
Getting Ready to Read: Extending Vocabulary - Concept Circles

MATHEMATICS

The *Fruyer Model*, *Concept Circles*, and *Verbal and Visual Word Associations* are three examples of visual organizers that help students understand key words and concepts. A *Concept Circle* is an organizer which is divided into sections to hold words/symbols that are connected by a common relationship. The *Fruyer Model* is a chart with 4 sections which can hold a definition, some characteristics/facts, examples, and non-examples of the word/concept. A *Verbal and Visual Word Association* is also a chart with 4 sections, but with one section reserved for a visual representation. Extending vocabulary using *Concept Circles* follows.

Purpose

- Identify unfamiliar concepts and vocabulary.
- Create a visual reference for concepts and vocabulary.

Payoff

Students will:

- develop understanding of key concepts and vocabulary.
- draw on prior knowledge to make connections among concepts.
- compare attributes and examples.
- think critically to find relationships between concepts and to develop deeper understanding.
- make visual connections and personal associations.

Tips and Resources

- Preview by scanning text (see Skimming and Scanning to Preview Text, pg. 32 *Think Literacy: Cross-Curricular Approaches, Grades 7-12*).
- Include targeted vocabulary/concepts in a classroom word wall. See ***Extending Vocabulary (Creating a Word Wall)***.
- Consider using the back of a word wall card for the vocabulary/concept organizer. When necessary, students can refer to the flip-side of a word wall card to clarify their understanding.
- Develop vocabulary/concept organizers in small groups using different strategies, for example, use a graffiti strategy by posting large Fruyer Model charts (with a different word/concept on each chart). Students then move in small groups to add their knowledge to each posted chart. See ***Extending Vocabulary - The Fruyer Model***.
- Strategically place the development of the organizer within the framework of the lesson/unit plan e.g., the day before beginning a geometry unit, assign a homework activity that asks students to find pictures of hexagons, octagons, and obtuse angles from printed media. Then, during the next day's "Minds On" activity, use the pictures in the development of the organizers.
- Be cognizant of math words that have different meanings in non-mathematical contexts (e.g., mean, rational, root, odd, radical, similar).
- Use organizers for developing understanding of symbols as well as words (e.g. \leq , π).
- Ensure that students understand that organizers such as the Concept Circle do not include all possible different types of examples.
See Student/Teacher Resource, *Concept Circles – Samples*.
See Student/Teacher Resource, *Concept Circles – Templates*.

Further Support

- Encourage students to use the organizers for reference as they might use a glossary or dictionary.
- Consider allowing students to use organizers during assessments.
- Use vocabulary organizers as assessment *for* learning to plan next steps.
- Combine the features of the organizers. For example, include pictures that provide a personal association within the sectors of a concept circle.
- When students are familiar with each type of organizer, consider allowing student choice in which type of organizer is used.



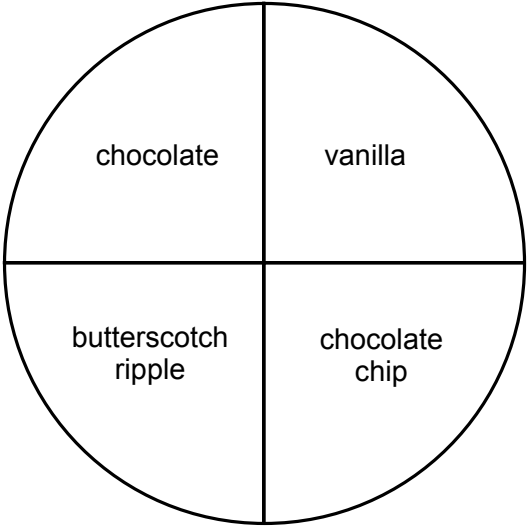
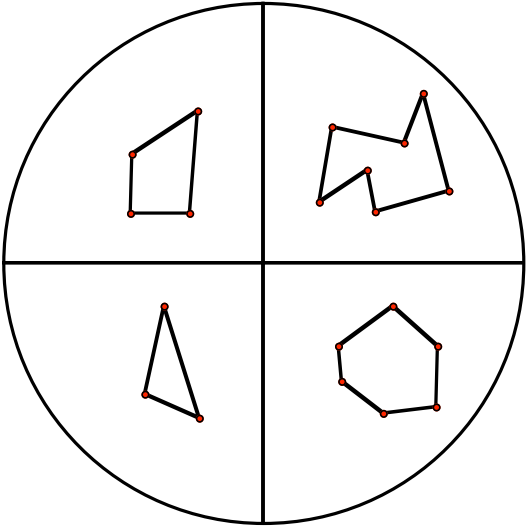
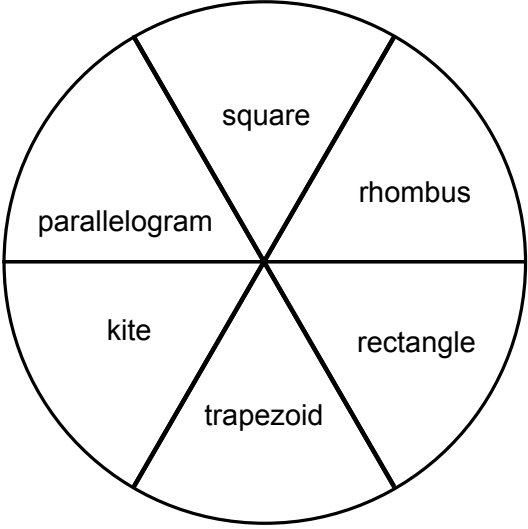
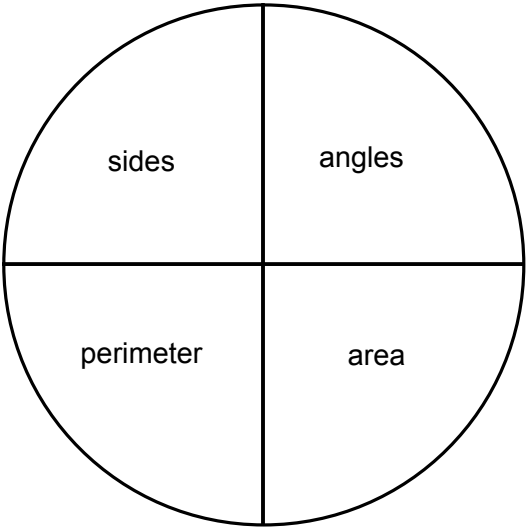
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What teachers do	What students do
<p>Before</p> <ul style="list-style-type: none"> Preview an activity or unit of study for key vocabulary and concepts. Modify the preview list using input from student preview lists. Use a graphic organizer to identify relationships among the words and symbols found during the preview and to show connections to students' prior knowledge from previous units, grades and/or student experiences. Determine which of the words/symbols are critical in developing deeper understanding of the mathematics in the activity or unit. Ensure that students understand how to read a concept circle by using a non-mathematical example (e.g. Concept: Countries – Canada, France, Germany, Japan). Choose 3 to 6 words/symbols that relate to a concept. Place the words into sections in the concept circle. Create 2 to 4 different concept circles. 	<ul style="list-style-type: none"> Preview an activity or unit of study to create a list of unfamiliar vocabulary and concepts. Name the concept or relationship shown in the sections of the example concept circle. Suggest alternative words/symbols for the sections of the circle. Suggest non-examples for the sectors. Ask questions to clarify understanding.
<p>During</p> <ul style="list-style-type: none"> Choose an Oral Communication strategy such as Think/Pair/Share (see Pair Work: Think/Pair/Share). Direct students to determine the relationship among the words/symbols in the concept circle. Engage students in a whole class discussion to reach a consensus about the relationship among the words/symbols in the concept circle. 	<ul style="list-style-type: none"> Individually record responses then share responses in pairs. Ask questions to clarify understanding Contribute to classroom discussion, giving reasons for responses.
<p>After</p> <ul style="list-style-type: none"> Ask students for other words/symbols that could be included if there were more sections. Discuss non-examples i.e. words/symbols that are connected to the concept but do not belong in the circle e.g., “triangle” is connected to “quadrilateral” because a triangle is also a polygon, however “triangle” does not belong in a “quadrilateral” concept circle because a triangle does not have 4 sides. Determine how to store the organizer for future reference e.g., on the back of a word wall card, in student notebooks, on a poster in the classroom. Discuss additional notes/pictures that can be added to the organizer. 	<ul style="list-style-type: none"> Suggest other connecting words/symbols. Suggest non-examples that have connections to the concept word/symbol but do not belong in the circle. Decide if a personal copy is needed and whether additional notes/pictures need to be included.

Notes

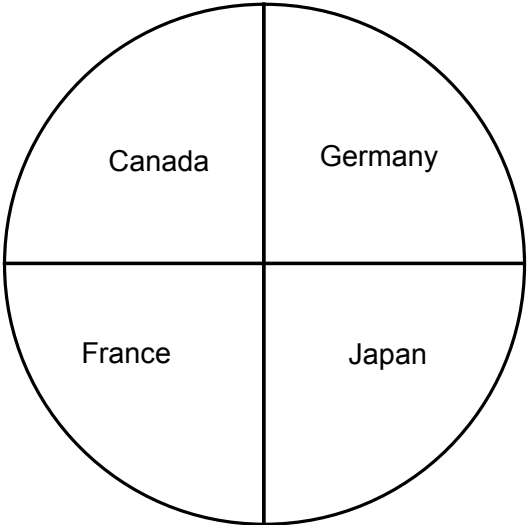
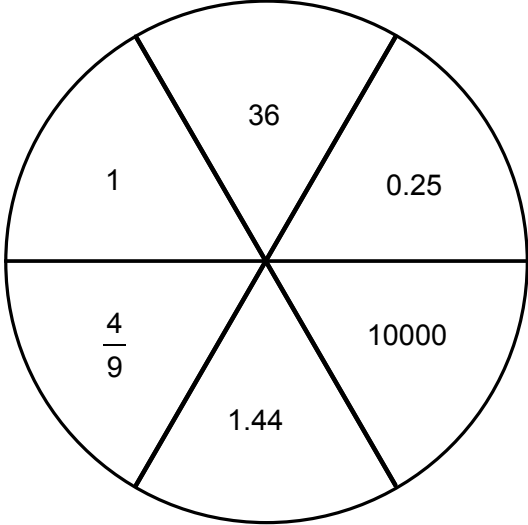
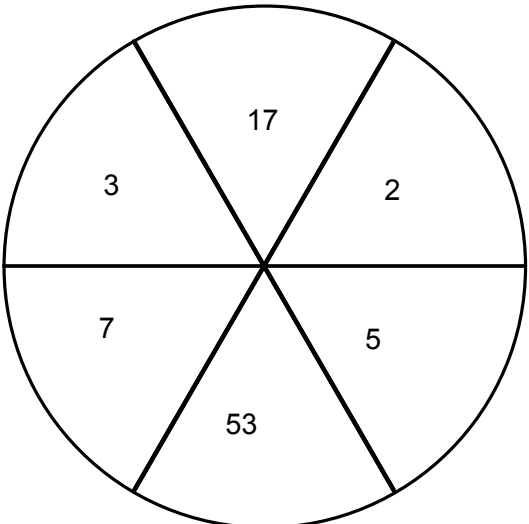
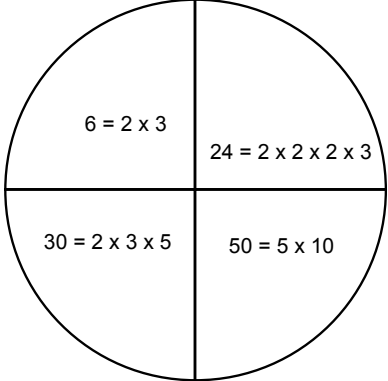
Concept Circles – Samples (Grade 7 – Geometry and Spatial Sense)

<p style="text-align: center;">Sample Concept Circle</p> <p>Concept: _____</p> 	<p>Concept: _____</p> 
<p>Concept: _____</p> 	<p>Concept: _____</p> 

Possible Answers: Ice-cream flavours, Polygons, Quadrilaterals, Measurable Attributes of a Polygon

Student/Teacher Resource

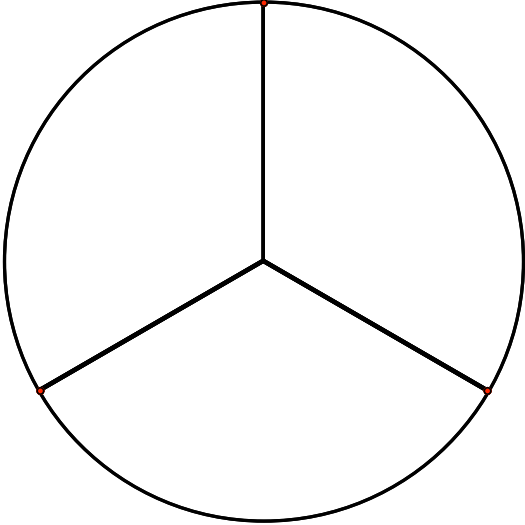
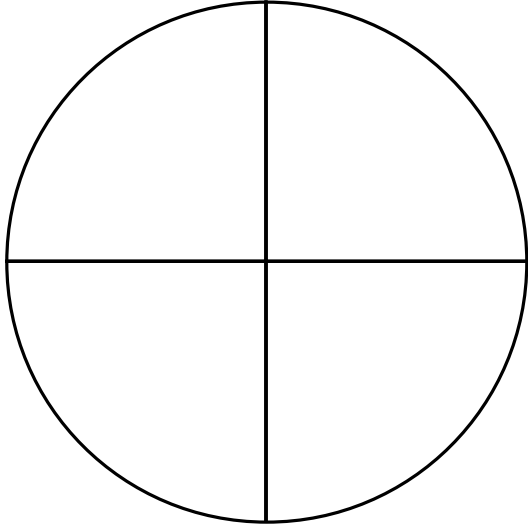
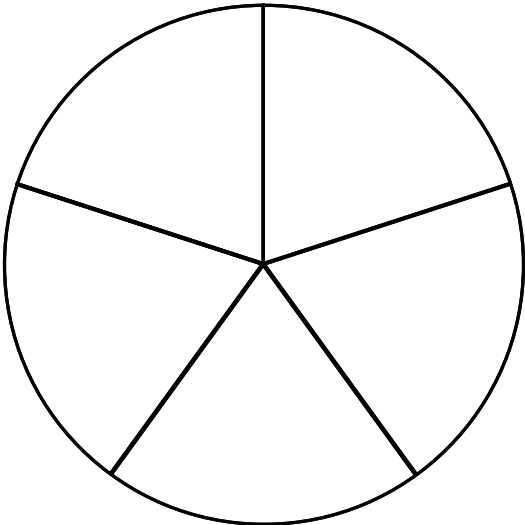
Concept Circles – Samples (Grade 8 Number Sense and Numeration)

<p style="text-align: center;">Sample Concept Circle</p> <p>Concept: _____</p> <div style="text-align: center;">  </div>	<p>Concept: _____</p> <div style="text-align: center;">  </div>
<p>Concept: _____</p> <div style="text-align: center;">  </div>	<p>Concept: _____</p> <p>One of the entries in this circle does not belong. Name the concept then change the incorrect entry to make it connect to the concept you named.</p> <div style="text-align: center;">  </div>

Possible Answers: Countries, Perfect Squares, Prime Numbers, Prime Factorization

Concept Circles - Templates

1. Put related concepts (e.g. units, shapes, words, phrases, symbols) into each section then direct students to identify the relationship among the contents of the sections.
2. Modify the strategy by:
 - a. leaving one section empty, to be filled by students;
 - b. including one non-example and asking students to find which item does not belong and to justify their answer.

<p>Concept: _____</p> 	<p>Concept: _____</p> 
<p>Concept: _____</p> 	<p>Concept: _____</p> 