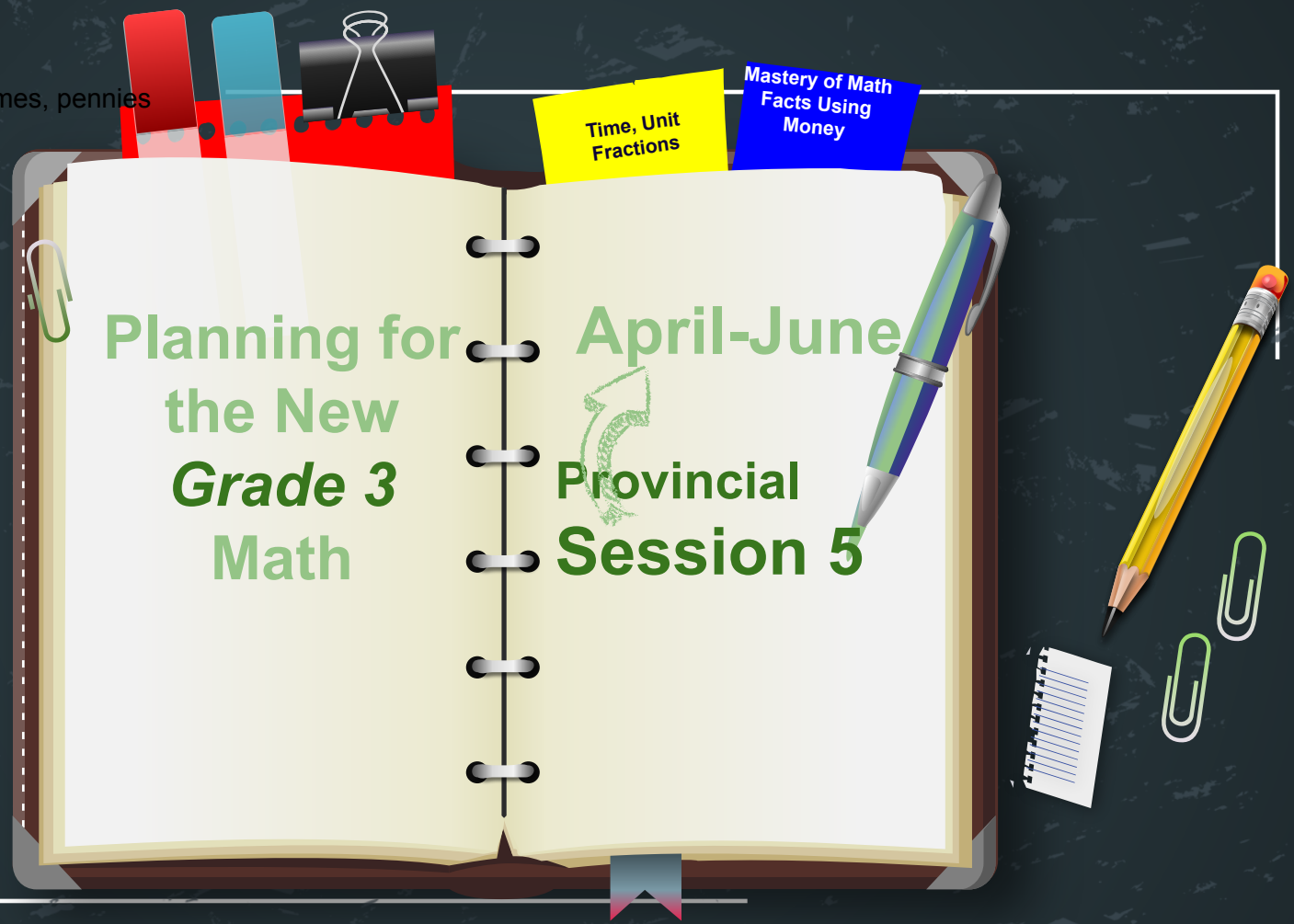
Pattern Blocks
Cuisenaire Rods
Money (100's, 10's. Loonies, dimes, pennies




Chris Zarski

Central Alberta Regional Consortium
Working Together: Making a Difference

# Land Acknowledgment

We respectfully acknowledges that we are situated on Traditional lands across the province of Alberta home to many First Nations, including the Cree, Blackfoot, Métis, Nakota Sioux, Saulteaux, Inuit, and many others whose histories, languages, and cultures continue to influence our vibrant community.

| April | May | June |
| --- | --- | --- |
| hat enable counting, labelling, comparing and operating. | | |
| 3N3.2 Students acquire an understanding of multiplication and division within 100.<br>• Sharing and grouping situations can be interpreted as multiplication or division.<br>• Multiplication and division strategies can be supported by addition and subtraction.<br><br>3N3.3 A multiplication table shows both multiplication and division facts.<br>• Multiplication number facts have related division facts.<br><br>3N4 Students interpret fractions in relation to one whole.<br>• Fractions are numbers between natural numbers.<br>• Fractions can represent part-to- whole relationships.<br>• A unit fraction describes the size of the equal parts of a fraction.<br>• The size of the parts and the total number of equal parts in the whole are inversely related. | 3N3.3 A multiplication table shows both multiplication and division facts.<br>• Multiplication number facts have related division facts.<br><br>3N4 Students interpret fractions in relation to one whole.<br>• Fractions are numbers between natural numbers.<br>• Fractions can represent part-to- whole relationships.<br>• A unit fraction describes the size of the equal parts of a fraction.<br>• The size of the parts and the total number of equal parts in the whole are inversely related. | 3N3.3 A multiplication table shows both multiplication and division facts.<br>• Multiplication number facts have related division facts.<br><br>3N4 Students interpret fractions in relation to one whole.<br>• Fractions are numbers between natural numbers.<br>• Fractions can represent part-to-whole relationships.<br>• A unit fraction describes the size of the equal parts of a fraction.<br>• The size of the parts and the total number of equal parts in the whole are inversely related.<br><br>K5 Resource |

**How can fractions contribute to a sense of number?**

**3N4 Students interpret fractions in relation to one whole.**

| Knowledge | Understanding | Skills & Procedures |
|---|---|---|
| The same fraction can represent<br>▫ equal parts of one whole<br>▫ length, shape, or object equal groups of one whole<br>▫ quantity equal parts of each equal group in one whole quantity<br><br>The name of a fraction describes its composition as a number of unit fractions.<br><br>Fraction notation, $(\frac{a}{b})$, relates the numerator, *a*, a number of equal parts, to the denominator, *b*, the total number of equal parts in the whole.<br><br>Equal numerators or equal denominators can facilitate the comparison of fractions.<br><br>A fraction with a numerator that is equal to its denominator is one whole.<br><br>Each fraction is associated with a point on the number line. | Fractions are numbers between natural numbers.<br><br>Fractions can represent part-to-whole relationships.<br><br>A unit fraction describes the size of the equal parts of a fraction.<br><br>The size of the parts and the total number of equal parts in the whole are inversely related. | Model fractions of a whole quantity, length, shape, or object, in various ways, limited to denominators of 12 or less.<br><br>Visualize fractions as compositions of a unit fraction.<br><br>Identify the numerator and denominator of a fraction in various representations.<br><br>Name a given fraction.<br><br>Express fractions, including one whole, symbolically, limited to denominators of 12 or less.<br><br>Relate various representations of the same fraction, limited to denominators of 12 or less.<br><br>Compare the same fraction of different-sized wholes.<br><br>Compare different fractions of the same whole that have the same denominator.<br><br>Compare different fractions of the same whole that have the same numerator and different denominators.<br><br>Express the relationship between two fractions of the same whole, using <, >, or =.<br><br>Relate a fraction less than one to its position on the number line, limited to denominators of 12 or less.<br><br>Compare fractions to benchmarks of 0, $\frac{1}{2}$, and 1. |

## Fraction Block

Session 4

- Go to www.brainingcamp.com
- Click on Redeem Code
- Enter – TEACHER23

Cuisenaire Rods

Model the Skills and Procedures Concepts

Review session 3 for identifying and counting by unit fractions.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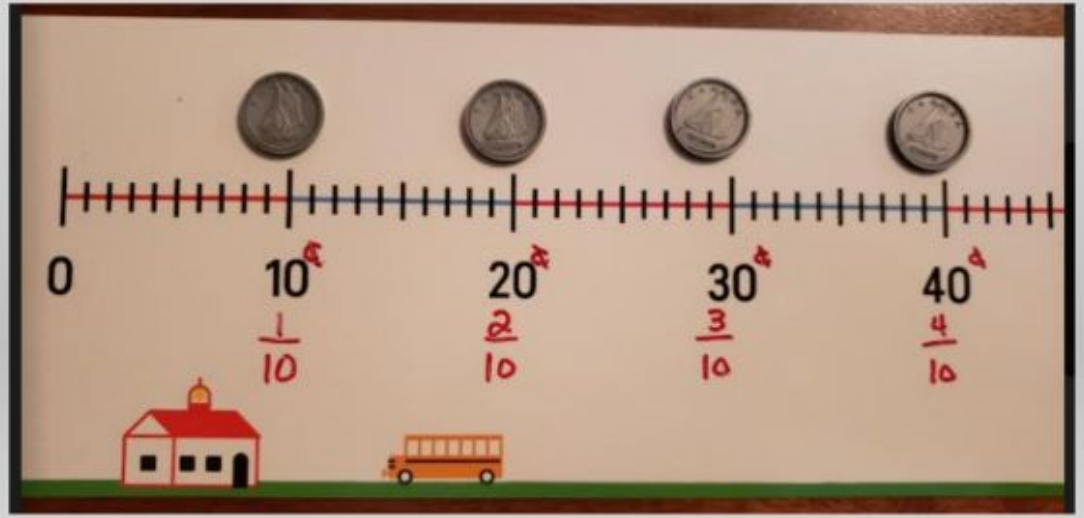
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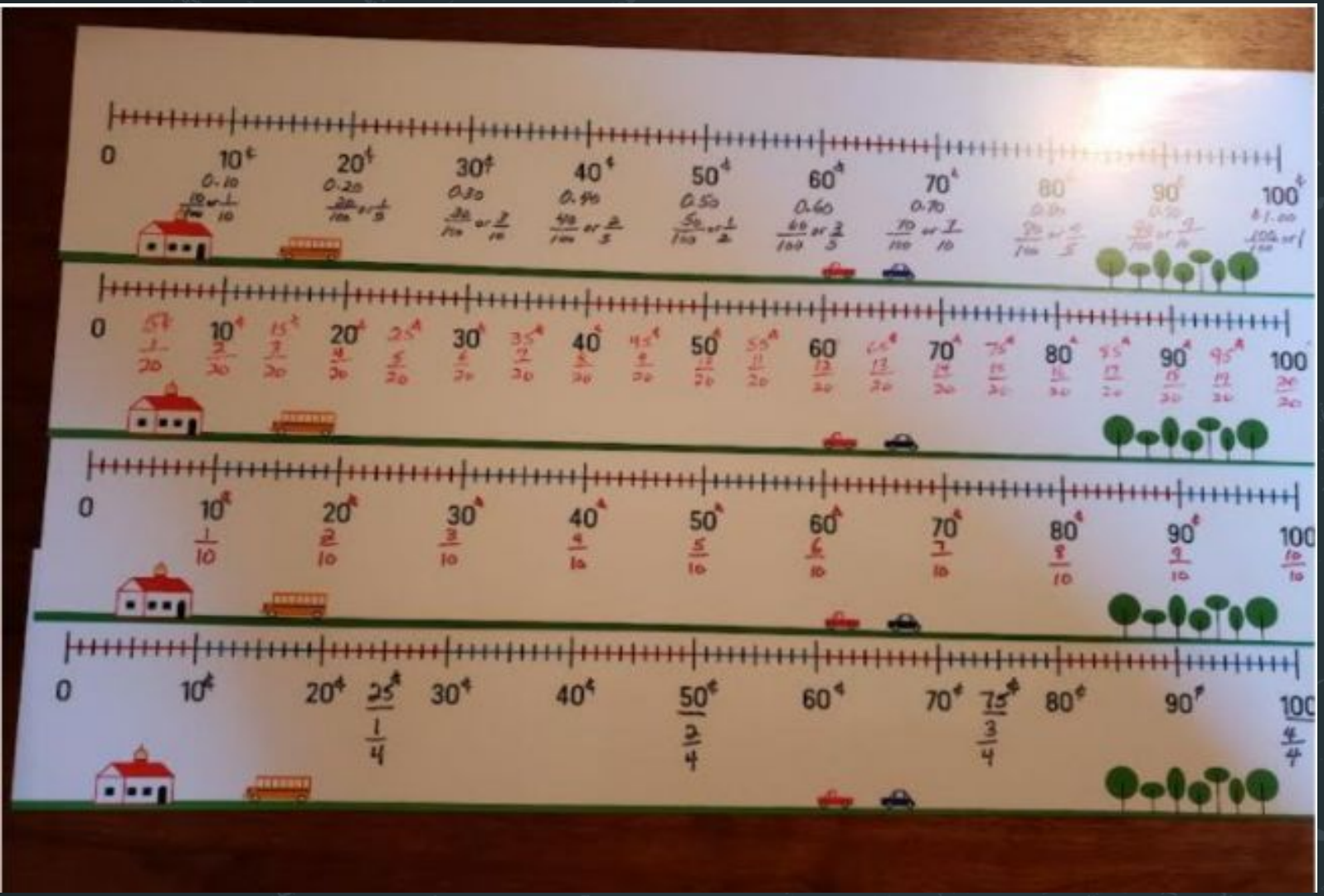
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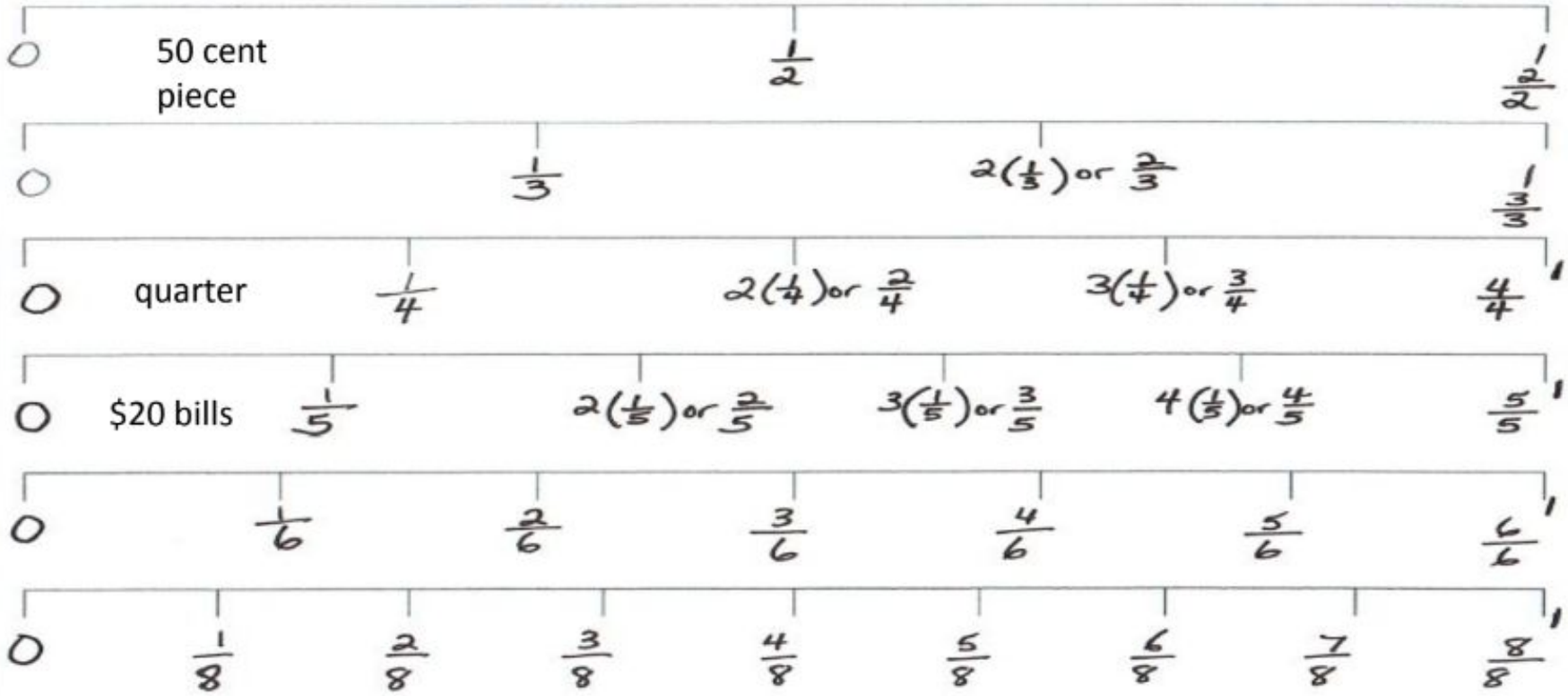



Compare

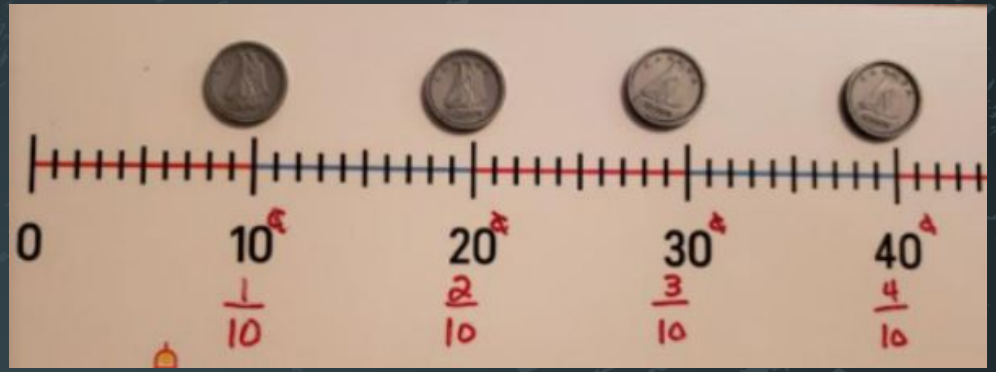
how can you recognize half?

**How can fractions contribute to a sense of number?**

**3N4 Students interpret fractions in relation to one whole.**

| Knowledge | Understanding | Skills & Procedures |
|---|---|---|
| The same fraction can represent<br>▫ equal parts of one whole<br>▫ length, shape, or object equal groups of one whole<br>▫ quantity equal parts of each equal group in one whole quantity<br><br>The name of a fraction describes its composition as a number of unit fractions.<br><br>Fraction notation, $(\frac{a}{b})$, relates the numerator, *a*, a number of equal parts, to the denominator, *b*, the total number of equal parts in the whole.<br><br>Equal numerators or equal denominators can facilitate the comparison of fractions.<br><br>A fraction with a numerator that is equal to its denominator is one whole.<br><br>Each fraction is associated with a point on the number line. | Fractions are numbers between natural numbers.<br><br>Fractions can represent part-to-whole relationships.<br><br>A unit fraction describes the size of the equal parts of a fraction.<br><br>The size of the parts and the total number of equal parts in the whole are inversely related. | Model fractions of a whole quantity, length, shape, or object, in various ways, limited to denominators of 12 or less.<br><br>Visualize fractions as compositions of a unit fraction.<br><br>Identify the numerator and denominator of a fraction in various representations.<br><br>Name a given fraction.<br><br>Express fractions, including one whole, symbolically, limited to denominators of 12 or less.<br><br>Relate various representations of the same fraction, limited to denominators of 12 or less.<br><br>Compare the same fraction of different-sized wholes.<br><br>Compare different fractions of the same whole that have the same denominator.<br><br>Compare different fractions of the same whole that have the same numerator and different denominators.<br><br>Express the relationship between two fractions of the same whole, using <, >, or =.<br><br>Relate a fraction less than one to its position on the number line, limited to denominators of 12 or less.<br><br>Compare fractions to benchmarks of 0, $\frac{1}{2}$, and 1. |

## Cuisenaire Rods




In relation to dimes, where is the halfway point?

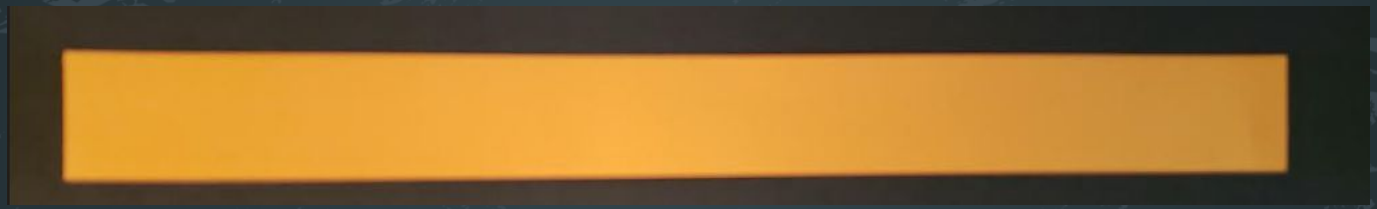
Compare 1/10 and ¼

- If this is money
- Using paper strips
- Using models

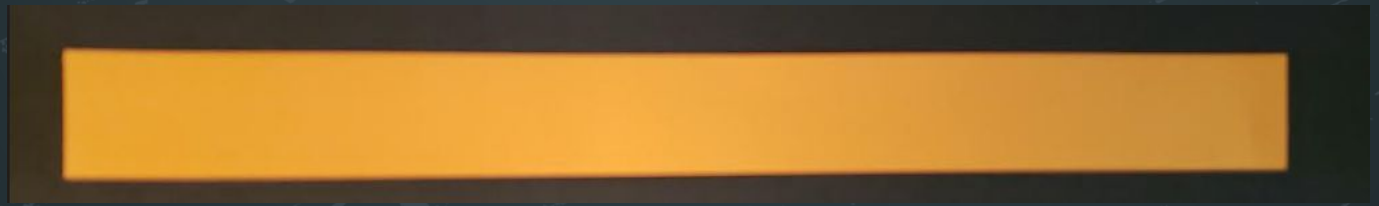
Compare 1/10 and ¼

- If this is money
- Using paper strips - making tenths
- Using models

Model - let's do eighths.

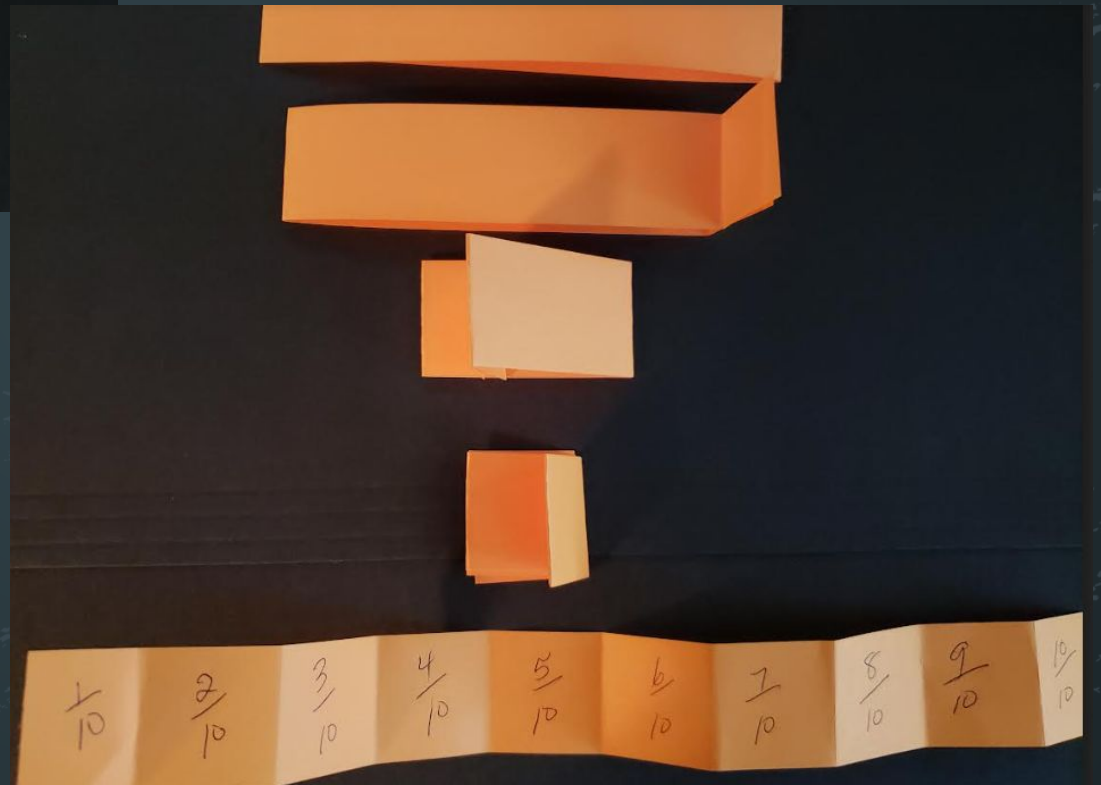


This strip to be turned into tenths



## Step 2 - fold in half. How many pieces does this represent?

Step 3. Need an even value for the length so change 5 to 4.


1/10
2/10
3/10
4/10
5/10
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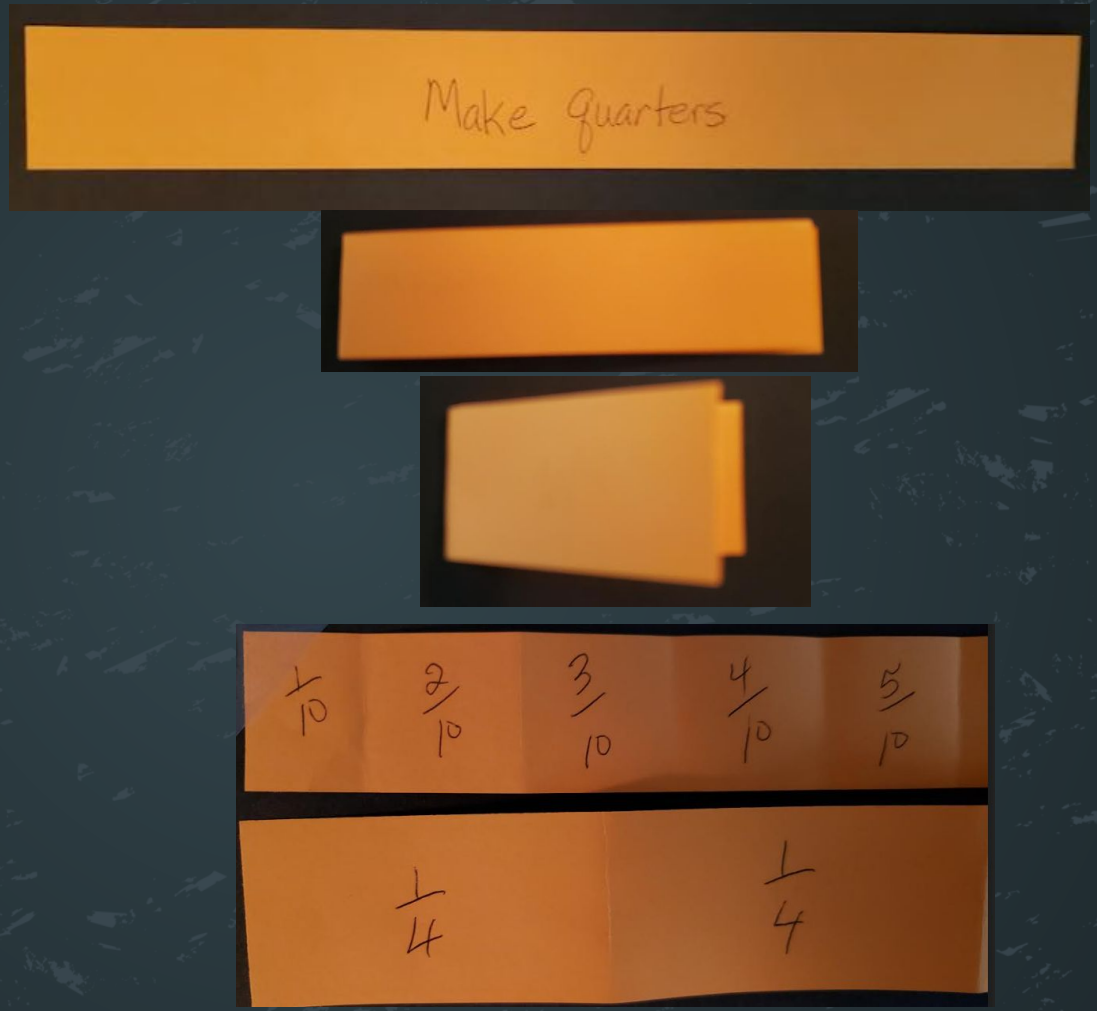
7/10
8/10
9/10
10/10

Compare 1/10 and ¼

- If this is money
- Using paper strips
- Using models



# Compare 1/10 and 1/9 and 1/4

Word the Understanding as a conceptual question:
What is the relationship between the size of the parts and the total number of equal parts in a whole?

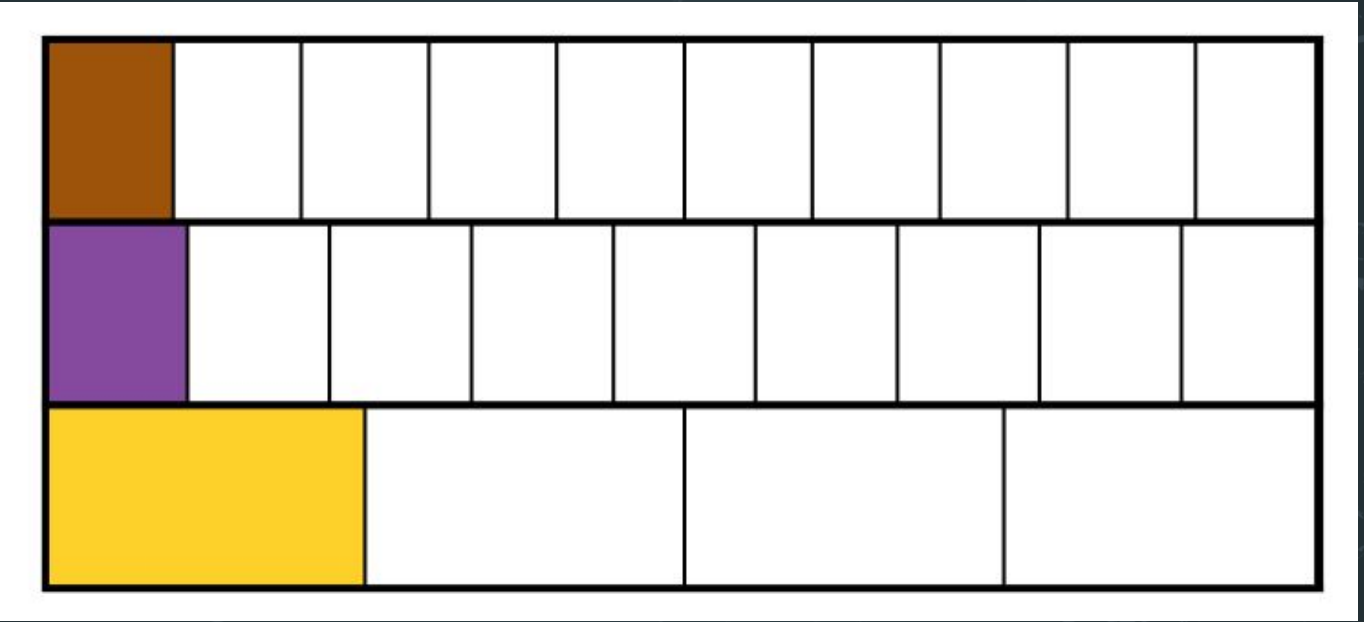
Put your tenths, quarters and sevenths vertically on top of one another.

The _____ the denominator, the _____ the equal pieces.

The _____ the denominator, the _____ the equal pieces.

# Toytheater.com

## Select Fraction Bars



**How can fractions contribute to a sense of number?**

**3N4 Students interpret fractions in relation to one whole.**

| Knowledge | Understanding | Skills & Procedures |
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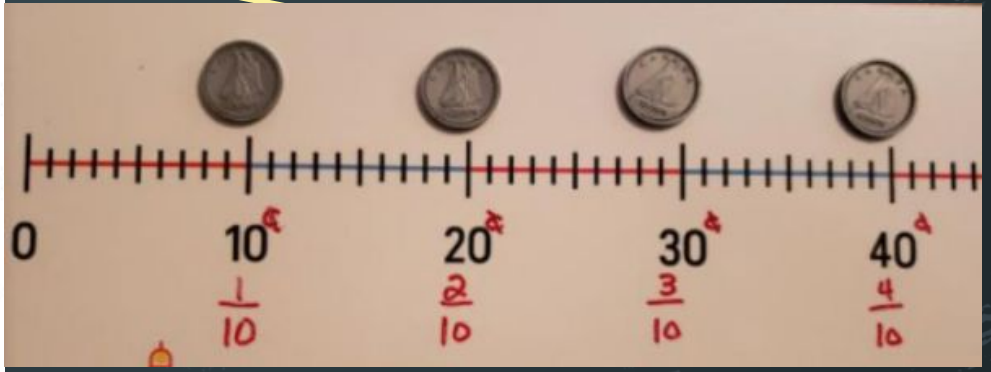
## Cuisenaire Rods

What unit fraction would I count by to obtain $\frac{5}{6}$? Model it.

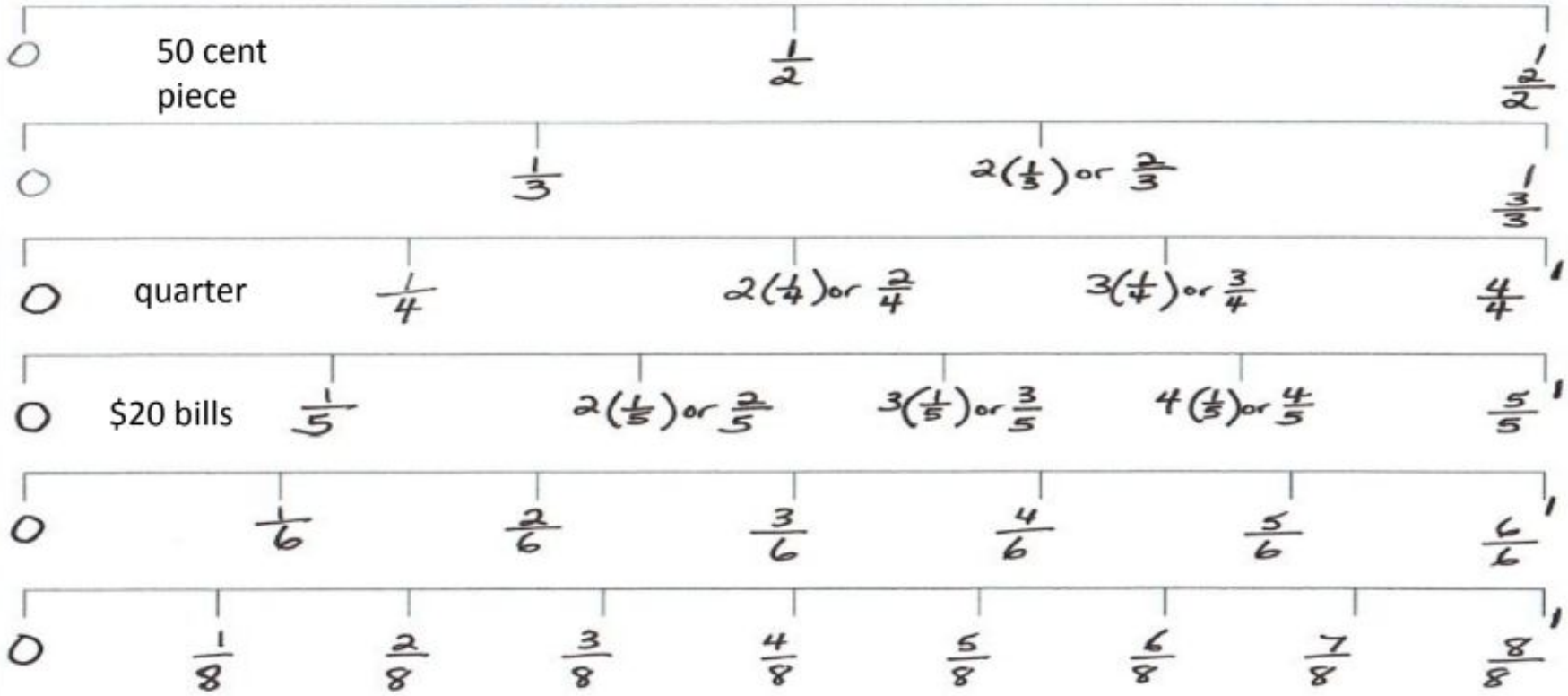



How could string be used for benchmarks? How could we use it for placing 79 on a numberline with the values of 0 and 200?

# Continuing with Number and String - critical thinking competency


How could string be used for benchmarks? How could we use it for placing 79 on a numberline with the values of 0 and 200?

Clue: how can the paper folding to find unit fractions be applied to solving the question above?




Compare

how can you recognize half?

The name of a fraction describes its composition as a number of unit fractions.

# Angles

**Measurement: Attributes such as length, area, volume and angle are quantified by measure.**

3M2.1 Students interpret angles.

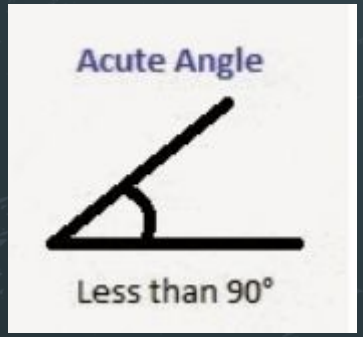
- An angle is the union of two arms with a common vertex.
- An angle can be interpreted as the motion of a length rotated about a vertex.

3M2.12 Students interpret angles.

- Two angles can be compared directly or indirectly.

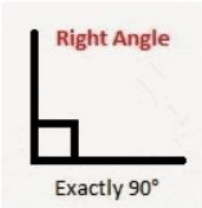
## What is an angle?

An angle measures the amount of turn between two lines (or arms) that are joined at one common endpoint.

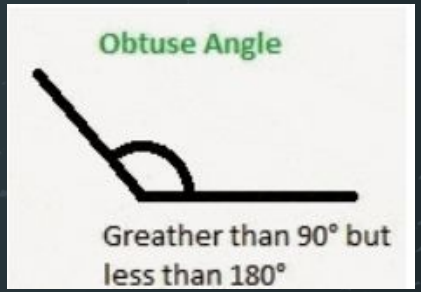




## Right Angles

Right angles measure exactly 90°.




Referent




K5 Learning

Find 5 examples of each in the classroom, outside, hallway etc.

3G1.1 Students relate geometric properties to shape.

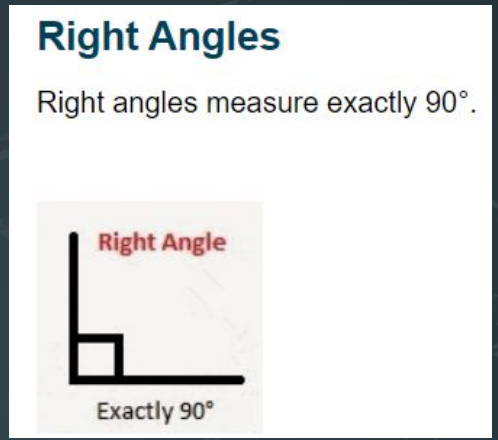
Investigate the relationships between the sides of a polygon, including perpendicular, parallel, and equal, using referents for 90° or by measuring.

Investigate the relationships between vertices of a polygon, including equal or right angles, using direct comparison or referents for 90°.

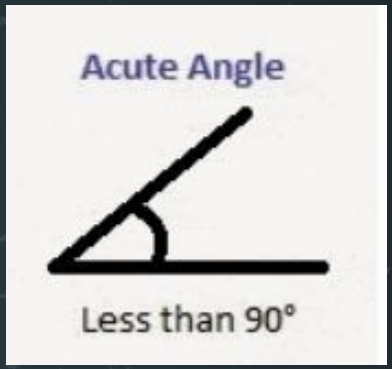
Describe geometric properties of regular and irregular polygons.

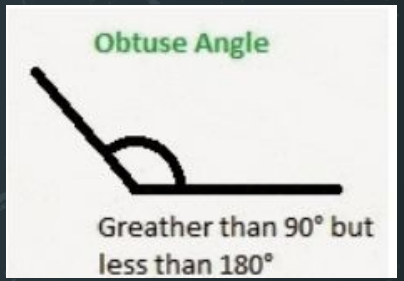
Sort polygons according to geometric properties and describe the sorting rule.

Classify polygons as regular or irregular using geometric properties.




Referent



Investigate the relationships between vertices of a polygon, including equal or right angles, using direct comparison or referents for 90°.

Mathigon.com

# 3G1.1 Geometric Properties and Shape

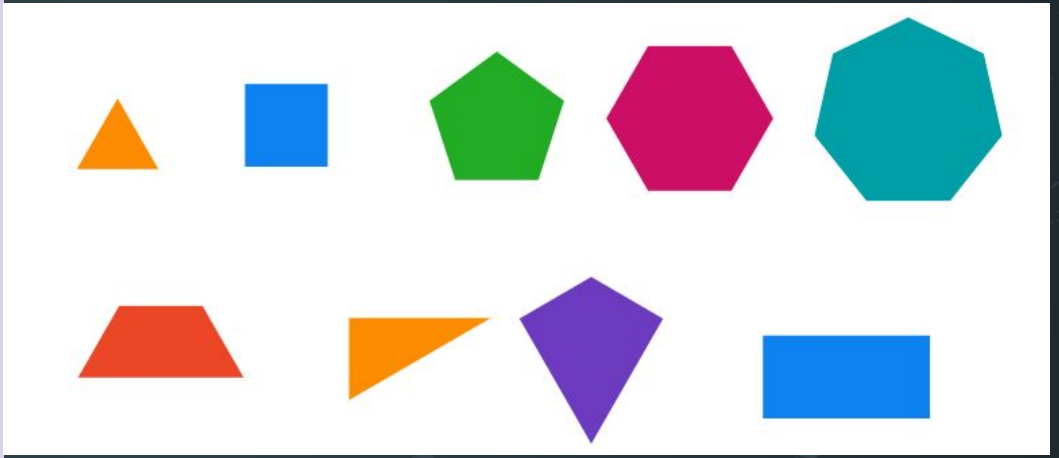
**Geometry: Shapes are defined and related by geometric attributes.**

3G1. 1 Students relate geometric properties to shape.

- Geometric properties are relationships between geometric attributes.
- Geometric properties define a class of polygon.

3G1.2 Students relate geometric properties to shape.

- Geometric properties do not change when a polygon undergoes a transformation.



**Geometry: Shapes are defined and related by geometric attributes.**

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# 3G1.2 Transformations

Interactive Maths

Transformations - Level 1

Smashmaths - go to section 2 & 3
*Shapes in Motion*

**Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and**

**How can representation support communication?**

**3ST1.1 Students interpret and explain representations of data.**

| Knowledge | Understanding | Skills & Procedures |
|---|---|---|
| Statistical questions are questions that can be answered by collecting data. | Representation connects data to a statistical question. | Formulate statistical questions for investigation.<br><br>Predict the answer to a statistical question. |

**3ST1.2 Students interpret and explain representations of data.**

| Knowledge | Understanding | Skills & Procedures |
|---|---|---|
| First-hand data is collected by the person using the data.<br><br>Second-hand data is data collected by others from sources such as websites and social media. | Representation expresses data specific to a unique time and place.<br><br>Representation tells a story about data. | Collect data using digital or non- digital tools and resources.<br><br>Represent first-hand and second-hand data in a dot plot or bar graph with one-to-one correspondence.<br><br>Describe the story that a representation tells about a collection of data in relation to a statistical question.<br><br>Examine First Nations, Métis, or Inuit representations of data.<br><br>Consider possible answers to a statistical question based on the data collected. |

| May | June |
|---|---|
| **orm understanding and decision making.** | |
| 2ST1.1 Students relate data to a variety of representations.<br>• Data can be collected to answer questions.<br><br>2ST1.2 Students relate data to a variety of representations.<br>• Data can be represented in various ways. | 2ST1.1 Students relate data to a variety of representations.<br>• Data can be collected to answer questions.<br><br>2ST1.2 Students relate data to a variety of representations.<br>• Data can be represented in various ways. |

## How can data inform representation?

### 2ST1.1 Students relate data to a variety of representations.

| Knowledge | Understanding | Skills & Procedures |
|---|---|---|
| Data can be collected by asking questions.<br><br>First-hand data is data collected by the person using the data. | Data can be collected to answer questions. | Generate questions for a specific investigation within the learning environment.<br>Collect first-hand data by questioning people within the learning environment. |

### 2ST1.2 Students relate data to a variety of representations.

| Knowledge | Understanding | Skills & Procedures |
|---|---|---|
| Data can be recorded using tally marks, words, or counts<br>Data can be expressed through First Nations, Métis, or Inuit stories.<br><br>A graph includes features such as<br>• a title<br>• a legend<br>• axes<br>• axis labels<br><br>Data can be represented with graphs such as<br>• pictographs<br>• bar graphs<br>• dot plots | Data can be represented in various ways. | Record data in a table.<br><br>Construct graphs to represent data.<br><br>Interpret graphs to answer questions.<br><br>Compare the features of pictographs, dot plots, and bar graphs. |

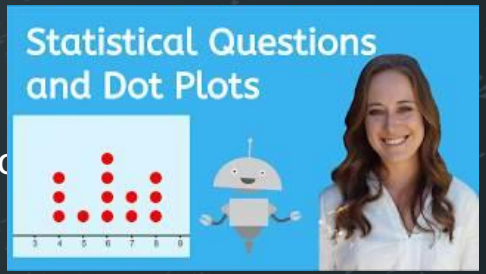
# GRADE 2

**Statistics: The science of collecting, analyzing, visualizing and interpreting data can inform understanding and decision making.**

| | |
|---|---|
| 3ST1.1 Students interpret and explain representations of data..<br>• Representation connects data to a statistical question.<br>3ST1. 2 Students interpret and explain representation.<br>• Representation expresses data specific to a unique time and place.<br>• Representation tells a story about data.<br>Could be addressed throughout the year in science as well. | 3ST1.1 Students interpret and explain representation of data.<br>• Representation connects data to a statistical question.<br>3ST1. 2 Students interpret and explain representation.<br>• Representation expresses data specific to a unique time and place.<br>• Representation tells a story about data.<br>Could be addressed throughout the year in science as well. |


What makes a good statistical question?

Intro to Statistical Questions and Dot Plots: more terminology than needed for grade 3 but appropriate to understand the information being exemplified. An easy one to stop and discuss along the way.

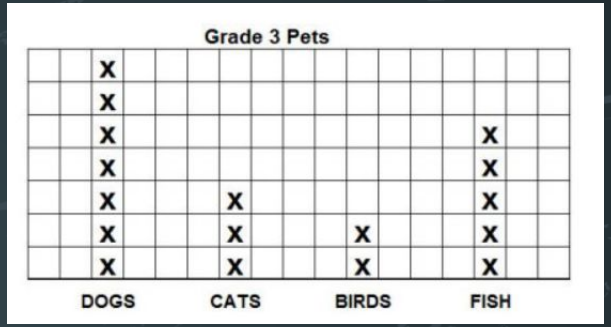


What good statistical question could we ask?

**Our Favourite Sports**

| Sport | Tally | Number of Students |
|---|---|---|
| Hockey | 𝍸 I | 6 |
| Soccer | 𝍸 | 5 |
| Basketball | IIII | 4 |
| Gymnastics | II | 2 |

What is the most favorite sport of students in our Grade 3 class?

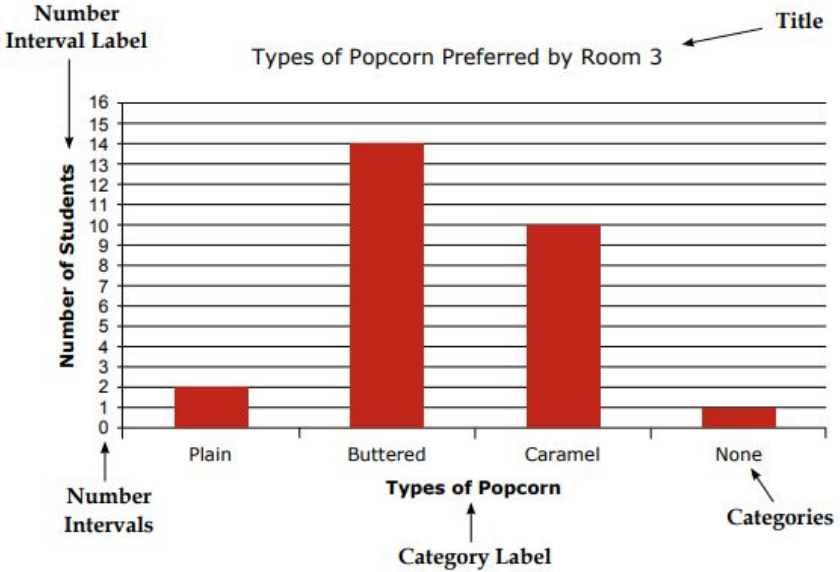



What is the most common type of pet owned by Grade 3 students?

What other questions could be generated?

**Bar Graph:** A bar graph is a graph that uses horizontal or vertical bars to display data.

Example:




A bar graph needs the following labels:

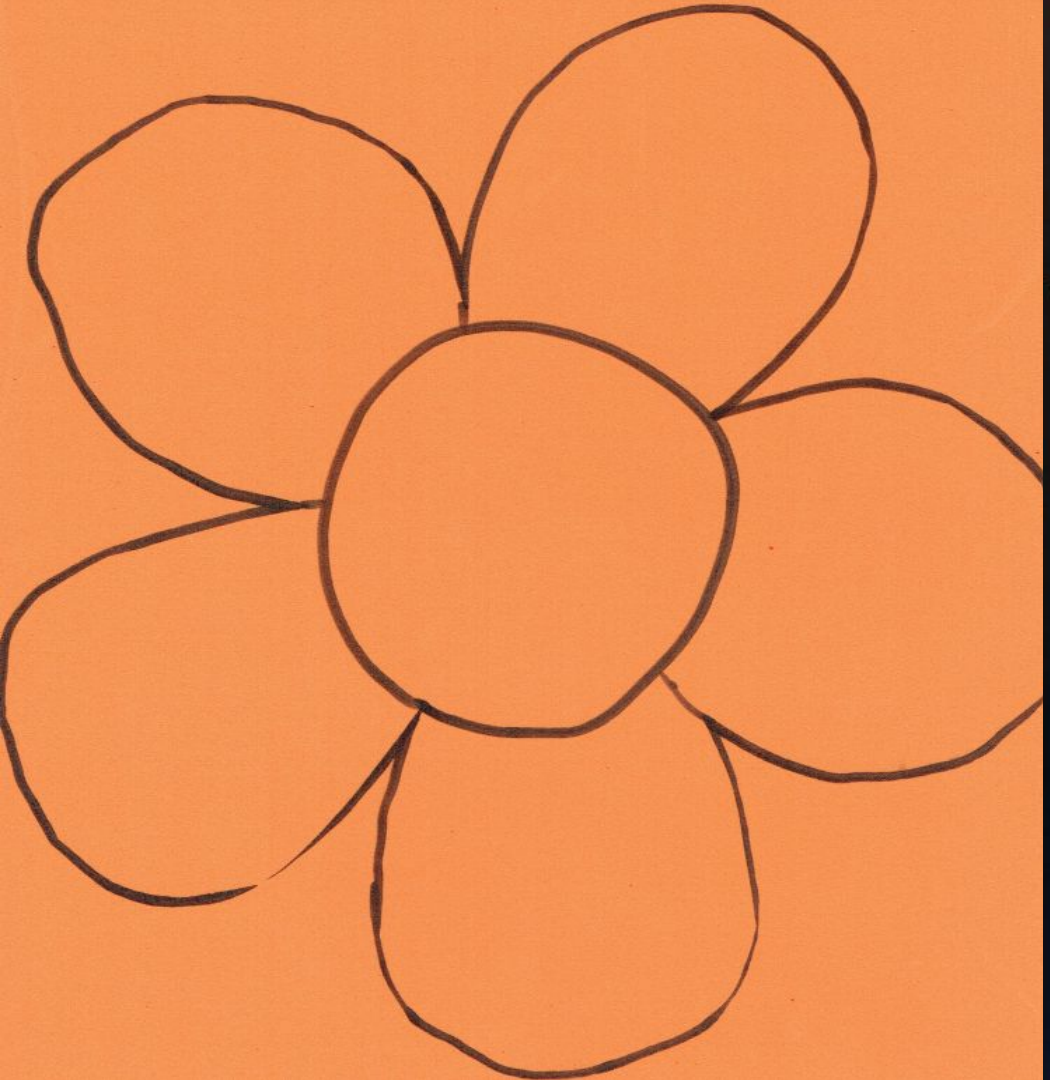
- title
- categories
- category label
- number intervals (Note: Numbers are labelled on the line not the space.)
- number interval label

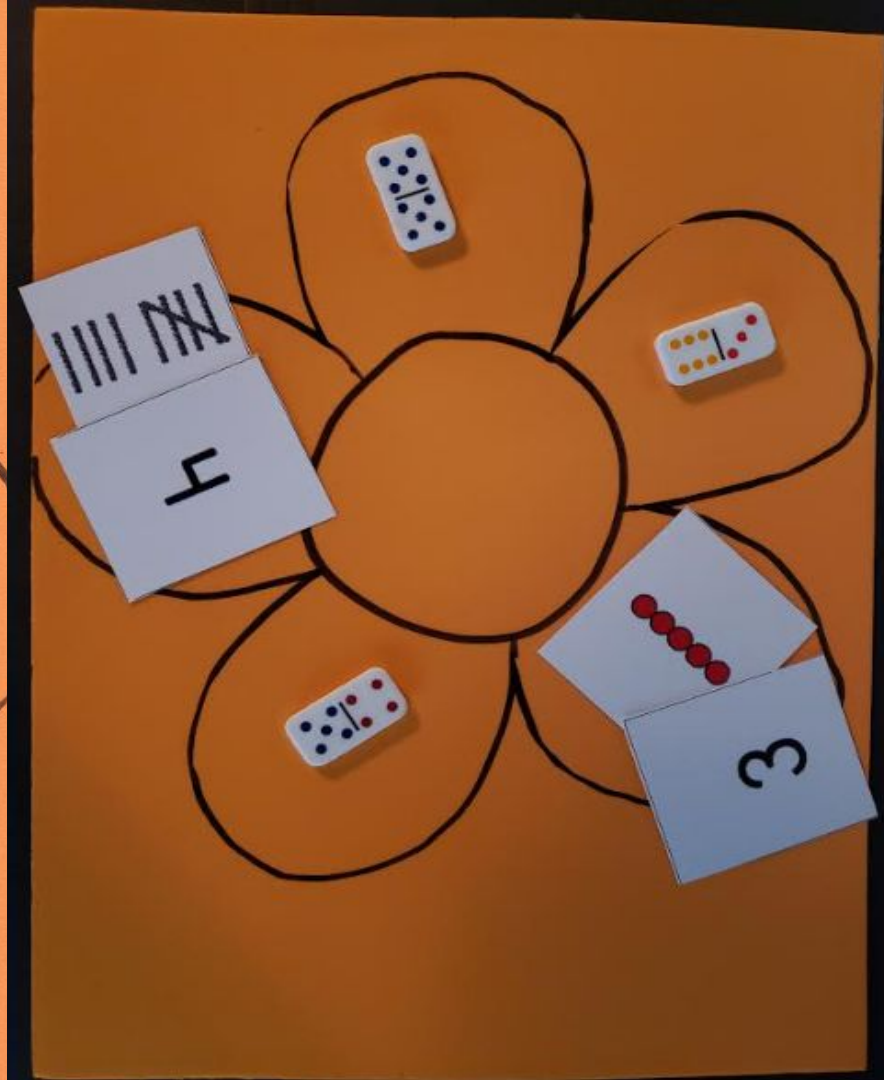
Generally the data graphed at the elementary level is discrete data (data attained by counting in whole numbers). In this case, there are always spaces left between the bars.

Important components of a graph.

Could you tie a Financial Literacy activity into a Statistical questions and data collection for analysis?

Wants and Needs

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3

# Show You Know #1!

Name _____

Where would the number "1,500" go on this number line? Make a ●.
Explain your thinking.


What number do you think is marked on this number line?
Explain your thinking.

# Resources

Math Toolbox - interactive manipulatives K-8

NZ Maths

Thinking 101

Archived US Exams - use appropriately based on outcomes.

Mathie.ca

# Any questions?