



SMARTS

EDUCATION AND ENRICHMENT

MATHEMATICS TIPS FOR PARENTS

(Pre-Kindergarten to Second Grade)

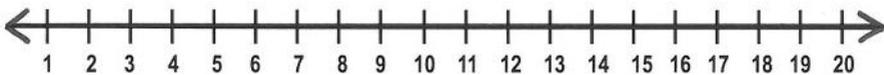


INTRODUCTION:

. Mathematics is an important part of our life. Numbers are involved in everything weight, counting, recipes and so on. Your child's ability to learn and adopt numbers starts from their early years. It is best if we start teaching these strategies as early as pre-kindergarten. The trick is to do these exercises both **orally** and **visually**, use coins or similar looking objects as visual aid. Make it fun by talking to them and let them know the joy of learning. These tips are easy to apply in day to day life activities, while interacting with your kids in general.



Number-lines are best example to explain order of numbers to your kid.



This booklet gives tips of easy learning for your kids.

CONTENTS:

- Counting & Grouping
- Fractions
- Addition and subtraction
- Problem solving
- Money
- Time
- Vocabulary

COUNTING and GROUPING:

The most basic skills in mathematics are *counting* and *grouping* (“seeing” numbers in groups). To develop counting skills, help children learn to count *from* any number, *to* any number, *by* any number. Do all counting forward and backward. Use visual aid like coins or crayons or fruits.

Count by

- 1s (0, 1, 2, 3,4,..24..120..),
- 2s (2, 4, 6, 8....88,...264..),
- 5s (5, 10, 15,...45...180...),
- 10s (10,20,30,...100...200),
- try numbers like 3s, 4s, 6, 11, etc.

To expand children’s thinking processes and help them “see” groups, ask questions like:

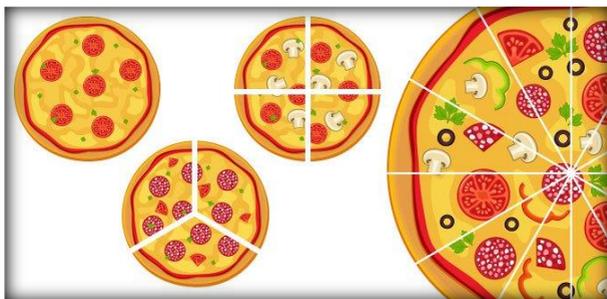
- “5 and how much more make 10?” “70 and how much more make 140?” “700 and how much more make 1100?”
- “10 and how much more make 23?” “10 and how much more make 43 ?”
- Just make up simple examples and make them count and let them understand the significance of numbers and group of

numbers.

Your little one doesn't care if your voice is off-pitch, so don't be afraid to sing out a song together. Start with simple nursery rhymes like "One, Two, Buckle My Shoe" or "Five Little Ducks," then get creative and change the words to a familiar tune. Being more interactive with your kid, while teaching helps them understand better than reading from a book. This way they are creative and it is easier for them to imagine different objects in their mind while reading or listening.

FRACTIONS:

Explain every fraction in terms of pizza or pie to make fractions familiar. When deciding on a method of how to teach fractions, we need to use fractional analogies that your kid will immediately recognize. So pizza or a pie are the perfect instrument needed to teach the concept of the fraction.



- Long before introducing

words like *numerator* and *denominator*, teach children that half means "2 parts the same," and have them use this knowledge to figure out things like:

- a. How much is the half of 10, 14, ...200...300fed
 - b. Half of what number is 4? ...25? ...50?
- If your kid is doing well and understands fractions for even

numbers then try odd numbers.

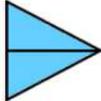
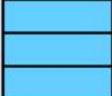
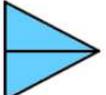
a. How much is half of 3? ...11? ...15? ...21? ...49? ...99? ...175?

b. How much is 7 take away 2?

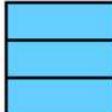
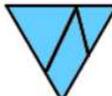
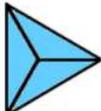
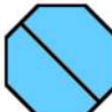
c. What part of 12 is 6? ...is 4? ...is 3? ...is 1? ...is 9? ...is 8? ...is 12? ...is 24? ...is 30?

Ask them these simple questions:

- Circle the shape that shows two halves

1. 		2. 	
3. 		4. 	
5. 		6. 	
7. 		8. 	

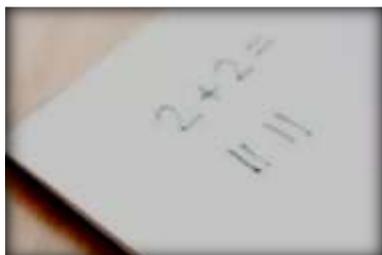
- Circle the shape that shows three thirds

1. 		2. 	
3. 		4. 	
5. 		6. 	
7. 		8. 	

The ability to “see” a whole as being a collection of parts should be learned in the early grades.

ADDITION AND SUBTRACTION:

Kids can add and subtract numbers with various techniques. Ask them to represent each number with lines. For example two lines represent the number 2. This technique is proven to be really good. To help with double or triple digit additions ask them to represent each number according to their units. For example use circles ‘o’ for tens digits.



Here is the structure of the process of learning addition and subtraction facts.

Addition

“Doubles”

1) $5 + 5 = \underline{\quad}$ 2) $9 + 9 = \underline{\quad}$

“Doubles plus 1” “Doubles minus 1”

3) $5 + 6 = 5 + 5 + 1 = \underline{\quad}$ 4) $8 + 7 = 8 + 8 - 1 = \underline{\quad}$

“Counting on (start at x and count up by y)”

5) $7 + 2 = \underline{\quad}$

6) $8 + 3 = \underline{\quad}$

“Breaking down numbers”

7) $6 + \underline{\quad} = 9$

8) $\underline{\quad} + 7 = 11$

“How far apart are two numbers?” “How far is it from x up to y?”

9) How far apart are 6 and 10? 10) How far is it from 9 up to 12?

“Combinations that make 10”

11) $8 + 2 = \underline{\quad}$

12) $6 + 4 = \underline{\quad}$

“10 plus a number”

13) $10 + 7 = 17$

14) $10 + 9 = 19$

“10 plus what number?”

15) $10 + 6 = \underline{\quad} = 16$

16) $10 + \underline{\quad} = 19$

“putting it altogether”

17) “ $8 + 6 = \underline{\quad}$ ”: “8 plus how much makes 10” (2) ... [$6 - 2 = 4$] ... 10 plus the left-over (4) ... $10 + 4 = 14$

18) “ $9 + 7 = \underline{\quad}$ ”: “9 plus how much makes 10” (1) ... [$7 - 1 = 6$] ... 10 plus the left-over (6) ... $10 + 6 = 16$

Subtraction

Subtraction has two aspects:

- the notion of “how much is left,” and
- the notion of “how far apart are the two numbers” (*how*

far is it from the smaller number up to the bigger number).

Use the notion of “how much is left” when the numbers are fairly far apart, and count down.

For example, “ $12 - 3$ ” is best thought of as “counting down from 12 by 3.”

On the other hand, use the notion of “how far apart are the two numbers” when the numbers are fairly close to each other, and count up.

For example, “ $12 - 9$ ” is best thought of as “how far is it from 9 up to 12.”

Make them practice problems with different numbers.

Problem Solving

Problem solving skills are important for kids. It helps them understand wide range of word problems if they are trained early at school or home. Start with easy questions; let the level of difficulty increase as the child’s ability grows.

Ask children questions like:

- “I’m 34 years old, and you are 6. How old will I be when you are 10?”
- “If 3 pieces of candy cost 25 cents, how much do 6 pieces cost? ...9 pieces?”
- “How many pieces of candy can you buy for a dollar?”
- “Which would you rather have: 1 piece of a candy bar cut into 3 equal– size pieces, or 1 piece of the same candy bar cut into 6 equal–size pieces? Why?”
- “How can 3 kids share 6 candy bars equally?”
- “A boy and a girl went to the movies. They spent half of

the money they had for their tickets, and they spent half of what they had left on snacks. Finally, they had \$5.00 left. How much money did they start with?"

Questions like these help a child's thought processes become animated. Try it. You'll see!

Money

By the end of second grade, children should know the names and values of the

U.S. coins:

- a penny = 1 cent ☐ a quarter = 25 cents
- a nickel = 5 cents ☐ a half dollar = 50 cents
- a dime = 10 cents ☐ a whole ("silver") dollar = 100 cents

By the end of third grade, children should have learned the basic equivalents:

- 20 nickels = 10 dimes = 4 quarters = 2 half dollars = 1 dollar
- 1 dime = 2 nickels
- 1 quarter = 5 nickels
- 1 half dollar = 5 dimes = 10 nickels

Other combinations, like 3 quarters = 15 nickels and 15 dimes = 6 quarters, should also be explored. Next come questions like, "How many dimes have the same value as 6 quarters? ...40 quarters?"



Counting piggy banks full of coins is an excellent way to develop these skills.

“Making Change” is a skill that can be introduced in late first grade or early second grade, and can be mastered by fourth grade. Children should learn to make change from:

- a dime
- a quarter
- a half dollar
- one dollar
- two (...five ...ten ...twenty ...hundred...) dollars

Questions can take the form of :

- “You have a dime. If you spend 6 cents, how much will you have left?”
- “If you want to buy something that costs 50 cents, and all you have is 47 cents, how much more do you need?”
- “If you want to buy something that costs a dollar, and all you have is 78 cents, how much more do you need?”
- “If you buy something that costs 18 cents, how much change will you get from \$2.00?”

Other money-related questions:

- “A roll of dimes is worth \$5.00. How many dimes are in a roll?”
- “A roll of quarters contains 40 quarters. How much is

the roll worth?” Money is the best model of our base

10(decimal) number system.

TIME:

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In our modern era it is tempting to let young children learn to tell time on a digital watch or a digital clock.

Digital timepieces definitely have their place, after students have learned all of the benefits that can be derived from learn to read an analog clock.

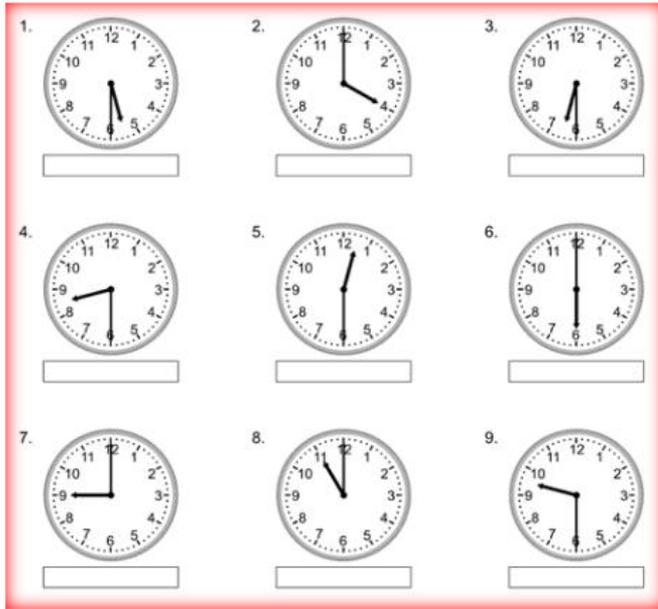


Here are a few of the benefits of learning to tell time on an analog clock.

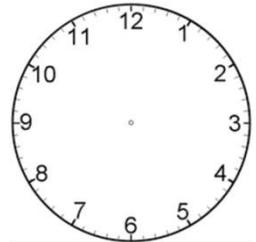
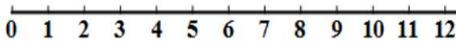
- “Half past,” “quarter ‘til,” and “three quarters of an hour” are easy to visualize on a “round” clock.
- The notions of “clockwise” and “counterclockwise” are transparent on an analog clock.
- The imagery of the “big hand” sweeping through 90° , 180° , 270° , and 360° cannot be reproduced on a digital watch.
- The visualization of the angles between the hands of an analog clock is an excellent pre-Geometry skill (90° at 3:00 and 9:00, 120° at 4:00...)
- Counting by 5s, 10s, 15s, 30s, and 60s is greatly facilitated by being able to see the numbers on a round clock.
- They will understand the significance of hours, minutes and seconds also.
- The below is to practice and more can be made up by the parent themselves.

Enter time in the given space below each diagram:

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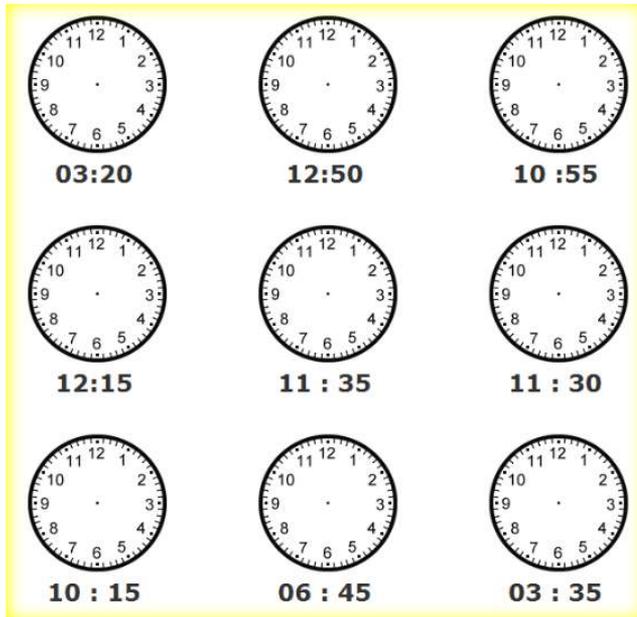


Introduce a number line which contains the numerals one through twelve. Bend the number line into a circle to resemble a clock face.



Number-line representing 12 hours of a clock

Make your kid draw hours and minutes hand looking at the time:



Teaching concept of time is crucial as it helps them understand the importance of a time table and time management for problem solving too.

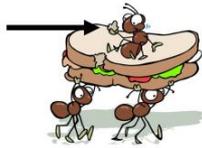
VOCABULARY:

Mathematics includes a lot vocabulary. This is when kids are to be prepared to understand the problem. Kids need to be aware of different words and their meanings, which may differ according to their application. For example a square is a 2D figure with four sides as its boundaries. But when 6 squares of equal dimensions are combined we can generate a cube. So these analogies are very important for kids to process while trying to solve problems.

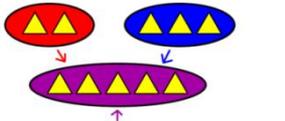
These are few vocabulary cards :

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above



add



addend

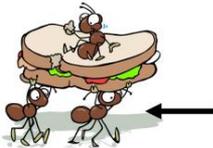
$$5 + 3 + 2 = 10$$

addends

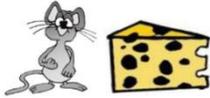
behind



below



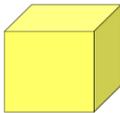
beside



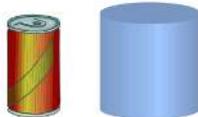
cone



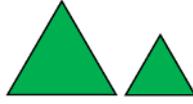
cube



cylinder



different



Different size but same shape.

heavier



height



Coming Soon

There are more mathematics vocabulary cards coming soon and will be available online on smarts club website. These cards are to be practiced on daily basis one per day and then increase according to how well your kid is doing.



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