

Kindergarten Mathematics

Key Concepts and Skills

A Parents' Guide

Below are the key mathematics concepts that we hope your child will master by the end of kindergarten.

Number Concepts

Counting Sequence

1. Your child needs to know the counting sequence from 1 to 19. He or she should be able to count forward from 1 without skipping or repeating any numbers. He or she should also be able to count backwards from 19 to 1 without skipping or repeating any numbers.
2. Your child needs to be able to count by tens. He or she should be able to count forward from 10 to 100 by tens without skipping any numbers.
3. Your child should understand that there is a pattern to counting within each decade. For example, when counting within the 20s we say 21, 22, 23, 24, 25, and so on. When counting within the 50s we say the same sequence, 51, 52, 53, 54, 55, and so on. Your child should be able to start at any decade (10, 20, 30, 40, 50, 60, 70, 80, or 90) and count on from the starting number.
4. Counting around the decade is very challenging for young children. They will often shift to another counting sequence. For example, your child may do a great job of counting from 15 to 20 saying 15, 16, 17, 18, 19, and 20. When they reach 20 they may then say 30, 40, 50, 60, etc. This is very common as young children learn to count from one decade into the next. We spend a lot of time helping your child transition around the decades. When working with your child have them start counting at a number such as 25. Have them count beyond 30. Pick another starting number such as 42 and have them count beyond 50. This will take time, but these transitions are very important.

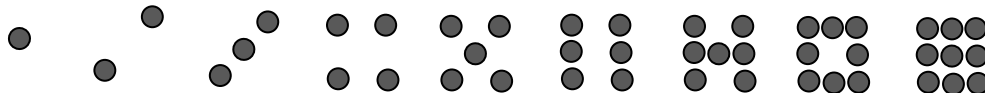
Counting Objects

5. Your child needs to be able to accurately count up to 20 objects. He or she should be able to accurately count the objects if placed in a single row, in several rows, or in a circle. He or she should be able to accurately count the objects by moving them or without moving them.
6. Your child needs to be able to accurately count up to 10 objects in a scattered arrangement, with and without moving the objects.

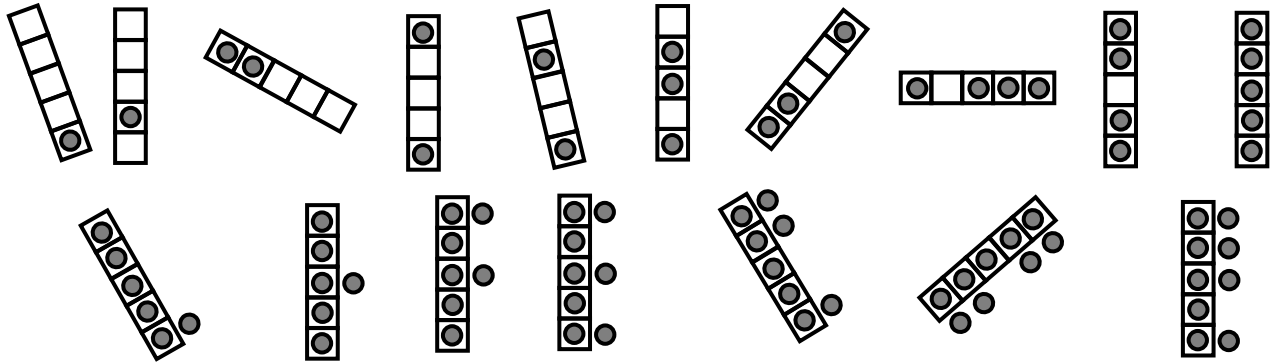
Subitize Numbers

Subitize may be an unfamiliar term but many of us do this without knowing its name. For example, when you play a game involving dice, do you recognize a 6 without counting the pips? That is subitizing. Recognizing and naming a quantity without counting the individual objects.

7. Your child should be able to subitize all of the domino dot images from 1 to 9.

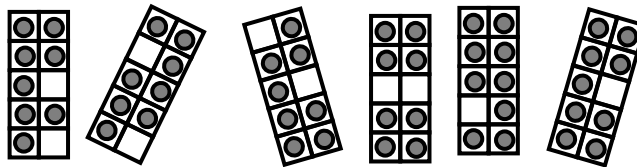


8. Your child should be able to subitize 5-frame images from 1 to 9 (in any arrangement and turned in a variety of ways). For example,



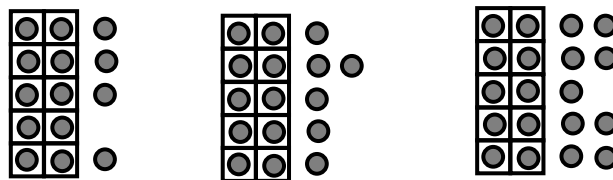
These images are used later to help your child identify how many more to make 5 or how many more than 5 a number is (such as 8). In grade 1 we use these images to introduce the addition doubling strategy. In grade 3 we use them to help children learn the Distributive Property for Multiplication.

9. Your child should be able to subitize 10-frame images from 1 to 10 in any arrangement and turned in a variety of ways. For example,



These images are used later to help your child identify how many more are needed to make 10 and combinations to make 10. In grade 2 we use these images to help your child learn how to count back change. In grade 3 we use them to build images for the multiplication facts. In grades 4 and 5 we modify the images slightly for work with decimals.

10. Your child should be able to subitize 10-frame images from 11 to 19 in any arrangement and turned in a variety of ways. For example,



These images help children understand that teen numbers are made up of a ten and some “extras” (ones). We use these images to help children learn the counting patterns within each decade. In grades 1 and 2 we use these images to build the Bridge to 10 addition strategy (Associative Property). In grades 3-5 we use similar images to build the Distributive Property for multiplication.

Comparing Quantities

11. Given 2 groups of objects (10 or fewer objects), your child should be able to tell which group has more objects, fewer objects, or if they have the same number of objects.

Teen Numbers

12. Your child should be able to show that a teen number has a group of 10 and some “extras.” For example, if given 16 beans your child should be able to make a group of 10 beans and show the 6 extras. He or she should be able to state that there is one 10 and 6 extras (ones).
13. Correctly writing teen numbers is very challenging for many children. Hearing the four first when saying fourteen leads children to write fourteen as 41 instead of 14. We hope that your child can correctly write the teen numbers by the end of kindergarten.

Introduction to addition and subtraction

Early addition and subtraction concepts

1. Your child should be able to illustrate math stories involving putting things together and adding to a starting quantity. For example,
 - 4 children were eating lunch at the picnic table. Two joined them.
 - Dylan had 5 toy cars. He got 3 more for his birthday.He or she should be able to illustrate with simple drawings, using objects, and fingers. He or she should also be able to act out the stories.
2. Your child should be able to illustrate math stories involving taking from or taking apart. For example,
 - 6 birds were sitting on a fence. 2 flew away.
 - Ashlyn has 6 cookies. She gives 2 cookies to her brother.He or she should be able to illustrate with simple drawings, using objects, and fingers. He or she should also be able to act out the stories.
3. Your child should be able to separate up to 10 objects into 2 groups in more than one way. For example, if given 8 objects, your child can separate them into 7 and 1, 6 and 2, 5 and 3, 4 and 4, 3 and 5, 2 and 6, 1 and 7, and 0 and 8 objects. He or she can draw pictures to match.
4. Your child should know numbers that go together to make 5. We use a 5-frame to help with this. For example, if shown



your child understands that 2 more are needed to make 5.

5. Your child should know numbers that go together to make 10. We use a 10-frame to help with this. For example, if shown



your child understands that 2 more are needed to make 10.

Measurement

Measurable attributes

1. It is important for your child to be able to describe the attributes of objects. For example, is an object long or short, tall or short, heavy or light, holds a lot, holds a little, fast or slow.
2. It is important for your child to be able to compare 2 objects. For example, is an object longer than another object, shorter than another object, taller, heavier, lighter, faster, slower, etc.
3. It is important for your child to understand that a larger object is not necessarily heavier and a smaller object is not necessarily lighter. For example, an inflated balloon may be lighter than a cup. A paper weight would be heavier than an inflated balloon.
4. It is important for your child to understand that we can talk about one object being longer than another object even though it isn't very long. One object can be heavier than another object even though it isn't very heavy.

Sorting and Classifying

1. Your child should be able to sort items into different groups and name the groups. This could be by color, shape, size, etc. At home he or she could sort cutlery into spoons, forks, knives and name those groups. He or she could sort groceries into groups such as box goods, can goods, etc. He or she could sort those same groceries into things that go in the cupboard and things that go in the refrigerator. It is important for your child to understand that the same objects could be sorted in different ways.

Simple Graphing

1. Your child should be able to identify which has more or which has fewer when shown a simple yes/no graph. (For example, your child may be asked if he or she walks to school. He or she would answer the question as yes or no. Your child could then answer if more children walk to school or don't walk to school.

Geometry

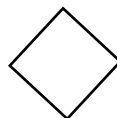
Position Language

1. It is important for your child to correctly place objects when asked to place them above, below, beside, under, over, in front of, behind, and next to.
2. It is important for your child to be able to describe the position of an object using terms such as above, below, beside, under, over, in front of, behind, and next to.

3D & 2D Shapes

3. Sorting grocery items and other real-world objects (balls, cones, etc.) helps children explore the attributes of 3D shapes. Do the objects stack? Roll? Have curved sides? Have a point? We introduce the terms such as cylinder, cone, sphere, and rectangular prism, but we do not expect your child to use them this year. However, many children will begin to use these terms.
4. It is important for children to understand that 2D objects have no thickness. We begin to develop this concept in kindergarten. We introduce rectangles before squares so that children understand that squares are special rectangles. They are rectangles with equal sides.

5. It is important for your child to understand that we can turn a square in any orientation and it is still called a square. Some children change its name to diamond when turned.



6. It is important for your child to understand that triangles can be turned in any orientation and still be triangles. They do not have to sit on a side.

