

Number Sense Activities

In addition to traditional calendar math using today's date:

Write the date using numbers and abbreviations

*Oct. 25, 2009 and 10/25/2009

Write the date in standard, word and expanded form

Skip counting to the date and relating this to multiplication

*We counted 3 groups of 5 to reach 15; $5 + 5 + 5$ or 3×5)

Writing number sentences using the date to show sum, difference and product

*Give me a number sentence with a sum of 12, a difference of 12, a product of 12

Learning math vocabulary (sum, difference, product, addend, expanded form, digits)

Creating fact families using the date

Introduce the concept of equivalency using the date ($8 + 4 = 15 - 3$)

Beginning algebraic thinking by solving for x, y, whatever ($10 + N = 15$)

Drawing square numbers when they occur on the calendar (4 columns of 4 rows = 16)

Introduction of prime and composite numbers as they occur

Writing the date with Roman Numerals

Geometry for each day (1 = point, 2 = parallel lines, 3 = triangles [I do introduce scalene, isosceles, equilateral, acute and obtuse], 4 = quadrilateral, rhombus, trapezoid, etc. , 5 = pentagon, 6 = hexagon, 7 = heptagon, 8 = octagon, 9 = nonagon, 10 = decagon, etc.)

Give clues to identify numbers on the calendar (even, multiple of 2, etc)

Use calendar cover-ups for number patterns

Number Sense Activities

Calendar Cover-Up Game - Primary Education Oasis

-number sense, facts practice, order of operations, writing number sentences

Materials: deck of cards, index cards to cover the dates, white boards, markers

Hold up two cards (Jacks = 11, Queens = 12, Kings = 13, Aces can be used as 1 or 0)

1. Have the teams write as many different number sentences as they can to equal a date on the calendar within two minutes (for example, if I hold up a 4 and a 6, students can write number sentences for $6+4=10$, $6-4=2$, $6\times 4=24$, $4\times 6=24$, $4+6=10$). Both cards must be used.
2. Hold up their whiteboards and check for accuracy. Credit is only given if a complete number sentence is written. A point is awarded to each team for each correct number sentence.
3. An index card is placed over the number(s) on the calendar that were given as correct answers (in the above example, 10, 2, and 24 would be covered). These dates/numbers are no longer available to use as sums, differences, products or quotients. This is where it starts to get tough.
4. As the calendar begins to get halfway covered, I will start to hold up 3 cards at a time. All cards must be used. This allows students to use multiple addends, parenthesis, etc. to form their number sentences. Excellent differentiation. Ace, 5 and 4 could be written as:
 - a. $(0 \times 5) + 4 = 4$
 - b. $(5 - 1) \times 4 = 16$
 - c. $5 + 1 - 4 = 2$
 - d. $5 \times (4 + 1) = 25$
5. I end the game when the calendar is mostly covered-up by allowing each team to earn a point for a creative way of showing the remaining numbers, whether by drawing a polygon with that many sides, showing it as a square number, a number sentence, Roman numerals, etc. You can really see their growth in number sense as the students become more adept at manipulating numbers throughout the year.

Number Sense Activities

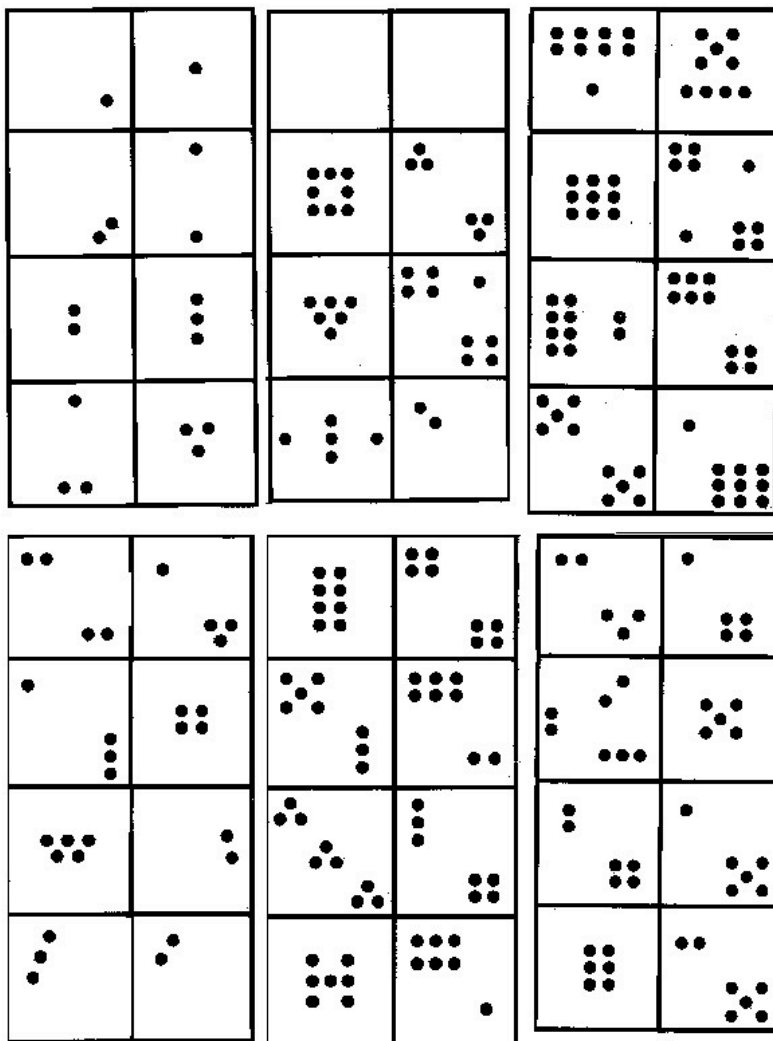
Dot Cards - from Montana Math

Description

Needed Materials: Overhead dot cards or cards large enough for the entire class to see, a piece of paper and writing utensil for each student. (I make my own on card stock)

Directions:

1. Students work individually with paper and pencil to record their answers, but sit in small groups so collaboration is possible.
2. At the top of their papers, the students write "I saw..." on the left side and "I know this is right because..." on the right side.
3. Show a dot card for about 3-5 seconds, and then ask the students to record what they saw and how they know it is right.
4. After a minute or two, facilitate a discussion of responses by calling on students for their answers or have the small groups compare results. You may want to record various answers at the chalkboard.



Number Sense Activities

Get to 1000! - from Montana Math

This idea was taken from Developing Number Sense by Rusty Bresser and Caren Holtzman.

Description

Needed Materials: One 6-sided die for each pair of students, a piece of paper and a pencil for each student.

Directions:

1. Students play in pairs. Each game consists of 10 rolls (have them number their papers from 1 to 10).
2. The die is rolled (take turns) and each student decides separately whether to multiply the die face by 1, 10, or 100. The number sentence each student chose is recorded on his sheet of paper.
3. Players continue to roll, multiply, and record the number sentences until all 10 spaces have been filled. (Each player will have rolled 5 times.)
4. Each player finds the sum of his products. The winner is the one whose sum is closer to 1000 (over or under).

The mathematical goals are for the student to think about numbers, their magnitude, and their relationship to 1000. These are part of developing good number sense. Discussing strategy enhances mathematical reasoning and can also introduce the element of probability.

Number Sense Activities

Going Up, Coming Down - from Montana Math

Materials: Two decahedron (10-sided) dice for every 4 students, a piece of paper and writing utensil for each team (2 students).

Directions:

1. Two students make a team; two teams play the game. The “going up” team will start at 0 and add to reach a target number. (In the fourth grade we used 100). The “coming down” team will start at the target number and subtract to reach 0. Teams should switch roles between games.
2. One partner rolls the dice. The other partner must independently multiply the faces. Together the partners determine the sum (or difference) of the product with their running score. All calculations are done mentally with verbal explanations of how the students know their answers are right. The number sentences are recorded on the team paper, but the paper is not used for calculation.
3. The opposing team is responsible for catching any mistakes. If a team misses the multiplication fact or adds/subtracts incorrectly and the other team catches them, the playing team loses that opportunity to “go up” or “come down”.
4. Play ends when either team goes beyond their goal, however, both teams must have rolled the same number of times. (If the team that went first goes beyond their goal first, the other team gets one more roll.)
5. The winning team is the one that is the closest to their target, above or below.

The mathematical goals are to practice multiplication facts, to practice mental addition/subtraction and justification of answers, and to think about the magnitude of numbers and their relationship to the team target. These are a part of developing good number sense. Class discussion can also introduce the element of probability.

Number Sense Activities

Games

Guess My Number (Bresser & Holtzman, 1999)

Choose a secret number and tell children a range that your number falls within. You can start small, with 1 to 10, or use a larger range (such as 1 to 100, 25 to 75, or 150 to 250). Have children guess your number and tell them whether their guess is larger or smaller than your number. Children will quickly develop strategies that help them zero in on your secret number. To extend this game, choose a secret number from a wide range such as 1 to 500 and give one clue, such as that it is even, it ends in 4, or the sum of the digits is 9; then ask students to start guessing.

Stand Up and Be Counted (Bresser & Holtzman, 1999)

Ask children to describe the number 25 in as many ways as they can, as with the "number of the day," and record their ideas as an example. Then have each child draw from a bag of squares numbered 1 through 100 and write down as many ways as they can to make the number they drew. Ask a volunteer to stand up and read one statement at a time about his or her number. If that statement is true for other children's numbers, they stand up. If it is not true, they remain seated. Through discussion, the children can begin to focus on the characteristics of the numbers and their relationships.

Pairs of Ten - Central Kitsap School District

This game is for those learning to add. Cut out 20 small squares of paper and ask your child to write the digits 0 through 9 (two sets) on the squares. Turn the squares face down, mix them up, and put the scattered pile between you. In turn, pick up one square at a time, turn it over and keep it. Each time two numbers have a sum of 10, remove the pair from your pile and score a point. The game is over when all squares have been picked. The person with the most pairs wins the round. After a couple of rounds, your child will notice that nothing can be paired with 0.

Name the Number - Primary Education Oasis

For every day on the calendar, ask the children to give names to the number. For example, 25 could be named as 2 tens and 5 ones, a square number, a composite number, two dimes and one nickel, $\frac{1}{4}$ of 100, and so on.

Number Sense Activities

The Estimation Station - Primary Education Oasis

Create a place in your classroom just for estimation.

Show the students what ten beans in the jar would look like. This gives them an anchor number. Then show them twenty, thirty, and on up to 100.

Every week, fill the jar to your desired level and allow the students to write their estimations in their journals. You can even have them label a drawing of the jar, show where their anchor number is, and show their estimation. Be sure to discuss the reasonability of their estimations at the end of the week.

Repeat this activity every week and watch your students estimations become very accurate!

Newspaper Numbers - K-8 Region Ten Mathematics Web Site

The newspaper is a great source for finding numbers to practice the skill of reading numbers. The Sports page, which is popular with many children, is full of numbers. Have your child look through the paper and find numbers. Have them read them out loud. Is that number an estimate or an exact answer? How do they know?

More or Less

Take 20 counters - a mixture of red and yellow. Shake them on the table. Are there more reds or more yellows? How do you know?

Write number sentences to show your answer.

Race to 100 (or 1000)

Materials: 2 large foam dice, recording sheet

Students roll the dice to make either an addition sentence or a multiplication sentence. The sum or product is recorded. After each roll, the new sum or product is added to the previous one. The first student to reach 100 (or 1000) wins the race.

Number Sense Activities

Squeeze Play

Materials: 2 sets of 0-9 cards for each player

Each player takes 6 cards and makes two, three-digit numbers. You want to get as large a range as possible between the two numbers. After both players have made their numbers, three more cards are turned over. The first card turned in the 100's place, the second turned is the 10's place, and the third card turned is the 1's place. A point is scored if the third number falls between the first two they have made.

Guesstimate

Materials: 2-4 sets of 0-9 cards

Players face each other and each draws two cards. Without looking at them, they hold them on their foreheads for the other player to view. Taking turns, the players try to guess the number the opponent is holding. They ask, "Is it a ___?" The other player responds by using the words "less than," "greater than," or "equal to." The number of guesses used is the number of points earned. At the end of a number of determined rounds, the player with the least number of points wins.

Differentiate the game by adding more numbers or asking only yes or no questions, such as: Is it greater than 20? Is it odd? Is it a prime number? Is it a multiple of 3?

Roll a Rectangle (multiplication)

Materials: Pair of number cubes labeled 1-6, grid paper, crayons

Players take turns rolling the number cubes and shading a rectangle on grid paper with those dimensions. They announce the number of squares shaded (i.e. if you roll a 3 and a 2, draw a rectangle with a length of 3 and a width of 2. That gives 6 points because there are 6 shaded squares). The second player then takes his/her turn and shades in a rectangle on the same paper. Require students to record the multiplication equation inside each rectangle shaded in. Keep a running total of points for each player. The game ends when a player can no longer shade in the rectangle rolled.

Number Sense Activities

The Product Game

Lappan, Fey, Fitzgerald, Friel and Phillips. (1996). Prime Time: Factors and Multiples. Connected Mathematics: Dale Seymour Publications.

Materials: Product Game Board, 2 paper clips, colored chips for each player

The first player places a paper clip on a number in the factor list. The second player places the other clip on a factor (it can be the same one) and then covers the product on the game board with a chip. The first player then moves either one of the clips to a different factor and covers the new product with a marker. The game continues with each player moving a clip and covering the product. If the product has already been covered, the player cannot place a marker. The winner is the first player to cover four squares in a row - vertically, horizontally or diagonally.

1	2	3	4	5	6
7	8	9	10	12	14
15	16	18	20	21	24
25	27	28	30	32	35
36	40	42	45	48	49
54	56	63	64	72	81

Factors

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

Number Sense Activities

Place the Point - Place Value

Brevard Inservice Teaching Center. [Numeration Workshop](#).

Materials: Place the Point board, 2 sets of 0-9 cards, colored chip for each player

Each player can put a chip on any number. The cards are placed face down in a pile. The first player picks a card and can move only one space in any direction, but must move to a space that contains the number on his/her card. Points are determined by the place value of the number. For example, a player's chip is on 830. She draws a "9." She can move to 349 for 9 points since it is in the ones place or the 590 for 90 points since it is in the tens. Each player gets 5 turns. If a player draws a card that cannot be used, no move is made. If a 0 is drawn, the player can move to a new spot but no points are gained. Player with the highest score wins.

130	713	542	985	425	249	476
316	2,308	867	960	1,567	609	176
713	542	958	542	590	476	248
790	613	591	349	830	671	528
824	179	645	825	325	806	718
956	417	832	1,470	879	102	910
2,130	238	382	630	409	315	2,314

Number Sense Activities

10	90	25	75	33	67
47	53	55	45	2	98
76	24	88	12	5	95
40	60	15	85	77	23

Concentration 100

McIntosh, Reys, Reys & Hope. (1997). Number SENSE: Simple Effective Number Sense Experiences Grades 4-6. Dale Seymore Publications.

Materials: 12 pairs of cards with sums of 100. Example: 10 & 90, 55 & 45, etc.

Place all cards face down in a rectangular array. Players take turns turning over two cards, mentally computing the sum, then announcing it. If the sum is 100, the player keeps the cards and takes another turn. If the sum is not 100, the cards are turned face down and the other player gets a turn. The winner is the player with the most 100 matches.

Differentiate the play by making cards where 3-4 cards make a sum of 100.