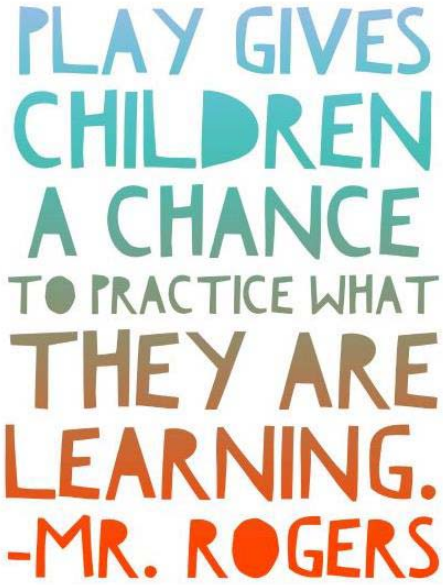
Overview

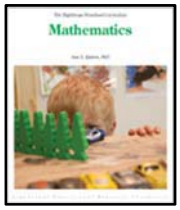
for

EPK Math

Scope and Sequence



Overview for EPK HighScope Math Scope and Sequence



At the start of the year, teachers focus on setting up their learning environment in a way that supports children's math development. Chapter 2 of The HighScope Preschool Curriculum, Mathematics, supports teachers in selecting materials for each of the learning areas.

Teachers follow the **Math Time Line** (Tab 4) as a guide throughout the year.

For planning Small Group Time, teachers will utilize the chart **Math Small Group Activities by Content Area** (Tabs 5, 6, &7). These lessons are taken from the book *Lesson Plans for the First 30 Days, Numbers Plus Preschool Mathematics Curriculum Kit,* and other HighScope sources.

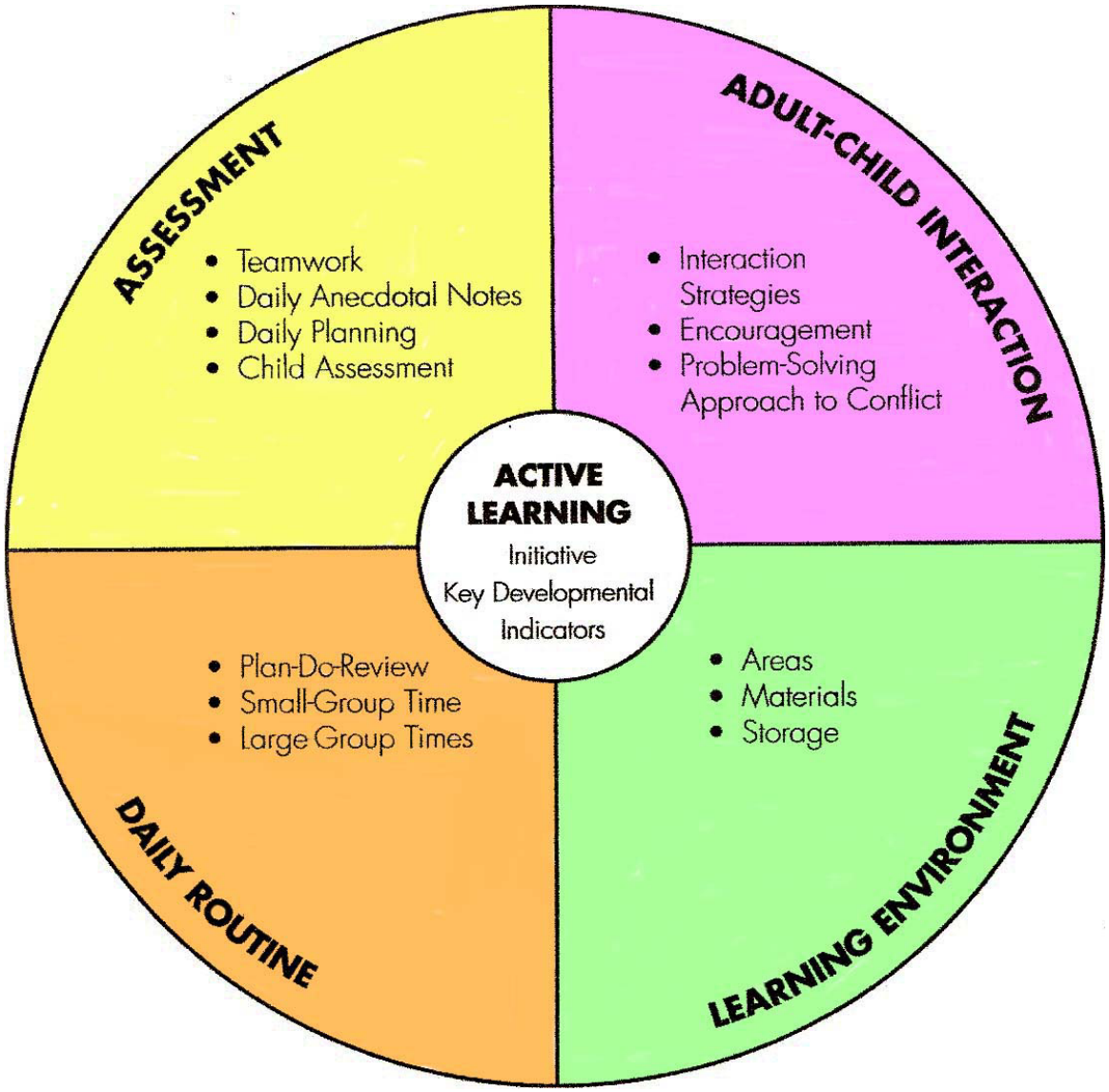
- This document is an alignment of the NYS Early Learning Guidelines, HighScope COR Advantage, and HighScope KDIs by Content Area.
- The colors in the chart align with the content tabs in the 2016 edition of the HighScope Numbers Plus kit. On the back of each Numbers Plus card, you will begin by looking at the "Earlier" developmental descriptors under "Scaffolding Learning at Each Developmental Level."
- For each lesson on the "EPK Math Small Group Activities by Content Area," the color-coding indicates the content area(s) where teachers should be observing and taking anecdotes.

Teachers can use the **Mathematical Developmental Continuum** (Tab 8) in conjunction with COR Advantage to support differentiated lesson plans.

- The **Mathematical Developmental Continuum** was designed using information from the following resources: HighScope COR Advantage, NYS Early Learning Guidelines, HighScope KDIs, RCSD Math Stage Cards, (developed in 1996) and the Common Core Curriculum Map in Mathematics (draft.)
- It identifies the mathematics milestones from beginning development to the kindergarten entry point.
- The COR Advantage levels are identified on the chart, i.e. S-0, S-1. The detailed COR Advantage Scoring Guide for the content area follows each section.
- The goal for teachers will be to move children along the continuum, which aligns with the kindergarten entry point.

The **Math Resource Guide for the Daily Routine** (Tab 10) can be used to infuse math into all the components of the Daily Routine.

The HighScope Preschool Wheel of Learning



The Five Ingredients of Active Learning

Materials: Children are offered an abundance of diverse, age-appropriate materials. The materials are open-ended, lending themselves to be used in a variety of ways. This helps to expand children's experiences and stimulate their thoughts. Since preschool children deal with the world in concrete terms, the materials will help them pose and answer math questions.

Manipulation: Children handle, examine, combine and transform materials and ideas. They make discoveries through hands-on exploration.

Choice: Children make choices about what to do with the materials based on their interests, needs and abilities.

Child Language and Thought: Children are encouraged to describe what they are doing and articulate their understanding of what they observe. They communicate both verbally and nonverbally as they think about their work and modify their exploration.

Adult Scaffolding: Adults support children's current level of thinking and challenge them to advance to the next stage of understanding and reason.

The HighScope Preschool "Wheel"

HighScope Preschool Curriculum Content

Key Developmental Indicators

A. Approaches to Learning

1. **Initiative:** Children demonstrate initiative as they explore their world.
2. **Planning:** Children make plans and follow through on their intentions.
3. **Engagement:** Children focus on activities that interest them.
4. **Problem solving:** Children solve problems encountered in play.
5. **Use of resources:** Children gather information and formulate ideas about their world.
6. **Reflection:** Children reflect on their experiences.

B. Social and Emotional Development

7. **Self-identity:** Children have a positive self-identity.
8. **Sense of competence:** Children feel they are competent.
9. **Emotions:** Children recognize, label, and regulate their feelings.
10. **Empathy:** Children demonstrate empathy toward others.
11. **Community:** Children participate in the community of the classroom.
12. **Building relationships:** Children build relationships with other children and adults.
13. **Cooperative play:** Children engage in cooperative play.
14. **Moral development:** Children develop an internal sense of right and wrong.
15. **Conflict resolution:** Children resolve social conflicts.

Key developmental indicators (KDIs) are the building blocks of thinking, reasoning, and learning at each stage of development.

C. Physical Development and Health

16. **Gross-motor skills:** Children demonstrate strength, flexibility, balance, and timing in using their large muscles.
17. **Fine-motor skills:** Children demonstrate dexterity and hand-eye coordination in using their small muscles.
18. **Body awareness:** Children know about their bodies and how to navigate them in space.
19. **Personal care:** Children carry out personal care routines on their own.
20. **Healthy behavior:** Children engage in healthy practices.

D. Language, Literacy, and Communication[1]

21. **Comprehension:** Children understand language.
22. **Speaking:** Children express themselves using language.
23. **Vocabulary:** Children understand and use a variety of words and phrases.
24. **Phonological awareness:** Children identify distinct sounds in spoken language.
25. **Alphabetic knowledge:** Children identify letter names and their sounds.
26. **Reading:** Children read for pleasure and information.
27. **Concepts about print:** Children demonstrate knowledge about environmental print.
28. **Book knowledge:** Children demonstrate knowledge about books.
29. **Writing:** Children write for many different purposes.
30. **ELL/Dual Language Acquisition:** (If applicable) Children use English and their home language(s) (including sign language).

E. Mathematics

31. **Number words and symbols:** Children recognize and use number words and symbols.
32. **Counting:** Children count things.
33. **Part-whole relationships:** Children combine and separate quantities of objects.
34. **Shapes:** Children identify, name, and describe shapes.
35. **Spatial awareness:** Children recognize spatial relationships among people and objects.
36. **Measuring:** Children measure to describe, compare, and order things.
37. **Unit:** Children understand and use the concept of unit.
38. **Patterns:** Children identify, describe, copy, complete, and create patterns.
39. **Data analysis:** Children use information about quantity to draw conclusions, make decisions, and solve problems.

F. Creative Arts

40. **Art:** Children express and represent what they observe, think, imagine, and feel through two- and three-dimensional art.
41. **Music:** Children express and represent what they observe, think, imagine, and feel through music.
42. **Movement:** Children express and represent what they observe, think, imagine, and feel through movement.
43. **Pretend play:** Children express and represent what they observe, think, imagine, and feel through pretend play.
44. **Appreciating the arts:** Children appreciate the creative arts.

G. Science and Technology

45. **Observing:** Children observe the materials and processes in their environment.
46. **Classifying:** Children classify materials, actions, people, and events.
47. **Experimenting:** Children experiment to test their ideas.
48. **Predicting:** Children predict what they expect will happen.
49. **Drawing conclusions:** Children draw conclusions based on their experiences and observations.
50. **Communicating ideas:** Children communicate their ideas about the characteristics of things and how they work.
51. **Natural and physical world:** Children gather knowledge about the natural and physical world.
52. **Tools and technology:** Children explore and use tools and technology.

H. Social Studies

53. **Diversity:** Children understand that people have diverse characteristics, interests, and abilities.
54. **Community roles:** Children recognize that people have different roles and functions in the community.
55. **Decision making:** Children participate in making classroom decisions.
56. **Geography:** Children recognize and interpret features and locations in their environment.
57. **History:** Children understand past, present, and future.
58. **Ecology:** Children understand the importance of taking care of their environment.

[1]Language, Literacy, and Communication KDIs #21–30 may be used for the child's home language(s) as well as English. KDI #30 refers specifically to ELL/Dual Language Acquisition.

HighScope Infant-Toddler Curriculum Content

Key Developmental Indicators

A. Approaches to Learning

1. **Initiative:** Children express initiative.
2. **Problem solving:** Children solve problems encountered in exploration and play.
3. **Self-help:** Children do things for themselves.

B. Social and Emotional Development

4. **Distinguishing self and others:** Children distinguish themselves from others.
5. **Attachment:** Children form an attachment to a primary caregiver.
6. **Relationships with adults:** Children build relationships with other adults.
7. **Relationships with peers:** Children build relationships with peers.
8. **Emotions:** Children express emotions.
9. **Empathy:** Children show empathy toward the feelings and needs of others.
10. **Playing with others:** Children play with others.
11. **Group participation:** Children participate in group routines.

C. Physical Development and Health

12. **Moving parts of the body:** Children move parts of the body (turning head, grasping, kicking).
13. **Moving the whole body:** Children move the whole body (rolling, crawling, cruising, walking, running, balancing).
14. **Moving with objects:** Children move with objects.
15. **Steady beat:** Children feel and experience steady beat.

D. Communication, Language, and Literacy

16. **Listening and responding:** Children listen and respond.
17. **Nonverbal communication:** Children communicate nonverbally.
18. **Two-way communication:** Children participate in two-way communication.
19. **Speaking:** Children speak.
20. **Exploring print:** Children explore picture books and magazines.
21. **Enjoying language:** Children enjoy stories, rhymes, and songs.

E. Cognitive Development

22. **Exploring objects:** Children explore objects with their hands, feet, mouth, eyes, ears, and nose.
23. **Object permanence:** Children discover object permanence.
24. **Exploring same and different:** Children explore and notice how things are the same or different.
25. **Exploring more:** Children experience "more."
26. **One-to-one correspondence:** Children experience one-to-one correspondence.
27. **Number:** Children experience the number of things.
28. **Locating objects:** Children explore and notice the location of objects.
29. **Filling and emptying:** Children fill and empty, put in and take out.
30. **Taking apart and putting together:** Children take things apart and fit them together.
31. **Seeing from different viewpoints:** Children observe people and things from various perspectives.
32. **Anticipating events:** Children anticipate familiar events.
33. **Time intervals:** Children notice the beginning and ending of time intervals.
34. **Speed:** Children experience "fast" and "slow."
35. **Cause and effect:** Children repeat an action to make something happen again, experience cause and effect.

F. Creative Arts

36. **Imitating and pretending:** Children imitate and pretend.
37. **Exploring art materials:** Children explore building and art materials.
38. **Identifying visual images:** Children respond to and identify pictures and photographs.
39. **Listening to music:** Children listen to music.
40. **Responding to music:** Children respond to music.
41. **Sounds:** Children explore and imitate sounds.
42. **Vocal pitch:** Children explore vocal pitch sounds.

Key developmental indicators (KDIs) are the building blocks of thinking, reasoning, and learning at each stage of development.

Mathematics: A Summary

General teaching strategies for mathematics

- Provide a wide variety of mathematics materials in every area of the classroom.
- Converse with children using mathematics words and terms.
- Encourage children to use mathematics to answer their own questions and solve their own problems.
- Pose challenges that encourage mathematical thinking.

Teaching strategies that support using number words and symbols

- Use numeral words to describe everyday materials and events.
- Call attention to numerals (number symbols) in the environment.
- Encourage children to write numerals.

Teaching strategies that support counting

- Count and compare everything.
- Provide materials to explore one-to-one correspondence.
- Engage children in simple numerical problem-solving.

Teaching strategies that support understanding part-whole relationships

- Provide materials that can be grouped and regrouped.
- Provide materials that can be taken apart and put back together.

Teaching strategies that support naming and using shapes

- Provide shapes for children to see and touch.
- Encourage children to create and transform shapes and observe and describe the results
- Name shapes and the actions children use to transform them.

Teaching strategies that support spatial awareness

- Provide materials and plan activities that encourage children to create spaces.
- Encourage children to handle, move and view things from different perspectives.
- Use and encourage children to use words that describe position, direction and distance.

Teaching strategies that support measuring

- Support children's interest in identifying and comparing measurable attributes.
- Encourage children to estimate quantities
- Use and encourage children to use measurement words.

Teaching strategies that support an understanding of unit

- Support children's use of conventional and unconventional measuring tools.
- Model accurate measuring techniques.

Teaching strategies that support an understanding of patterns

- Provide opportunities for children to recognize and describe patterns in the environment.
- Provide materials and opportunities that lend themselves to creating patterns.
- Look for opportunities to have fun with patterns.

Teaching strategies that support data analysis

- Provide opportunities to sort and count things and to describe and apply the results.
- Help children represent data using lists, tabulation, charts, and graphs.
- Ask and encourage children to ask questions that can be answered by gathering data.

HighScope Preschool Curriculum [i] *Mathematics* Ann S. Epstein PhD