THE LEARNING WALL D

The 3 – 5 MATH Concept Learning Bricks packet is organized alphabetically, with each concept explanation (concept, question, answer, gesture, and examples) listed first and the Concept Learning Brick visual listed behind the explanation. This section contains **24** Concept Learning Bricks from the C section. Please refer to The Learning Wall Introduction and Explanation at www.PEPnonprofit.org for details on how to implement these items in your classroom. * NOTE THAT THE STEPS OF DIVISION BRICKS ARE A LIGHTER SHADE OF BLUE, BECAUSE THEY NEED TO BE TAUGHT AND DISPLAYED TOGETHER.

Dd

decade, decimal equivalent, decimal point, denominator, descending order, diameter, difference, dime, distributive property, dividend, divisible, division family (steps of division – six bricks to be taught together), division of fractions, division sentence, divisor, dollar, dollar sign, double bar graph

Decade

Question: What is a decade?

Answer: A decade is a time period of ten years.

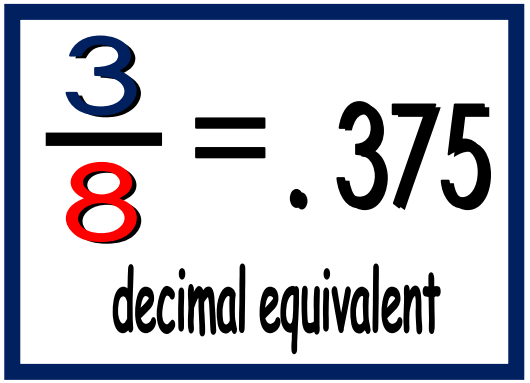
Gesture: Hold up ten fingers.

Examples: Make a chart with different decades in the heading: 70s, 80s, 90s, 2000s, 2010s. Across the left margin, write some categories like: Popular music, popular movies, TV shows, fashion, president, technology, etc…. To give the students a sense of how much can change in a decade, you can also show them what telephones and computers looked like in the 80s. Show as many pictures or real objects as possible.

decade

www.PEPnonprofit.org

Decimal Equivalent

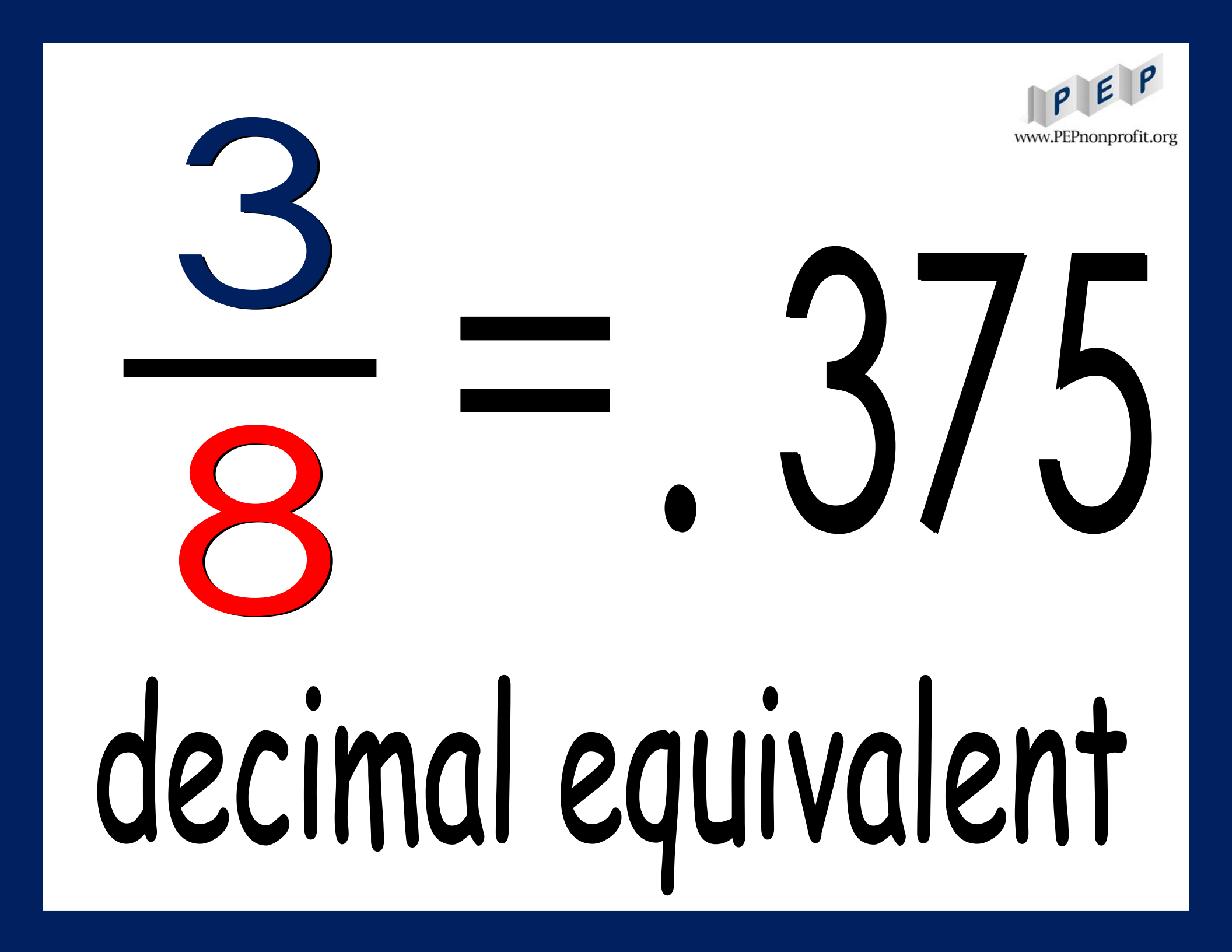


Question: What is a decimal equivalent?

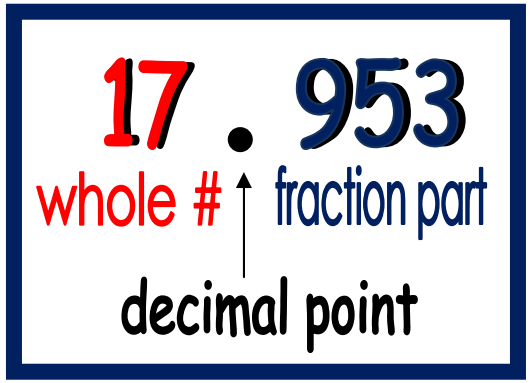
Answer: A decimal equivalent is what a fraction or mixed number is equal to in decimal form.

Gesture: Hold one finger up, make a slash for the fraction line, then hold up two fingers (one over two). Hold both arms parallel to the ground (equal sign). Hold out fist (decimal point) then a five fingers in one hand and make a zero with the other (.50).

Examples: Make a set of decimal equivalent cards (enough for the entire class). For each set, one card is the fraction or mixed number and the second card is the decimal equivalent. Pass out the fraction – mixed number cards to half the class and the decimal equivalent to the other half of the class. Have kids get up and try to find their match and partner up.


3/8 = .375
decimal equivalent
www.PEPnonprofit.org

Decimal Point

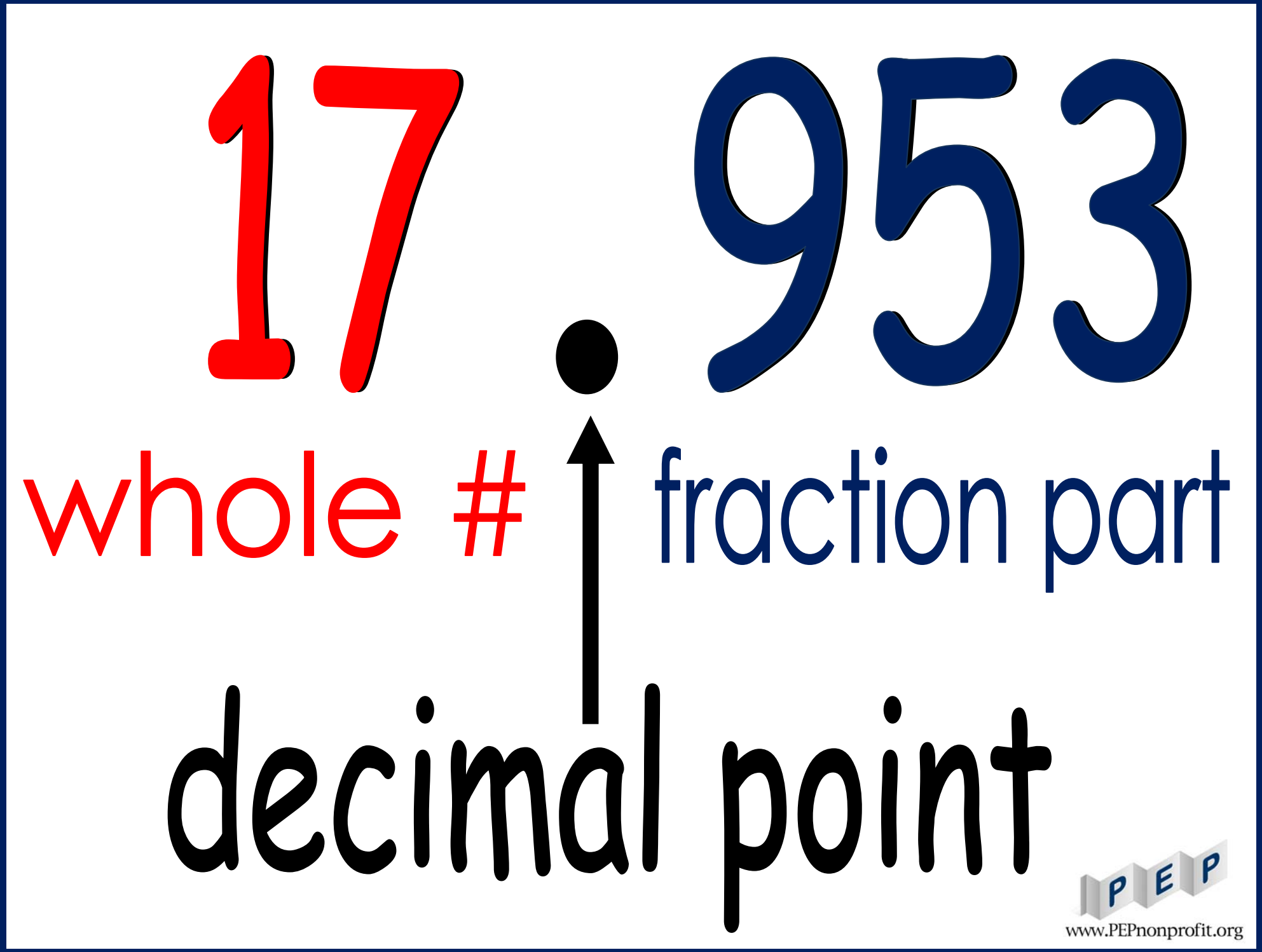


Question: What is a decimal point?

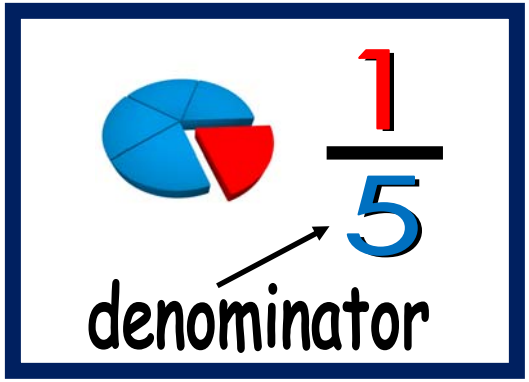
Answer: A decimal point is a point or dot used to separate the whole number part from the fractional part of a number.

Gesture: Hold your hand out like a fist (to show it is whole). Make a decimal point by pointing your finger. Finally, hold your hand out, but this time fingers a part to show they are part of a whole.

Examples: Bring in some supermarket advertisements and have the kids look for items that have a decimal point in the price. Have students rewrite some of the prices, but without the decimal point. How important does that little point or dot become? A soda that used to cost $1.25 is $125 without the decimal point!


17.953
whole #
fraction part
decimal point
PEP
www.PEPnonprofit.org

Denominator



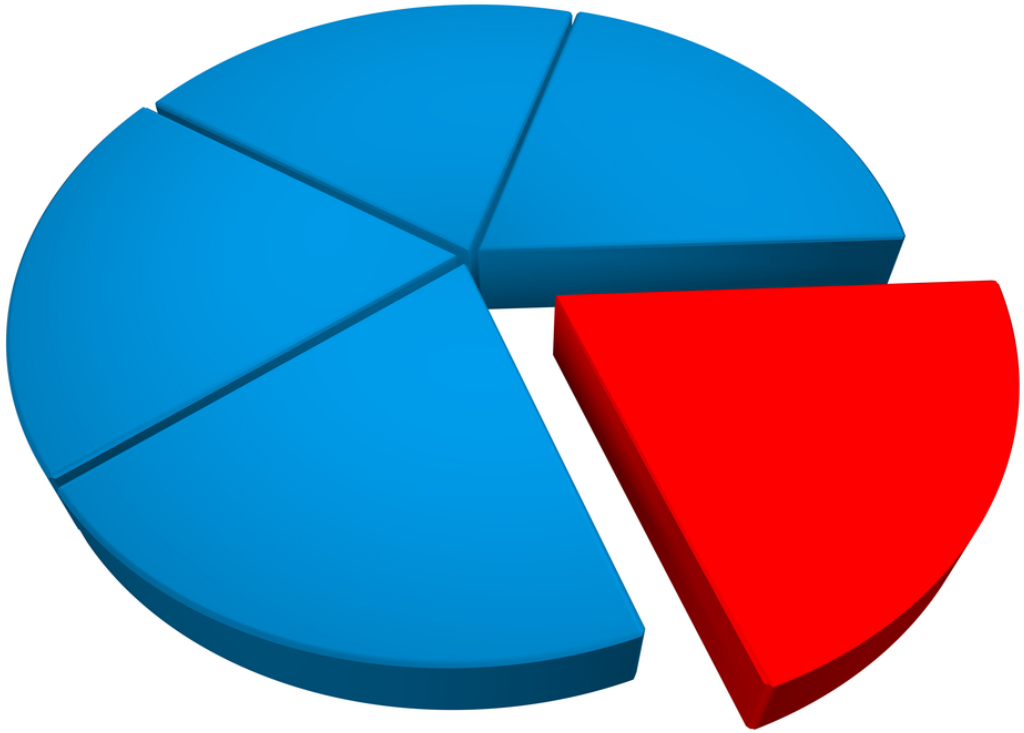
Question: What is a denominator?

Answer: The denominator is the bottom number in a fraction. It shows how many equal parts the item is divided into.

Gesture: Hold one finger above five fingers, symbolizing the numerator above the denominator in a fraction. Then shake the bottom five fingers, symbolizing the denominator.

Examples: Give each group a paper cup filled with skittles and two pages of construction paper. Have them pour the cup of Skittles on one page. Tell them to divide the Skittles into groups by color and place onto the other page of construction paper while working. Have them count the number of Skittles in each group and write the number beside each group. Then have students add together each group for the total number of Skittles. **Ask the following questions:** Is the total number of Skittles the numerator or denominator? How many of the Skittles are red; purple; yellow; green; and is this number the numerator or denominator? Have each group member record each answer in fraction form, numerator over denominator, without assistance on the empty piece of construction paper.

www.PEPnonprofit.org



$$\frac{1}{5}$$

denominator

Descending Order

Question: What is descending order?

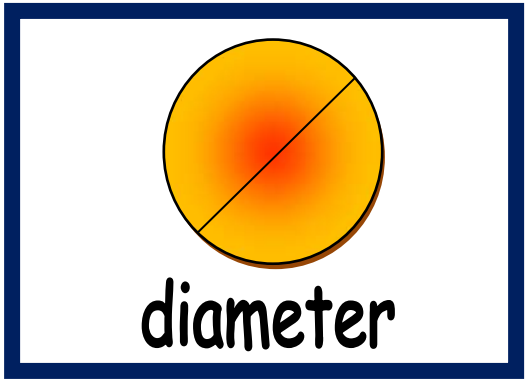
Answer: Descending order is when numbers are arranged biggest to smallest.

Gesture: Hold your hands close together above your head. Then spread them apart a little and move them up a bit. Then spread them apart a little more and lower them down a little lower. Repeat as many times as you wish to show the number is getting smaller and lower.

Examples: Have numbers written on various index cards. Give the cards to random students throughout the class. Have the students come up to the front of the classroom and organize themselves into descending order.


descending order
PEP
www.PEPnonprofit.org

Diameter

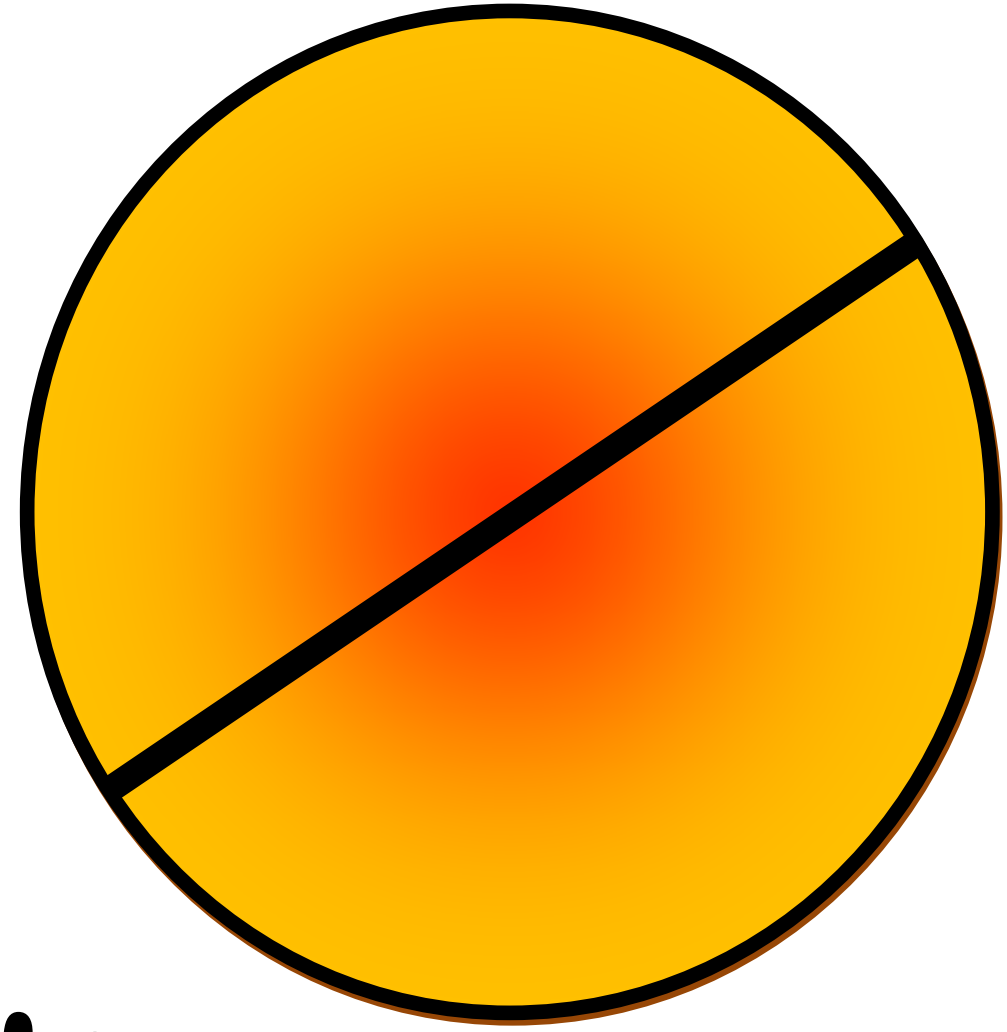


Question: What is a diameter?

Answer: A diameter is the distance across a circle through it's center.

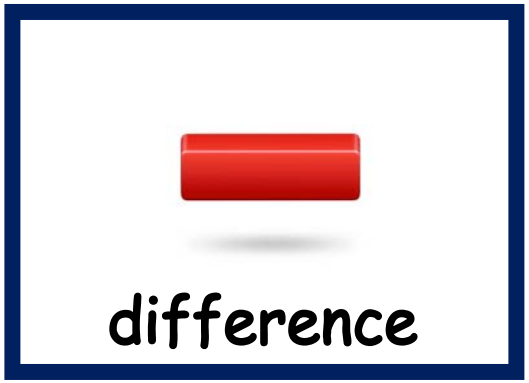
Gesture: Draw a circle in the air with your finger and then draw a line from edge to edge through the center point.

Examples: Pose a scenario using parts of circles in real-world situations.
Mr. Chase wants to create a circular pond in his backyard. He wants to place a fountain in the center of the pond. How would Mr. Chase determine where the center of the pond is located?
Provide students with lids and grid paper to draw visual representations. Students may draw a circle on the grid paper and show where the center is by counting the number of squares across and dividing the number by two. Have students cut out the circle and fold it in half to show the diameter passes through the center of the circle.



diameter

Difference



Question: What is difference?

Answer: Difference is what you get when you subtract one number from another number.

Gesture: Hold out one arm (horizontal to the ground) to subtraction sign.

Examples: Write different number pairings on your whiteboard (8 and 4, 10 and 5, 34 and 30). Ask the question, "What is the difference between 8 and 4?" Have students share answers and how they got them. Once the class concludes that they got the difference by subtracting the two numbers in each group, pose another challenge. Tell them to write as many number groupings as they can with a difference of 9. Let them work in groups and share out.

difference

Dime

Question: What is a dime?

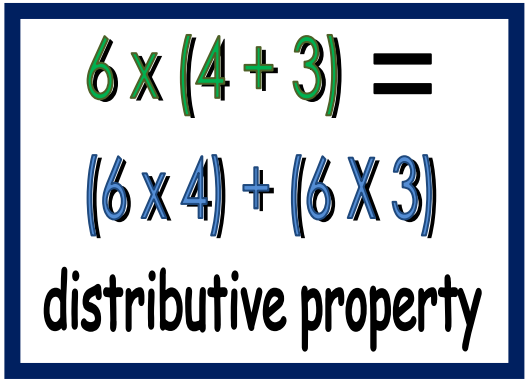
Answer: A dime is worth ten cents. There are ten dimes in one dollar.

Gesture: Pinch your thumb and finger together, as if holding a dime, then hold up ten fingers to show it's worth ten cents.

Examples: Show how one dime can be written 10¢ or $0.10. Put students in groups of two or three. Give each group a cup with an assortment of coins (preferably real coins). Have the groups create money puzzle problems with their coins. For example, I have 5 coins. The total is $0.18. What are my coins? Since we are working on dimes, you must include one dime in every money puzzle problem.

dime

Distributive Property



Question: What is the distributive property?

Answer: The distributive property means the sum of two numbers times a third number is equal to the sum of each addend times the third number.

Gesture: Hold up two fingers (the sum of two numbers) and cross your arms (multiply) and then hold up three fingers (third number). Hold out both arms parallel to each other (horizontal to the ground) to represent an equal sign.

Examples: Here is a story about a party at a friend's house. The host is Bob, so let's call him ***b***. There's only one other person at the party so far, and that's Chris, so let's call him ***c***. The house looks like this so far: **(b + c)**, where b stands for Bob and c stands for Chris.

Angel shows up to the house, so let's call him ***a***. When Angel knocks on the door just outside the house, it looks like this: **a(b +c)**

When Angel gets inside, he high fives his friends...first a high five to *b*, and then *c*: **ab + ac**

This is the distributive property.

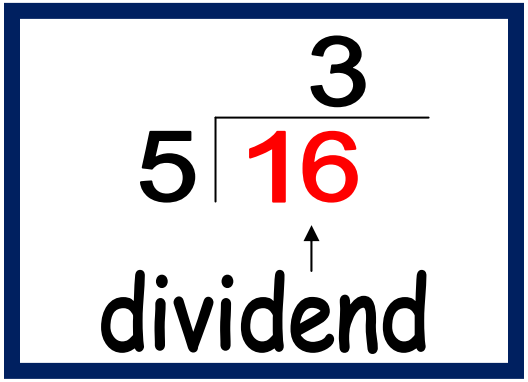
www.PEPnonprofit.org

$$6 \times (4 + 3) =$$

$$(6 \times 4) + (6 \times 3)$$

distributive property

Dividend

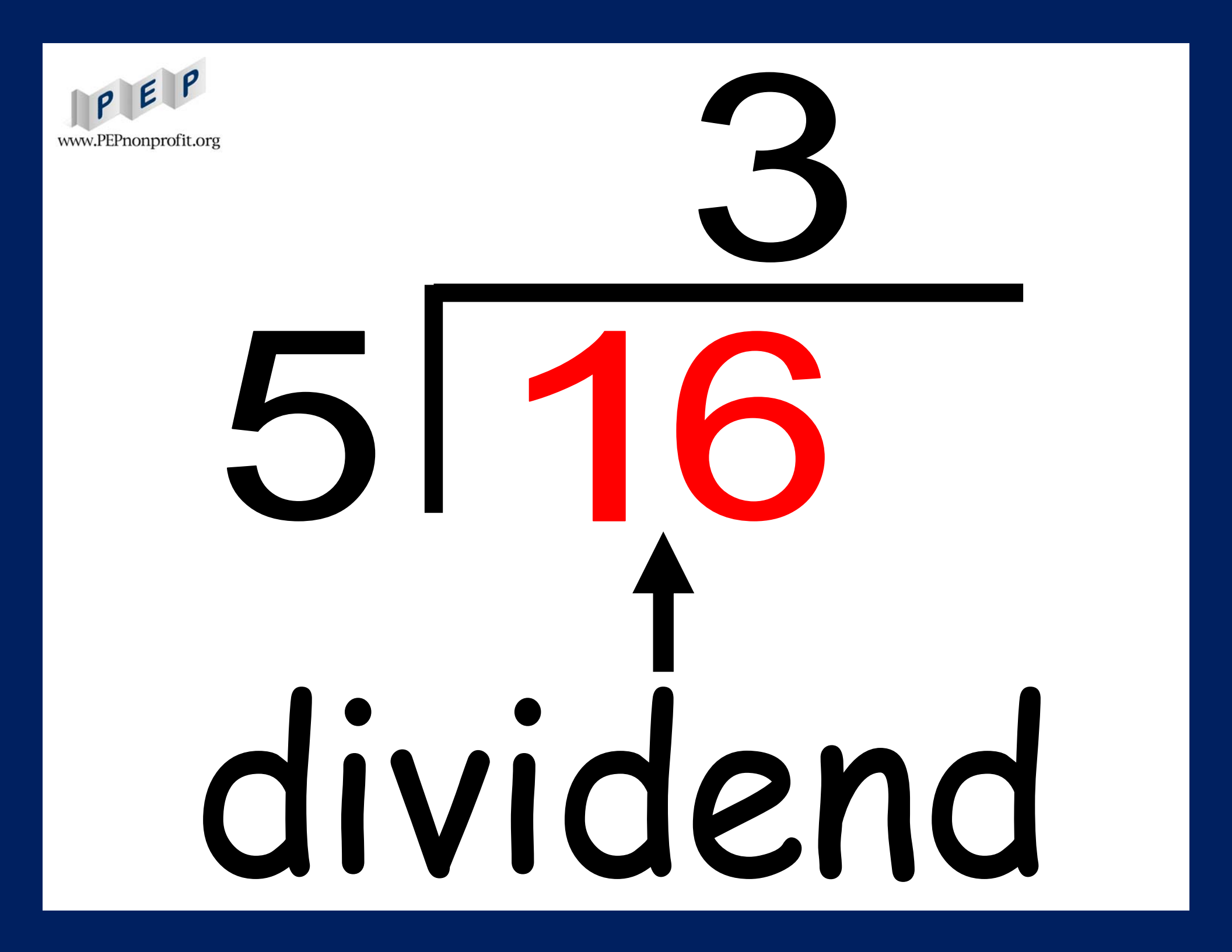


Question: What is a dividend?

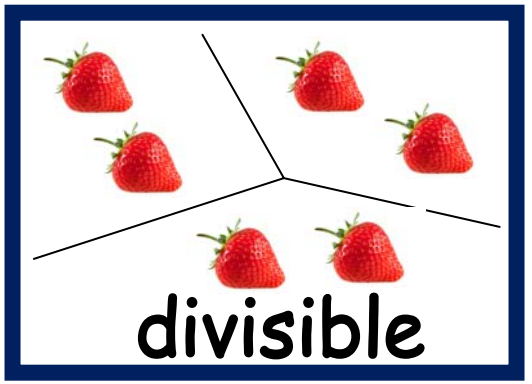
Answer: A dividend is the number that is being divided.

Gesture: Hold up one finger, then six fingers (16) on your hand, then point to your hand, like you are pointing to the inside of 16.

Examples: Write a number of division problems on the board and have the kids indicate which number is the dividend for each problem. Don't worry about the process yet, just get them familiar with the academic division terms, such as dividend, divisor, and quotient by have them identify and produce each of the terms from examples.


www.PEPnonprofit.org
3
5 16
dividend

Divisible



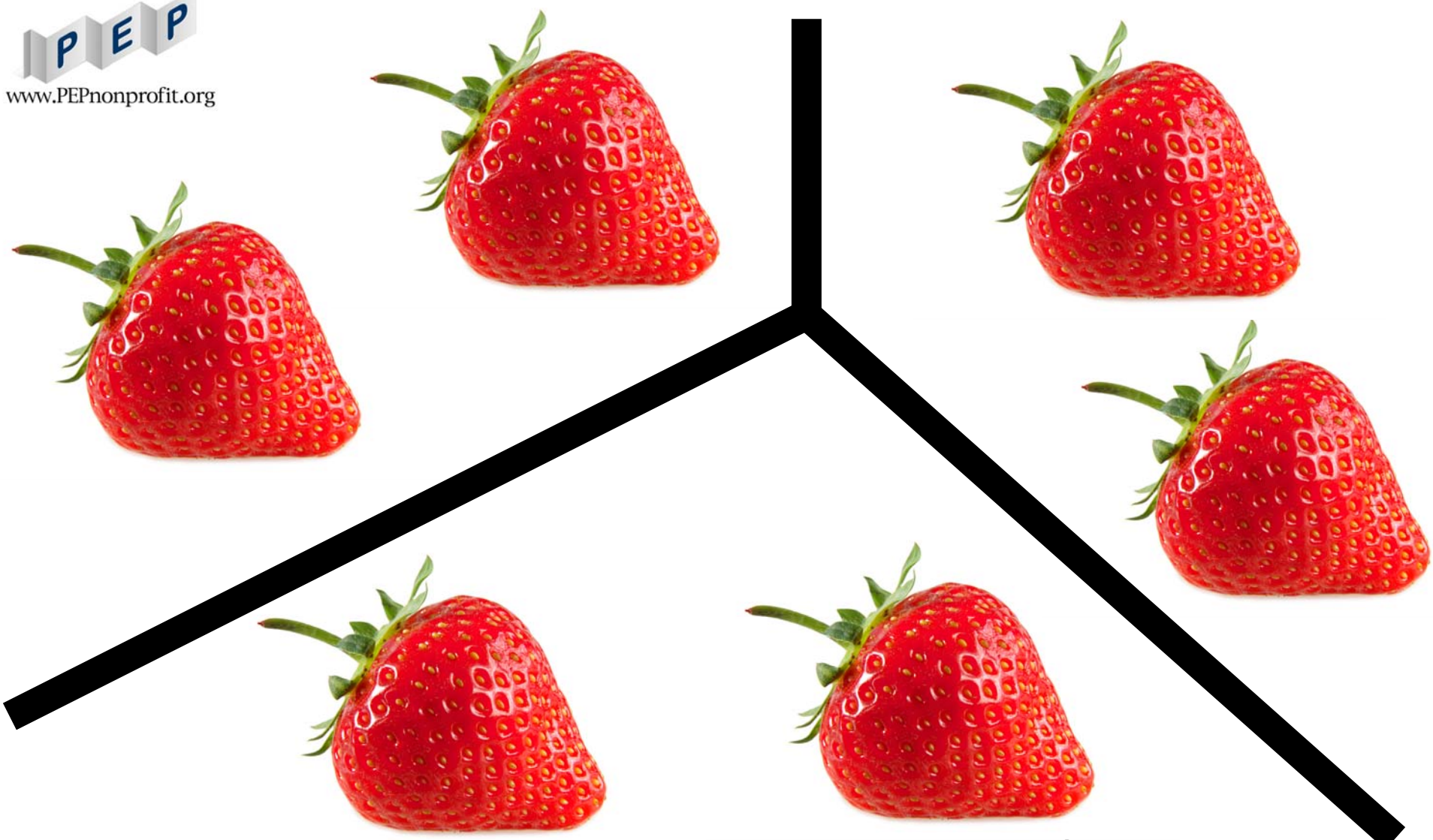
Question: What is divisible?

Answer: A number is divisible by another number, if in the process of division, the remainder is zero.

Gesture: Hold your hands together. With one hand, pretend to pull from the other hand and distribute equal shares in front of you. Hold your hands together to form a zero to show that the number is divided equally with no remainder.

Examples: Give students different amounts of objects (cubes, markers, coins). Purposefully give some students amounts that are not divisible. Have the students discuss the differences between the objects that are divisible and those that are not….can they see any patterns or come to any conclusions?

www.PEPnonprofit.org



divisible

Division – Long Family

Question: What is division and who is the Long Family?

Answer: Division is splitting things (numbers) into equal parts. The Long Family is a way to remember the steps of division.

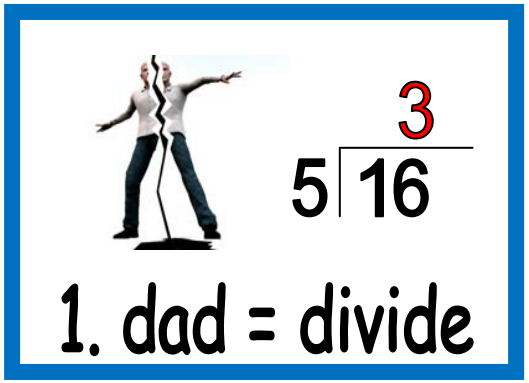
Gesture: Hold your hands together. With one hand, pretend to pull from the other hand and distribute equal shares in front of you.

Examples: Introduce each member of the Long Family and explain that each one of them have a specific job and it never changes, neither does the order in which they do their jobs. Dad's job is to divide. Mom's job is to multiply. Sister's job is to subtract. Cousin, yes there is a cousin in the Long Family, and their job is to compare the divisor to the difference left by the sister. Brother's job is to bring down the next number (if needed). Rover, that's the Long Family dog, has a job as well. Rover's job is to restart the process again or make a remainder.

www.PEPnonprofit.org

division - Long Family

Division: Dad = Divide



Question: What is Dad's job in division?

Answer: The first step in a division problem is for Dad to divide.

Gesture: Hold up one finger to show Dad's job is first**.** Hold your hands together. With one hand, pretend to pull from the other hand and distribute equal shares in front of you.

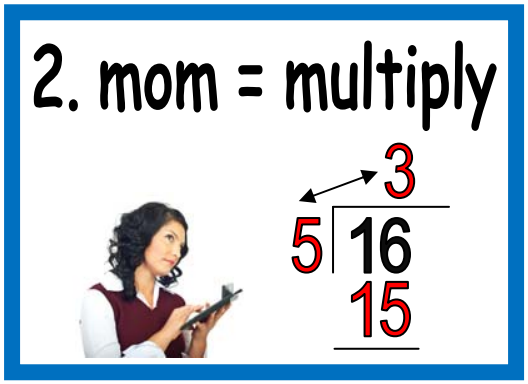
Examples: Give kids a set of cubes or other hands on math manipulatives. To get the idea of what Dad's job is, have them divide their cubes. Have them count out ten cubes. Next have them divide the ten cubes into two equal groups. What about five equal groups? Once kids start to see the connection, change your examples to include problems that will have a remainder. Also, stress to your students he importance of lining up the number in the quotient over the number they are dividing into. Using graph paper to introduce this concept is very good to help students keep their numbers properly lined up.

www.PEPnonprofit.org

$$5\overline{)16}\quad 3$$

1. dad = divide

Division: Mom = Multiply



Question: What is Mom's job in division?

Answer: The second step in a division problem is for Mom to multiply.

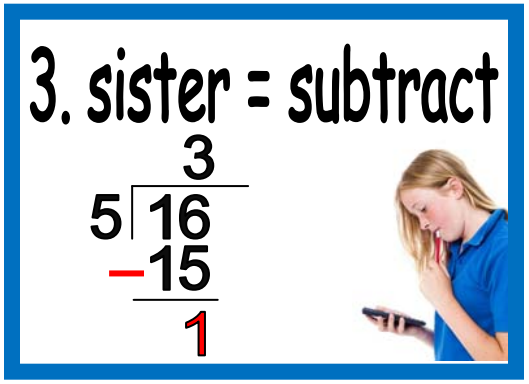
Gesture: Hold up two fingers to show Mom's job is second**.** Cross your arms like a multiplication sign.

Examples: Have each student bring in an egg carton and a plastic bag with some type of little objects, such as beads, buttons, paper clips, raw macaroni….ect. Write a problem, such as 3 x 5, and have the students display this problem using different sections of the egg carton to hold each group. You can do this for multiple number sentences to introduce Mom's job of multiplication.

2. mom = multiply

$$5\overline{)16}\quad 3,\ 15$$

Division: Sister = Subtract



Question: What is sister's job in division?

Answer: The third step in a division problem is for sister to subtract.

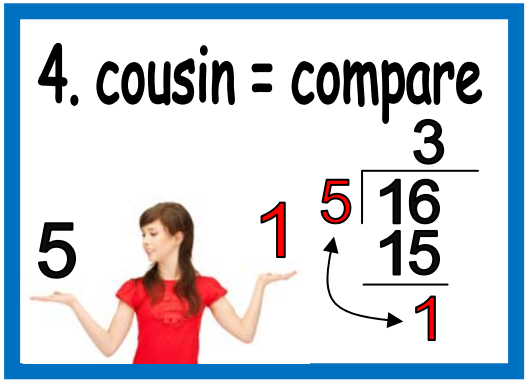
Gesture: Hold three fingers to show sister's job is third**.** Hold your arm in front of you horizontal to the ground to show a subtraction sign.

Examples: The subtraction step in division is generally the second easiest of jobs in the Long Family as long as the students have their numbers lined up properly. Again, using graph paper for this step is a good way for students to get into the habit of lining up their columns during division problems. Walking students through the steps of division a multitude of times will be key in their success of following the procedure of long division. Check www.PEPnonprofit.org for a Long Family Paperclip activity to help students rehearse the steps of division.

3. sister = subtract

$$
\begin{array}{r}
3 \\
5\overline{)16} \\
-15 \\
\hline
1
\end{array}
$$

Division: Cousin = Compare



Question: What is cousin's job in division?

Answer: The fourth step in a division problem is for cousin to compare.

Gesture: Hold up four fingers to show cousin's job is fourth**.** Hold up both hands and look back and forth from one hand to the other as if you were comparing two things.

Examples: Have students get with learning partners. Ask partners to each think of a secret number. Then have each person write down or say different clues to help the partner find the secret number. For example, one person might say "This number is less than 9, but greater than 3." The partner can write down possible answers and then the person can give more clues to help narrow the number down. When the secret number is found, partners can switch roles. Students must be aware that if the number they are comparing to the divisor is equal or larger, the quotient will be off. This game allows students some practice in comparing numbers in a fun way.

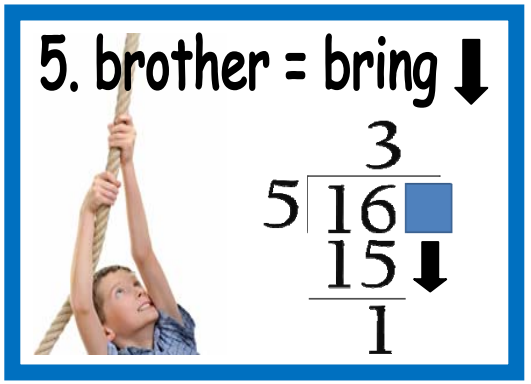
4. cousin = compare

$$5\overline{)16}\quad 3$$

$$15$$

$$1$$

Division: Brother = Bring ⬇



Question: What is brother's job in division?

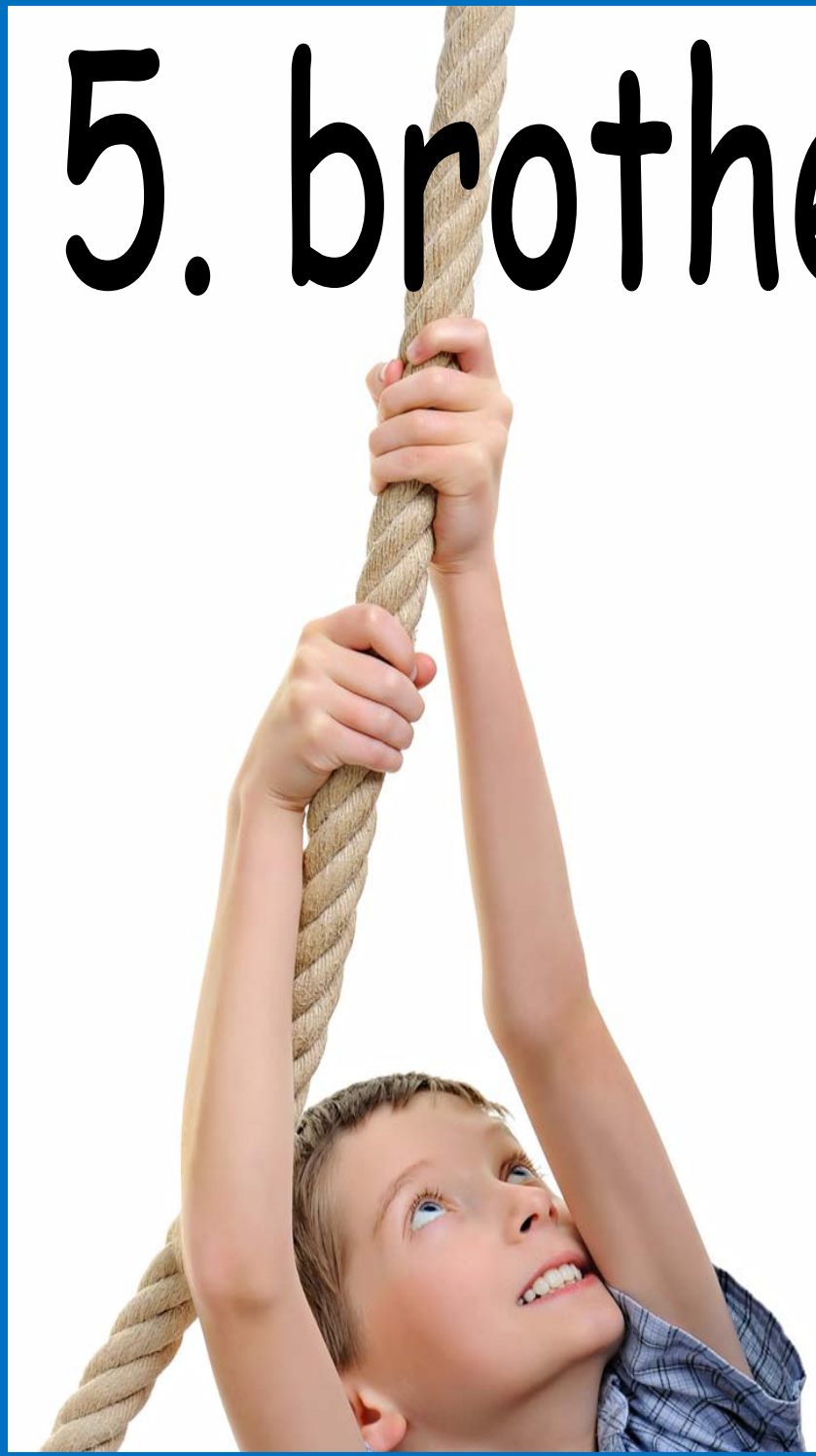
Answer: The fifth step in a division problem is for brother to bring down.

Gesture: Hold up five fingers to show brother's job is fifth. Pretend to pull a rope down (to bring down the next number).

Examples: The bring-down step in division is generally the easiest of jobs in the Long Family as long as the students have their numbers lined up properly. Again, using graph paper for this step is a good way for students to get into the habit of lining up their columns during division problems. Walking students through the steps of division a multitude of times will be key in their success of following the procedure of long division. Check www.PEPnonprofit.org for a Long Familv Paperclip activity to help students rehearse the steps of division.

PEP
www.PEPnonprofit.org

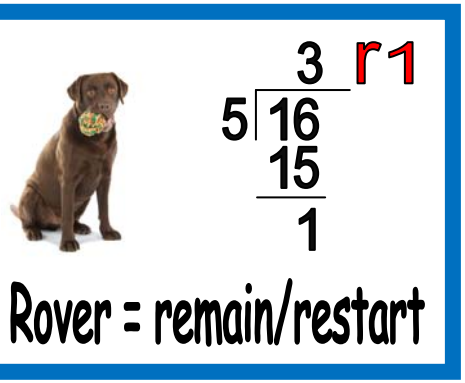
5. brother = bring ⬇



$$5\overline{)16\ \square}$$
$$\underline{15}\ \downarrow$$
$$1$$

www.PEPnonprofit.org

Division:
Rover = Remain or Restart



Question: What is Rover's job in division?

Answer: The sixth step in a division problem is for Rover to remain or restart.

Gesture: Hold up six fingers to show Rover's job is sixth. Hold your hands off to the side and keep them there for a couple of seconds (remain). Then say, "or" move them dramatically to the other side to show them restarting (or Rover bringing the ball back to Dad to start the process over again).

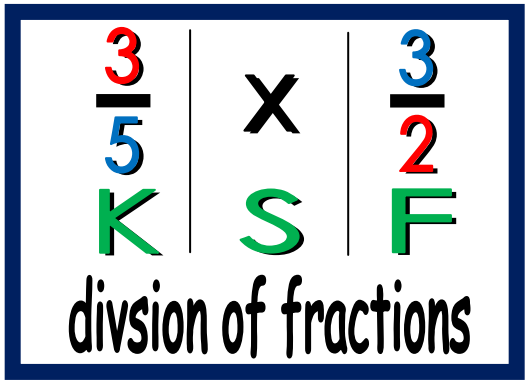
Examples: Using hula hoops, teach your kids about a remainder. Place hula hoops around the room on the floor. Each hula hoop is a boat. Tell the kids to find a boat, but there must be an equal number on each boat. They have to work together to divvy up so that there is an equal number on each boat. Any that cannot fit onto the boats are the 'men overboard' (remainders). So, 23 kids divided onto 5 boats equals 4 on each boat with 3 men overboard. Once you've done this. show the students what is looks like as a math equation on the board.

www.PEPnonprofit.org

$$5\overline{)16}\quad 3\ r\ 1$$
$$15$$
$$1$$

6. Rover = remain/restart

Division of Fractions

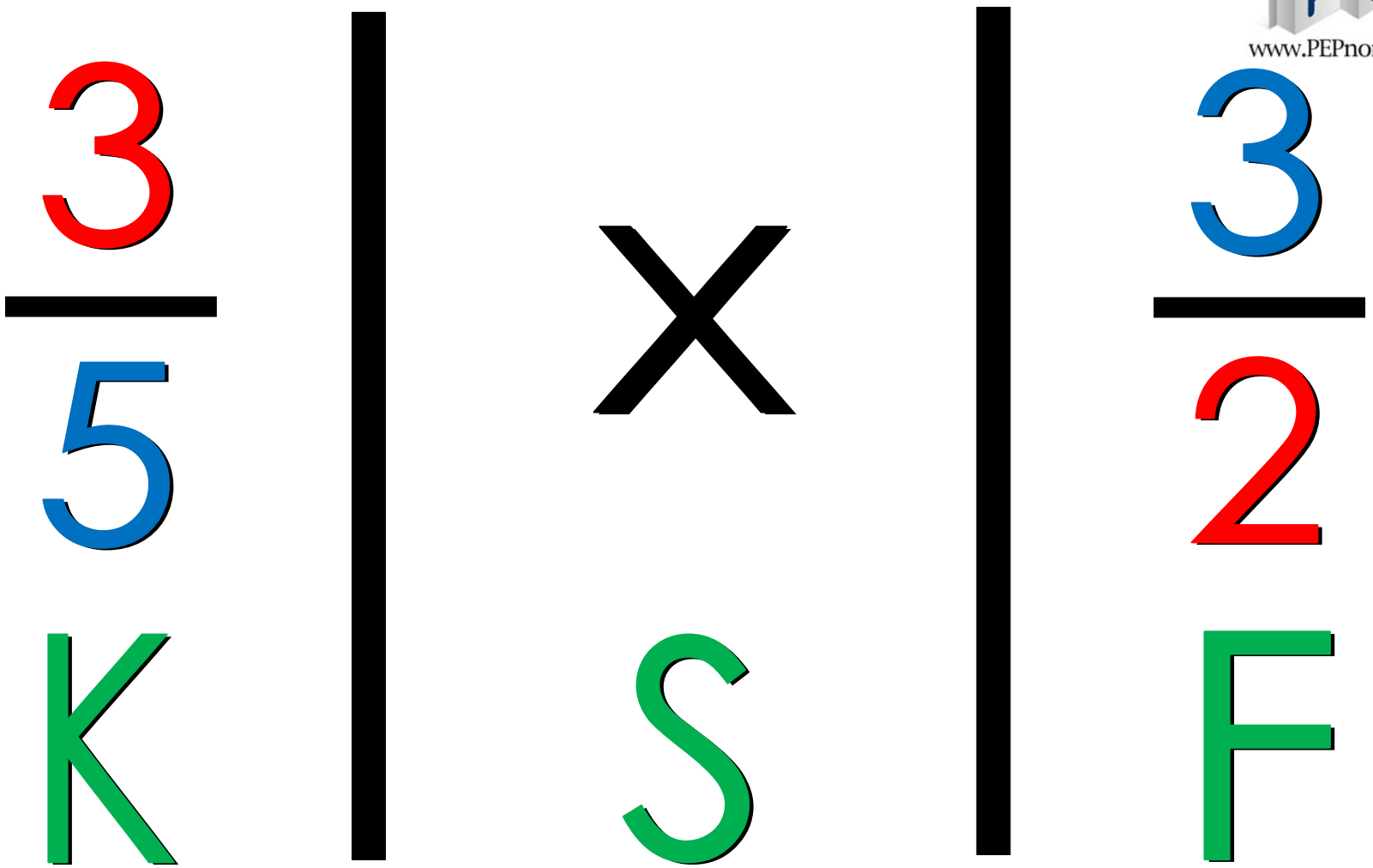


Question: What is division of fractions?

Answer: When you divide fractions, remember KSF. Keep the first fraction the same. Switch the operation. Flip the second fraction upside down.

Gesture: Hold one fist over your other fist and keep it the same (fist over first is a fraction). Pretend to move something out of the way and put something else in it's place (switch from division to multiplication). Hold one fist over your other fist, but this time flip it so the top fist goes to the bottom and the bottom goes to the top (flip).

Examples: Use Acing Math: One Deck at a Time and play the game Quotient Fractions on pages 37-38 at www.PEPnonprofit.org



division of fractions

Division Sentence

Question: What is a division sentence?

Answer: A division sentence is read left to right and states that the dividend is divided by the divisor. In the division number sentence 8 ÷ 2 = 4, 8 is divisible by 2.

Gesture: Hold up one finger, then six fingers (16) on your hand. Hold your hands together. With one hand, pretend to pull from the other hand and distribute equal shares in front of you (division). Hold up five fingers.

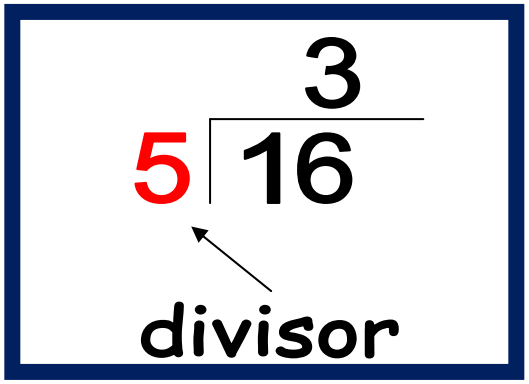
Examples: Write a bunch of traditional division problems on the board. Have students rewrite the problems as a division sentence. You can go both ways with this by having students convert division sentences to traditional division problems.

www.PEPnonprofit.org

16 ÷ 5

division sentence

Divisor

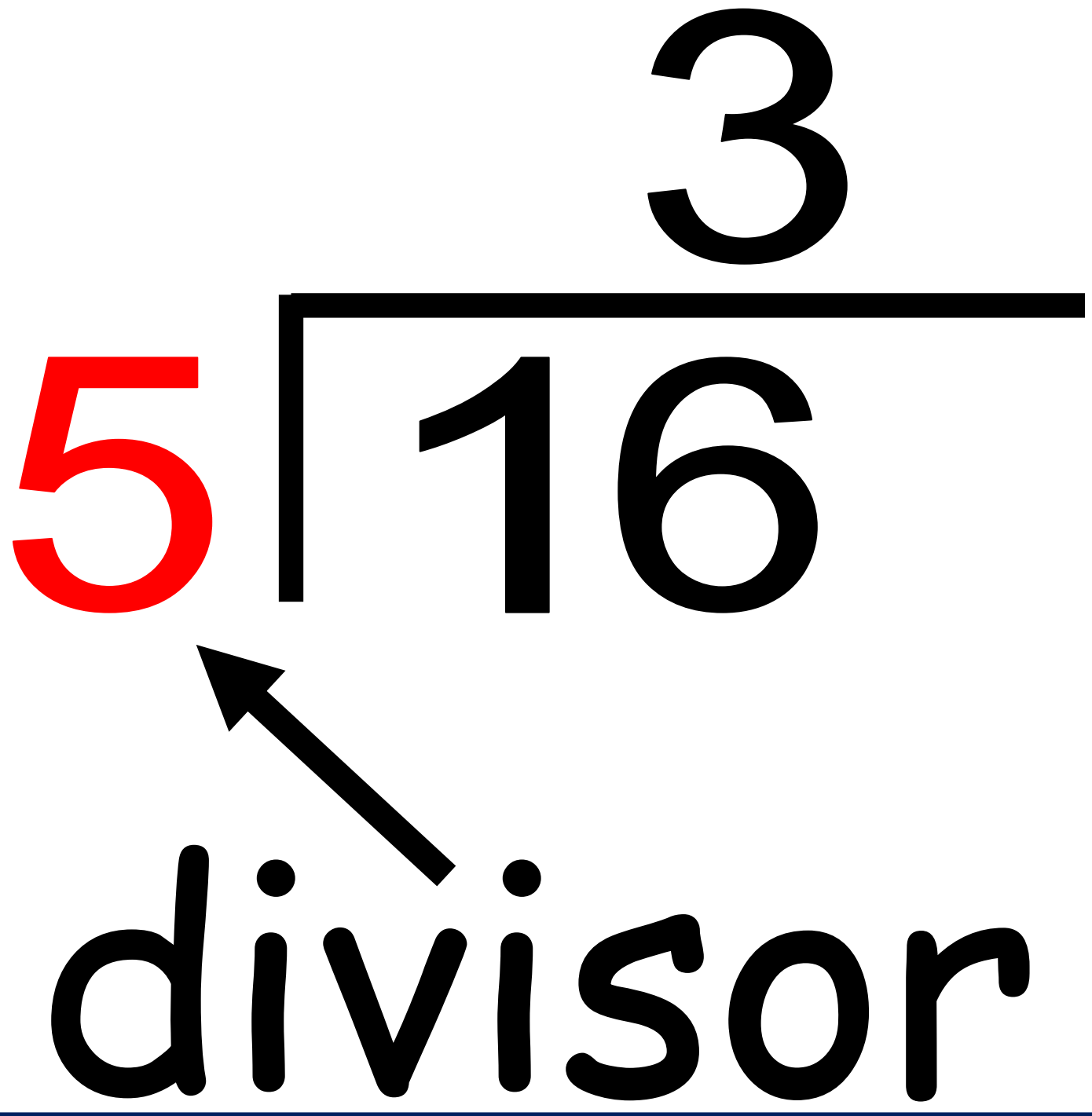


Question: What is a divisor?

Answer: A divisor is the number you divide by.

Gesture: Hold up five fingers then point, because the divisor is the number doing the dividing.

Examples: Write a number of division problems on the board and have the kids indicate which number is the divisor for each problem. Don't worry about the process yet, just get them familiar with the academic division terms, such as dividend, divisor, and quotient by have them identify and produce each of the terms from examples.



Dollar

dollar

Question: What is a dollar?

Answer: A dollar is a kind of money. In the United States, 100 cents equals one dollar.

Gesture: Make 100 by holding up one finger, then holding up two zeros. Then hold both arms parallel to the ground (equal sign) then hold up one finger and rub your thumb, middle, and pointing finger (to symbolize money).

Examples: With a large jar of various coins, accidently spill it (all of it) on the floor. Ask the kids to work in pairs and help pick up the coins. Tell the children that they should place all the pennies in a designated area. Designate an area for the other coins, as well. After all of the coins have been sorted, the children will be working with the coins that they collected. The children will need to put their coins in groups that equal $1.00. After each group is done, they should count how many groups of one dollar they have made.

www.PEPnonprofit.org

dollar

Dollar Sign

Question: What is the dollar sign?

Answer: A dollar sign a mark ($) written before a number to indicate that it stands for the number of dollars.

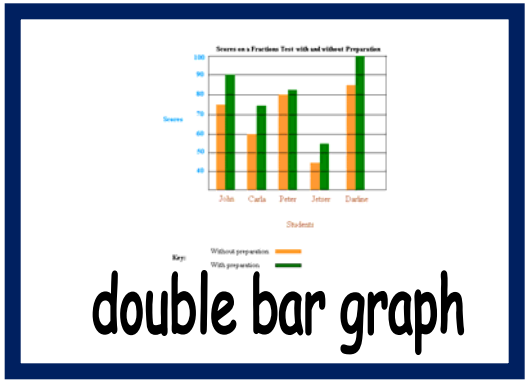
Gesture: Draw the letter S in the air and then draw a line through it (top to bottom) and then rub your thumb, middle, and pointing finger (to symbolize money).

Examples: Let your students play with different combinations of coins and dollars (use fake coins and bills for this exercise). Call out an amount, $4.35, and have students both make that amount with their money and write it out correctly on their whiteboards. Point out the different ways to make the amount and the proper way to write the amount with numbers and symbols.

www.PEPnonprofit.org

dollar sign

Double Bar Graph

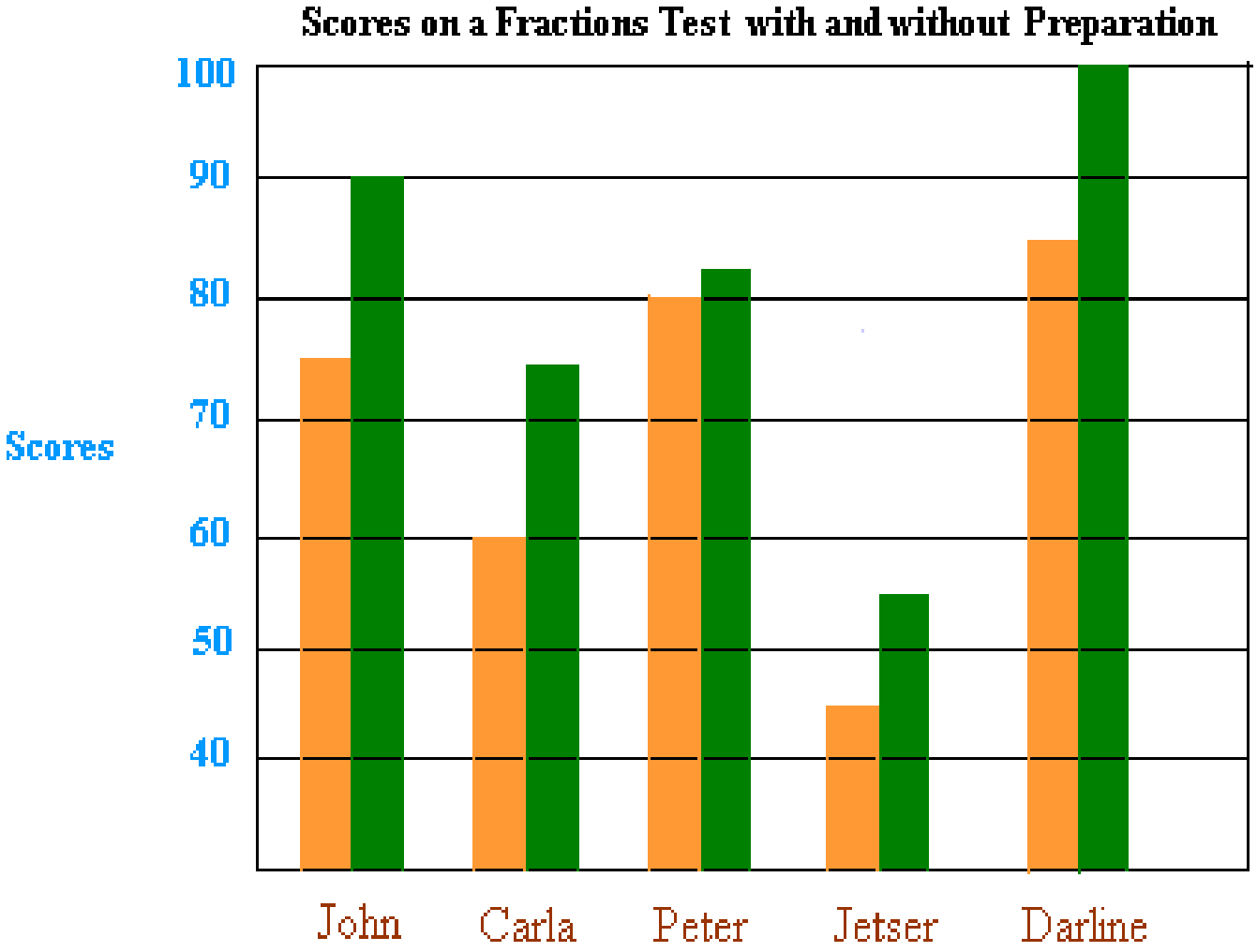


Question: What is a double bar graph?

Answer: A double bar graph is a graph drawn using rectangular bars to show a comparison of two sets of data.

Gesture: Scatter all of your fingers to show a mess; then make rows with your forearms to show the information in an organized manner. Then hold up both hands and look back and forth from one hand to the other as if you were comparing two things.

Examples: Here are some scores from four students. The first score is the pretest, the second score is the real test: James: 60,70. Pablo: 75, 90. Maggie: 55, 55. Tara: 80, 95. As a group, choose a title for the graph. Decide if the scale on the left side of the graph should be 1s, 5s, or 10s. Determine which colors will represent the pretest and real test. Graph the information and have a discussion on what the data tells us.



www.PEPnonprofit.org

double bar graph