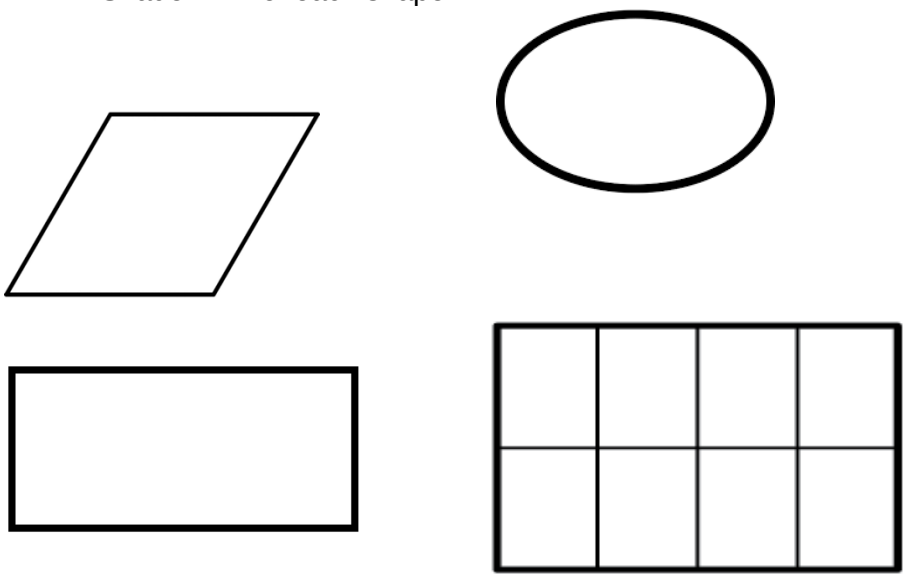
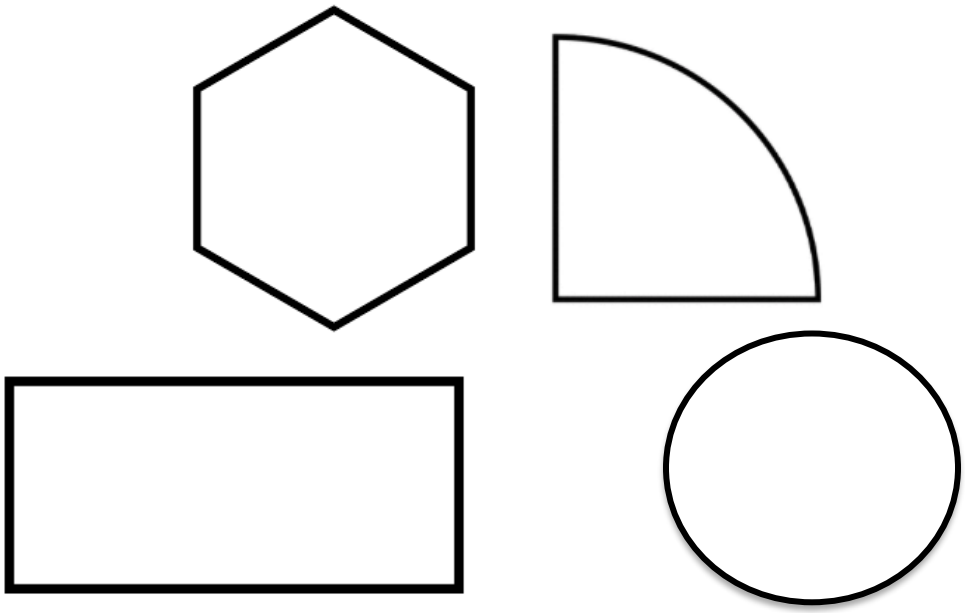
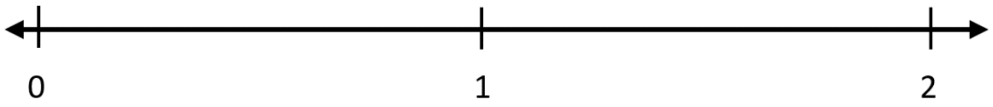
Assessment Question	Answer Key
1. Shade $\frac{3}{4}$ of each shape. 	Students shade three quarters of each representation. (the one whole bar with 8 parts invites students to represent equivalence; an extension of what would be expected)
1. Shade $\frac{1}{3}$ of each shape. 	Students shade one third of each shape. Adapted from Beyond Pizzas and Pies, McNamara The hexagon image should identify students with the most robust understanding.

2. Place each common fraction on the number line:

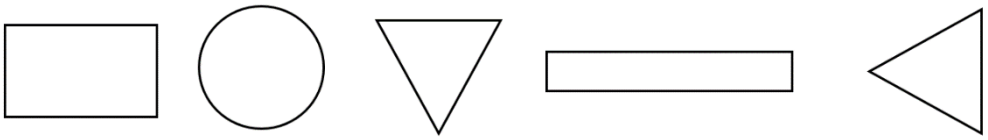
$\frac{1}{2}$ $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$

Show or explain how you know.



I know ½ is midway between 0 and 1. 2/4 and ½ are equivalent so they are placed on the same space on the number line.

3. Shade $\frac{2}{5}$ of **this set.**

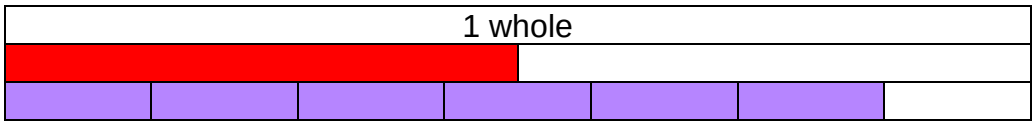


The whole is considered the set of 5 shapes, each shape is ⅕. Students shade two fifths of the shapes.

The shapes are different in this set to explore student reasoning about part-whole relations.

4. How are these fractions alike and how are they different? Use pictures, number and words to show your thinking.

$\frac{1}{2}$ $\frac{7}{8}$



A student might draw a bar model or number line to represent their thinking.

Alike: both less than one whole, both denominators are even, both numerators are odd, both are common fractions.
Both fractions are fairly simple and easy to partition.

Different: ⅞ is close to one whole, ½ can indicate something shared equally between 2 people.

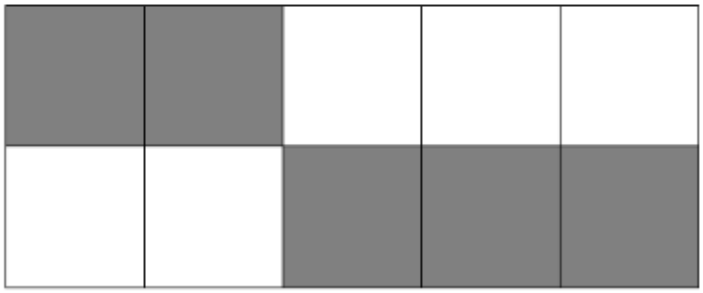
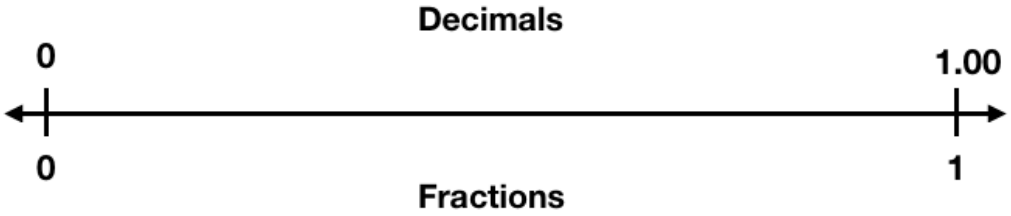
$\frac{7}{8} > \frac{1}{2}$

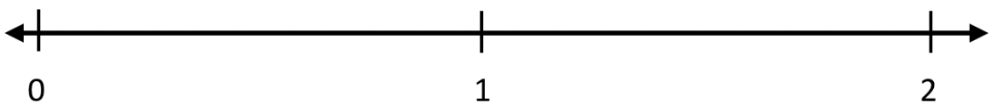
5. How do people use fractions and decimals in their daily lives? Offer one situation for fractions and another for decimals.
   Fractions – baking, cup measures, sharing food
   Decimals- money , statistics, temperature, race times

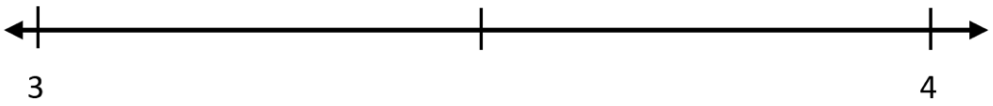
Fractions and decimals are numbers that represent an amount or quantity. Fractions and decimals can represent parts of a region, set, or linear model. Fractional parts and decimals are equal shares or equal-sized portions of a whole or unit.

Question is open-ended so students can make personal connections. Responses will vary.

6. Is 0.44 closer to 0.5 or 0.4? Show your thinking. Representing hundredths with fractions, decimals, number line	0.4 Students may use a number line, or hundred grid, base ten blocks. Students may share what they know about rounding.

7. What fraction of the diagram is shaded? 	0.5 or $\frac{1}{2}$ five tenths students may suggest 50 %
8. A fraction and a decimal are quite close together on a number line. What might the two numbers be? Record your choice of one decimal and one fraction on the number line.  	Possible answers: ½ and 0.6 ⅞ and 0.8 ¼ and 2/10 Note *if* and *how* students use benchmarks to communicate their reasoning. Decimals and fractions are labels on this double number line as scaffolding.

9. Place each common fraction on the number line: $\frac{1}{3}$ $\frac{2}{3}$ $\frac{5}{6}$ Show or explain how you know.  	*I know one one-third and 2 one-thirds are equal distance on the number line. I know 5/6 is close to one whole. All these common fractions are an amount between 0 and 1. Sixths are ½ of a third.*

10. Place each decimal number on the number line: 3.5 , 3.12 , 3.4 , 3.75 Show or explain how you know.  	3.12, 3.4, 3.5, 3.75 Note whether students place their own benchmarks beyond the ½ *I know that 3.5 is the same as 3 ½.* *5/10 is equal to ½.* 3 and 12 hundredths is slightly larger than 3 and one tenth.
11. You add two numbers and the answer is 4.1. What might the numbers be?	3.6 + 0.5 2.5 + 1.6 4 + 0.1 3 + 1.1

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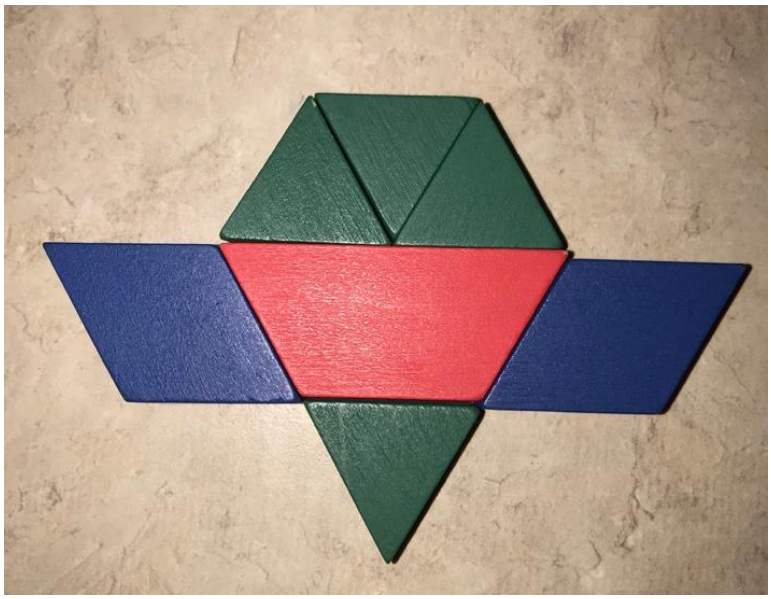
Performance Task:

What fractions do you see in this picture? project photo below



What fractions do you find easy to model with pattern blocks? $\frac{1}{2}$ $\frac{2}{3}$ $\frac{1}{6}$

What fractions are *not as easy* to model? $\frac{1}{4}$ $\frac{5}{8}$ $\frac{3}{10}$

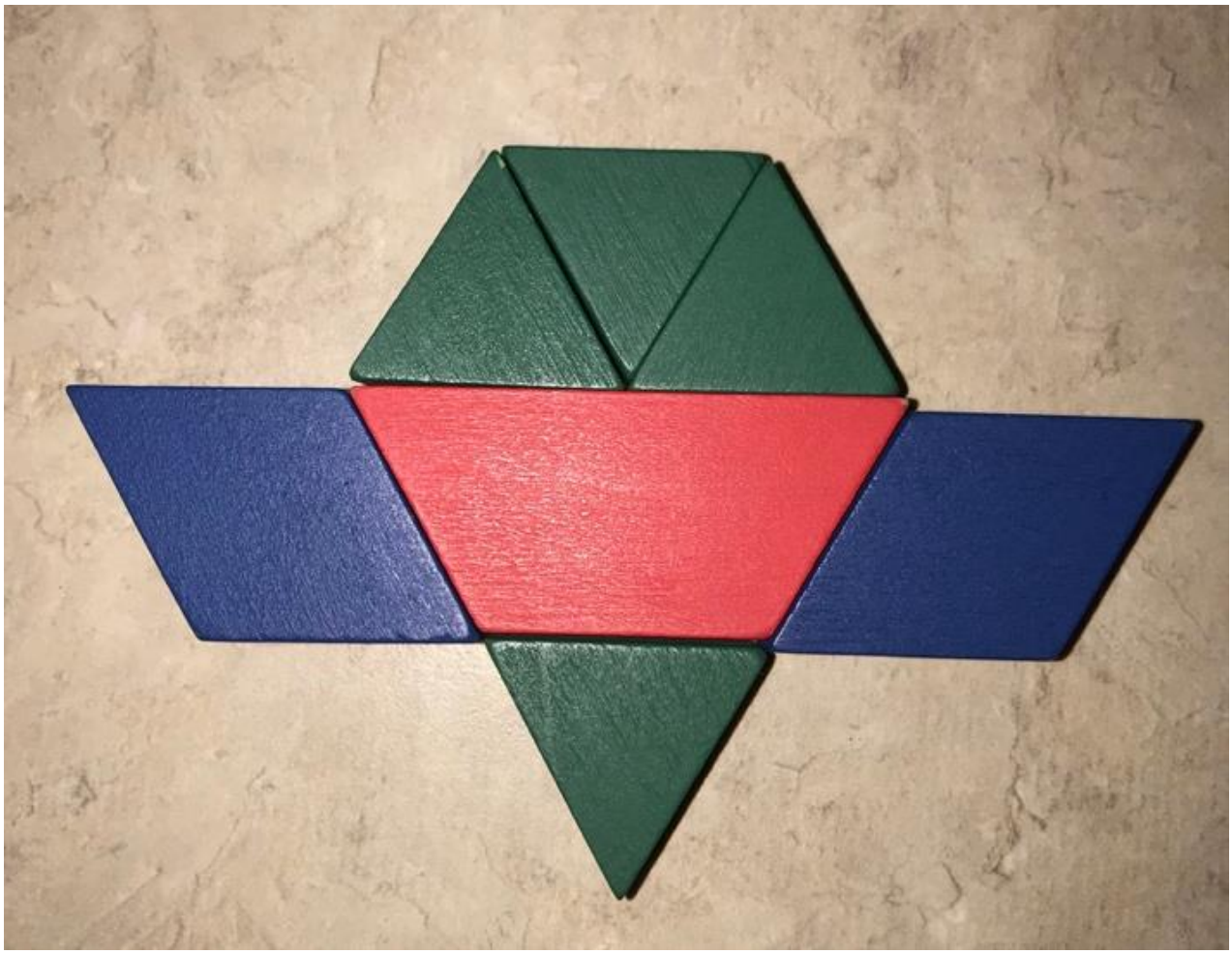
Name three fractions less than one half. How do you know they are less than one half?

One fraction less than $\frac{1}{2}$ is $\frac{1}{3}$ since if you cut a whole into three parts, these three parts are smaller than if there were two parts.

Another fraction is 3/100 since it is only a small part of a whole compared to half of it.

4/10 since 4 is less than 5 and 5 is half of 10

Credit Marian Small, WNCP Number Strand, page 39, 44



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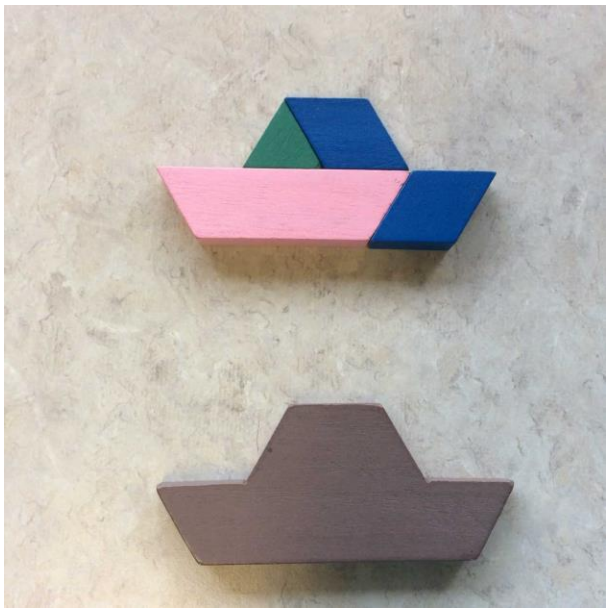
Performance Task



If the **brown block represents one whole,** name and describe the fraction parts of the coloured blocks using common fractions and decimals.

Share your reasoning using both fraction and decimal understanding.

The pink block is $\frac{1}{2}$ or $\frac{5}{10}$ of the whole.

The two blue rhombi make up 0.4 of the whole.

.

The green triangle in this instance is not one one-sixth but rather represents $\frac{1}{10}$ of the whole.

$\frac{1}{2}$ *the coloured blocks are pink.*

$\frac{4}{10}$ *or* $\frac{2}{5}$ *of the blocks are blue.*

The pink block is equivalent to the other coloured blocks.

The green triangle is one-tenth of the whole.

Deci-blocks provide an extension to decimal understanding of tenths.