The Learning Wall

C

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.

Cc

calendar, capacity, Celsius, cent symbol, centimeter, century, certain event, chord, circle, circle graph, circumference, common denominator, commutative property of addition, commutative property of multiplication, complex figure, composite number, cone, congruent, coordinate plane, coordinate point, cube, cubic unit, cup, cylinder

Calendar

calendar

Question: What is a calendar?

Answer: A calendar is a table that shows the days, weeks, and months of a specific year.

Gesture: Hold up ten fingers, then two more for the 12 months on a calendar.

Examples: As students walk into class, give each child a month. Ask the class what is on the piece of paper? Have students make a 12-month calendar by using their month puzzle pieces. Ask some questions to the students and allow them to work as a group to answer. What is today's date? What day of the week is it today? How many months are in a year? How many weeks are in a year? How many days are in a year? How many days are in a week? What month comes before February? How many days are in November? What month has the ***least*** number of days?

calendar

Capacity

Question: What is capacity?

Answer: Capacity is the amount something can hold.

Gesture: Hold one arm curved to your chest (the bucket) and pretend to put something into the bucket with your other hand.

Examples: Bring in different size and shape containers. Pour the same amount of (water, rice, coffee beans, etc…) in each container. Explain that the size and shape of each container helps determine the capacity that it can hold. *This is only an introduction to the term capacity. Actual units of measure for capacity are on other Concept Learning Bricks.

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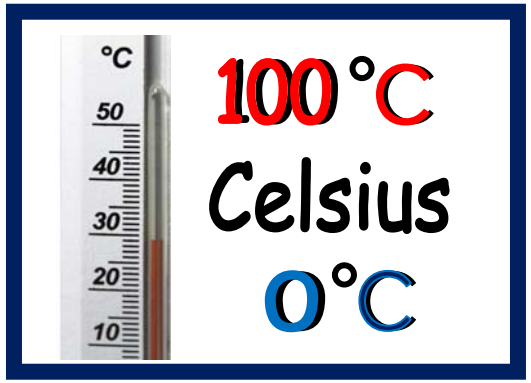
capacity

Celsius

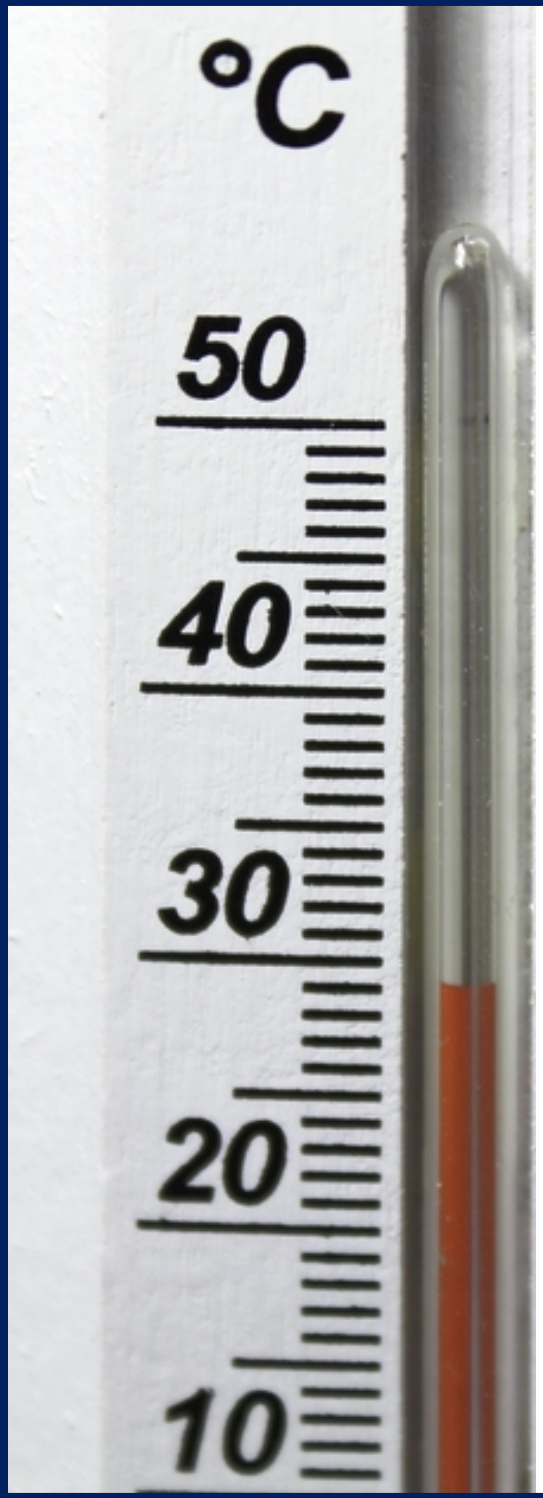


Question: What is Celsius?

Answer: Celsius is a metric scale for measuring temperature in which water freezes at 0 degrees and boils at 100 degrees.

Gesture: Hold your hand like a 0 and then shiver (water freezes at 0). Hold up one finger next to your two eyes to make 100 and then wipe sweat from your forehead (water boils at 100).

Examples: Measure the temperature outside in Celsius for a few days. Explain that many (most) countries use Celsius when dealing with temperature.



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100°C

Celsius

0°C

Cent Symbol

Question: What is the cent symbol?

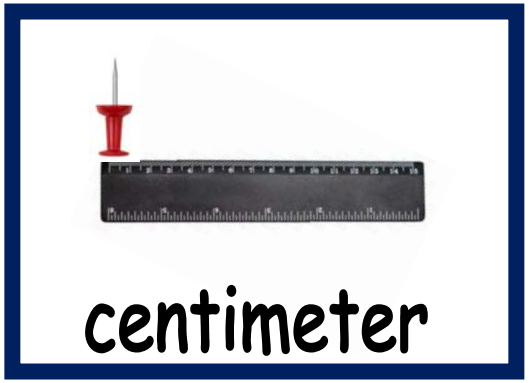
Answer: The symbol ¢ is placed after a number to indicate that the number represents cents.

Gesture: Cup one hand to look like a C and place one finger to form the cent symbol.

Examples: The word "percent" means "per one hundred." With money, one cent represents one per one hundred cents, or one dollar. Five cents represent five percent of one dollar, ten cents represent ten percent of one dollar, and so on. When using numerals, we use the symbol ¢ to represent cents up to a dollar, as in 4¢ or 48¢. When the value reaches a dollar or more, we use the symbol $, as in $1.01 or $324.00. Place pennies in a bag. Have a student reach in and take a handful of pennies and count them as a class. Then have that student exchange the pennies for other coins. For example, a student can exchange 5 pennies for a nickel or 10 pennies for a dime.

cent symbol

Centimeter

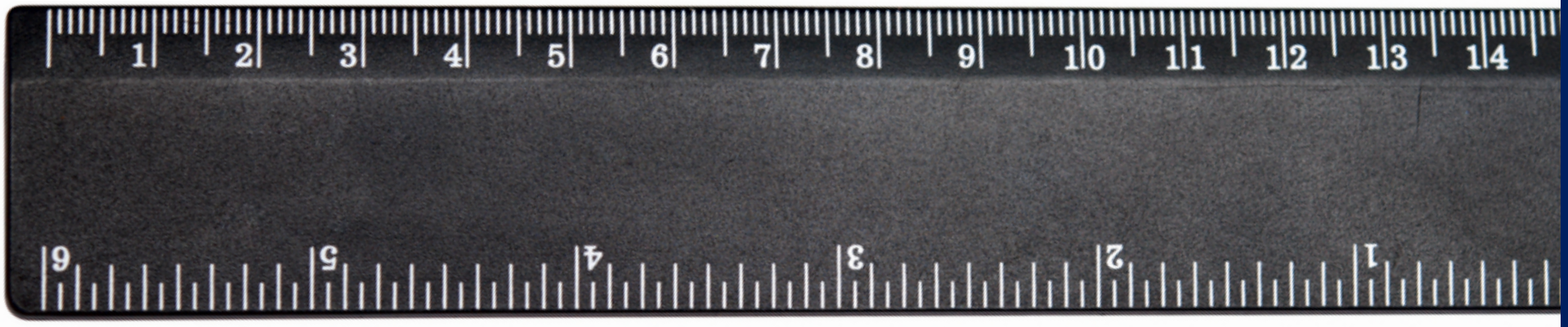


Question: What is a centimeter?

Answer: A centimeter is a unit of measurement. One centimeter is about as wide as a push pin.

Gesture: Make a C with one hand and a M with your other hand. Then pretend to pin something on the wall.

Examples: Have your students brainstorm as many things that are approximately 1 cm. Do the same thing for things that are approximately 1 inch. Have the kids note the size differential between the 1 cm and 1 inch.



centimeter

Century

Question: What is a century?

Answer: A century is a length of time equal to one hundred years.

Gesture: Hold up one finger next to your two eyes to make 100.

Examples: Make a list of what things looked like a century ago. What did school look like? What were the rights for everyone a100 years ago? What did technology look like a century ago? Then show how a century is a 100 years. Have the students write math word problems that incorporate the term "century" within the problem. For example, in 1848 people were exploring the Western Frontier. A century later, there isn't a part of the West Coast that hasn't been explored. What year is it a century after 1848?

century

Certain Event

Question: What is a certain event?

Answer: A certain event is certain to occur. The probability of picking a red marble from a group of all red marbles is certain.

Gesture: Pretend to pull a marble from a bag. Smile and shake your head with confidence, because you are certain to get the marble you want.

Examples: Have your students brainstorm different events that are certain. For example, the Sun will rise and set everyday, and people will breathe air. Make a list of goals that you and your class will be certain to accomplish. For a hands-on project, use a deck of cards. Show that the deck has four different suits: hearts, diamonds, spades, and clubs. Have the kids figure out a way to make it certain to pull a heart. What would they have to do for that to happen?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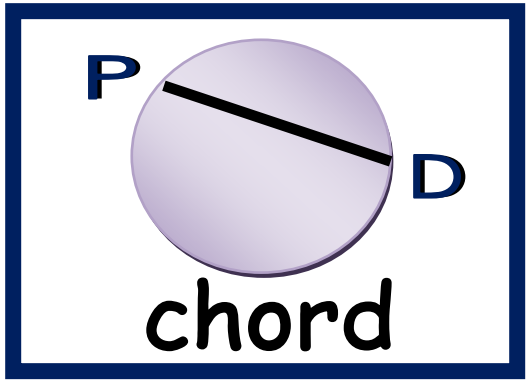
certain event

Chord



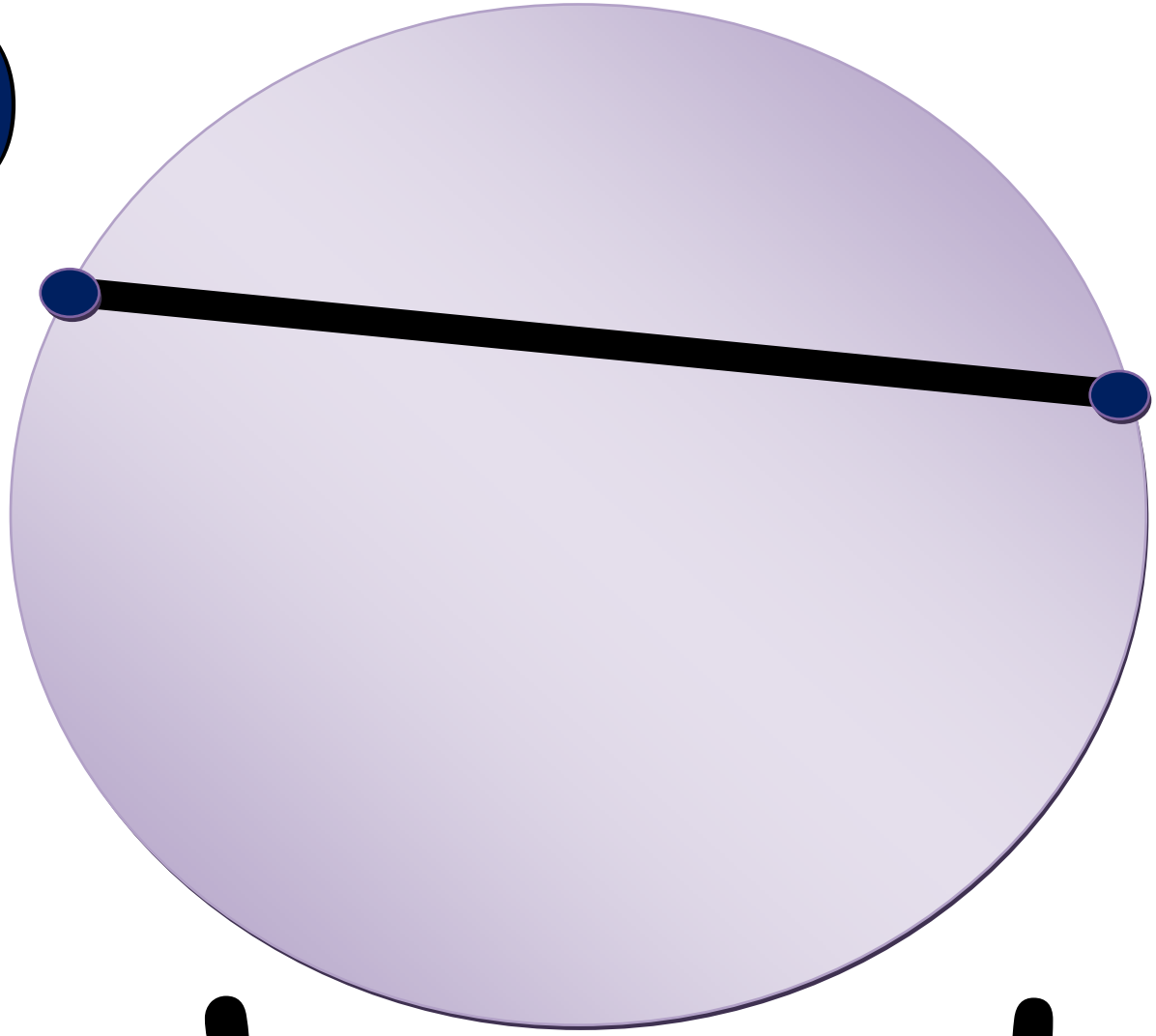
Question: What is a chord?

Answer: A chord is a line that connects to points on a circle or a curve.

Gesture: Draw a circle in the air, then draw a line that connects to two points on the circle.

Examples: Give students a paper plate and some pipe cleaners. Have them play with different points on the curve of the plate and to create chords with their pipe cleaners.

P



D

chord

Circle

Question: What is a circle?

Answer: A circle is a line forming a closed loop, with every point on it being the same distance from a center point.

Gesture: Draw a circle in the air with your finger.

Examples: Draw a variety of closed lines forming a loop on the board (make some of them circles and others random curved shapes). Explain that everybody knows these are NOT all circles. But why? Some of these figures have round shapes, but they are not circles. What in them is different from circles? Use compasses to form perfect circles.

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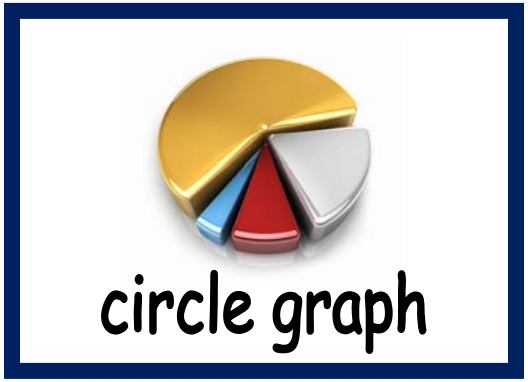
circle

Circle Graph



Question: What is a circle graph?

Answer: A circle graph is a graph in the form of a circle that is divided into sectors, with each sector being proportional in size to the amount each sector represents. This graph is used to show parts of a whole.

Gesture: Draw a circle in the air with your finger. Pretend to cut out a section to show a part of the whole circle.

Examples: Construct a circle graph together with the class. Give each student a paper plate to create their circle graph. The first step is to graph a **Title** at the top of the graph – the Title gives Information on what is displayed on the Circle Graph. **Each sector** represents **a fraction of the whole**. Label each sector indicating the type of information represented in that sector. **Give a %** for **each sector** so one knows the size of the sector.

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circle graph

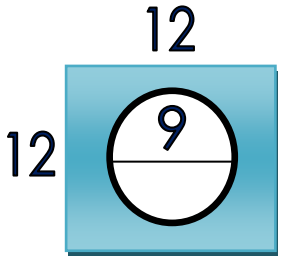
Circumference

Question: What is circumference?

Answer: Circumference is the distance around the edge of a circle. The formula to find the circumference of a circle is $c = \pi \cdot d$.

Gesture: Draw a circle around yourself. Then hold up three fingers, make a dot with your finger, hold up one finger, and finally four fingers. Cross your arms (multiplication sign) and draw a line in the air (diameter).

Examples: Draw the following image of a wrestling mat on your whiteboard. The circle is the part of the mat used for competition. What is the area of the part that is *not* used for competition? Find the area of the entire mat. Find the area of the circle used for competition to the nearest square meter. Subtract the area of the circle from the area of the mat.



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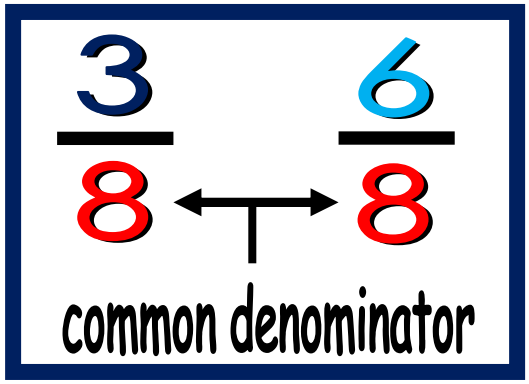
circumference: π x D

Common Denominator



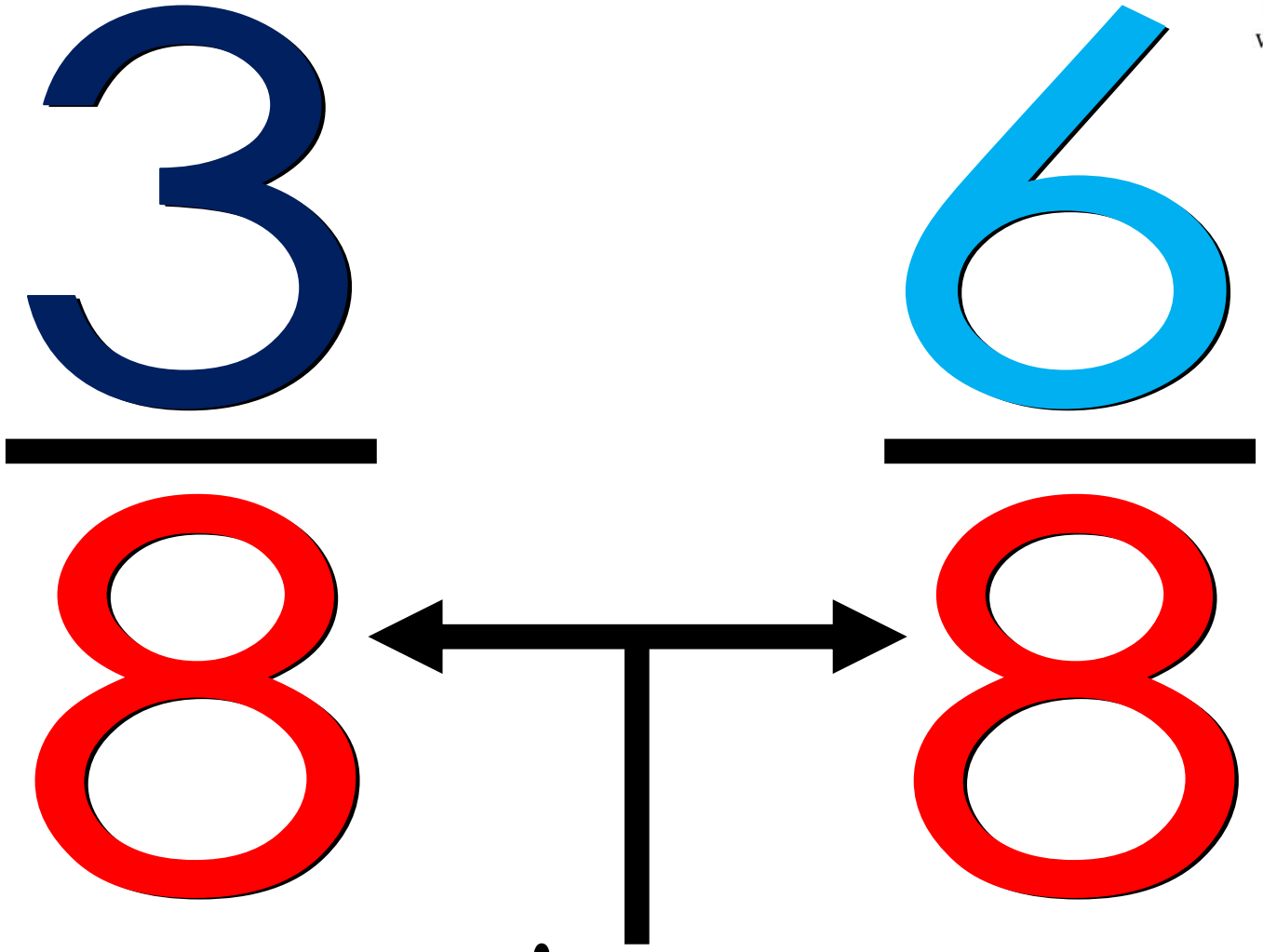
Question: What is a common denominator?

Answer: A common denominator is when two or more fractions have the same denominator (the number on the bottom).

Gesture: Make a slash with your arm (line to separate the numerator and denominator). Then hold up both fists to represent the denominators (the number on the bottom) are the same.

Examples: Write numbers on at least 20 index cards, making sure that most of the numbers are not prime. Most of the numbers should be between 1 and 20, with a few larger ones that have a lot of factors (e.g., 20, 24, 30). Divide the pile of index cards in half into two smaller piles, and give each player one of these smaller piles. Both players call out "1, 2, 3…go!" and simultaneously turn over the top card in their piles and place it between them. **The goal: as quickly as each player can, calculate the lowest common multiple of the numbers on the two cards, and call it out.** The first player to call out the correct lowest common multiple wins the round and gets to add both of the cards to the bottom of her pile. Repeat Steps 3 and 4 for the next round.

The game ends when one player runs out of cards. The other player is the winner.



common denominator

Commutative Property of Addition

Question: What is the commutative property of addition?

Answer: The commutative property of addition states that changing the order of addends does not change the sum.

Gesture: Hold up 3 fingers. Put both arms together to form an addition sign. Hold up 4 fingers. Hold out both arms parallel to each other (horizontal to the ground) to represent an equal sign. Hold up 4 fingers. Put both arms together to form an addition sign. Hold up 3 fingers.

Examples: Choose a volunteer to put on a hat and a coat. Structure the scene to make sure children know that the coat is first and the hat is second. Have the class notice how the volunteer looks, dressed in this coat and hat. Have the student remove the hat and coat. Tell the class that you want the same student to put on the hat and coat again, but this time put the hat on first and the coat on second. Ask the class if they notice that our volunteer looked the same? Why was that? Ask if the volunteer would look the same if we asked him/her to put on sneakers first, then socks? Or, would it look different if the socks were put on first, then the sneakers? Lead children to realize that for certain items, order is important. This is true in math as well.
In addition, does the order matter? What about subtraction?

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3+4=4+3

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commutative property of +

Commutative Property of Multiplication

Question: What is the commutative property of multiplication?

Answer: The commutative property of multiplication states that changing the order of factors does not change the product.

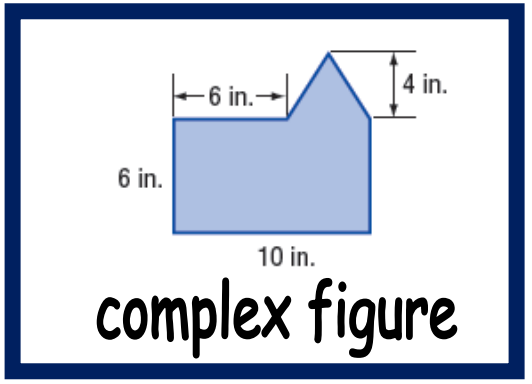
Gesture: Hold up 5 fingers. Cross both arms together to form a multiplication sign. Hold up 2 fingers. Hold out both arms parallel to each other (horizontal to the ground) to represent an equal sign. Hold up 2 fingers. Cross both arms together to form a multiplication sign. Hold up 5 fingers.

Examples: Choose a volunteer to put on a hat and a coat. Structure the scene to make sure children know that the coat is first and the hat is second. Have the class notice how the volunteer looks, dressed in this coat and hat. Have the student remove the hat and coat. Tell the class that you want the same student to put on the hat and coat again, but this time put the hat on first and the coat on second. Ask the class if they notice that our volunteer looked the same? Why was that? Ask if the volunteer would look the same if we asked him/her to put on sneakers first, then socks? Or, would it look different if the socks were put on first, then the sneakers? Lead children to realize that for certain items, order is important. This is true in math as well.
In addition, does the order matter? What about subtraction?

$5 \times 2 = 2 \times 5$

commutative property of X

Complex Figure



Question: What is a complex figure?

Answer: A complex figure is a combination of two or more basic shapes.

Gesture: Draw a complex figure in the air with your finger.

Examples: Give students some tangram pieces and let them create their own complex figures. Do a gallery walk so all students can see the countless number of complex figures that are possible.

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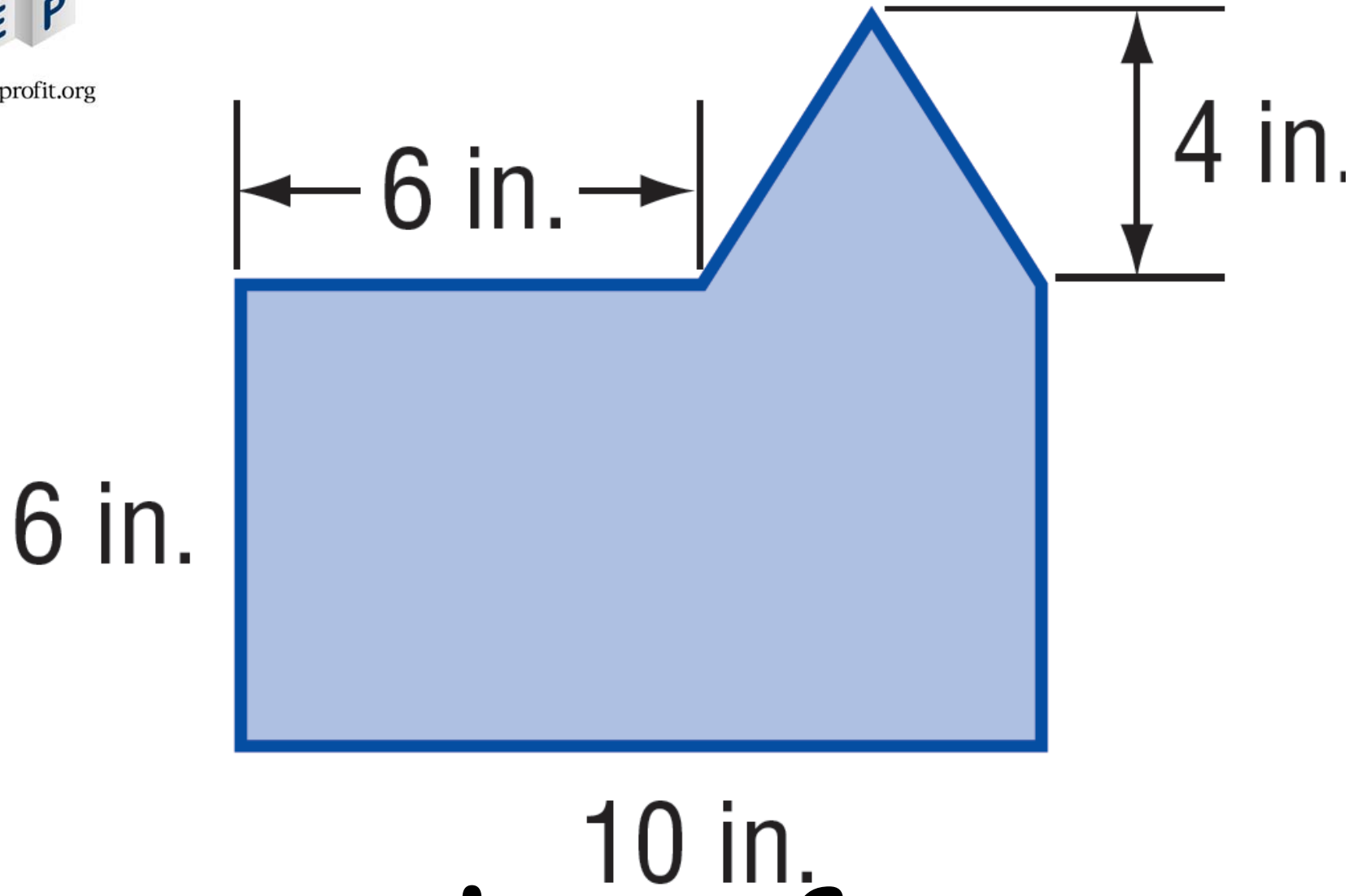
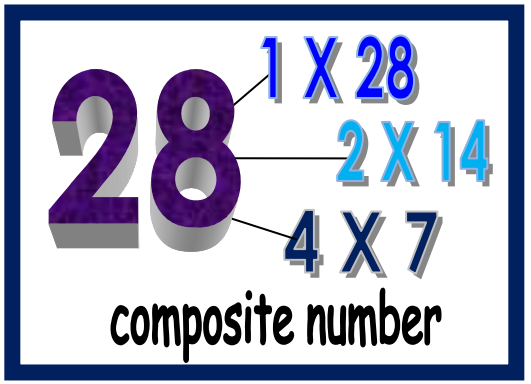


complex figure

Composite Number

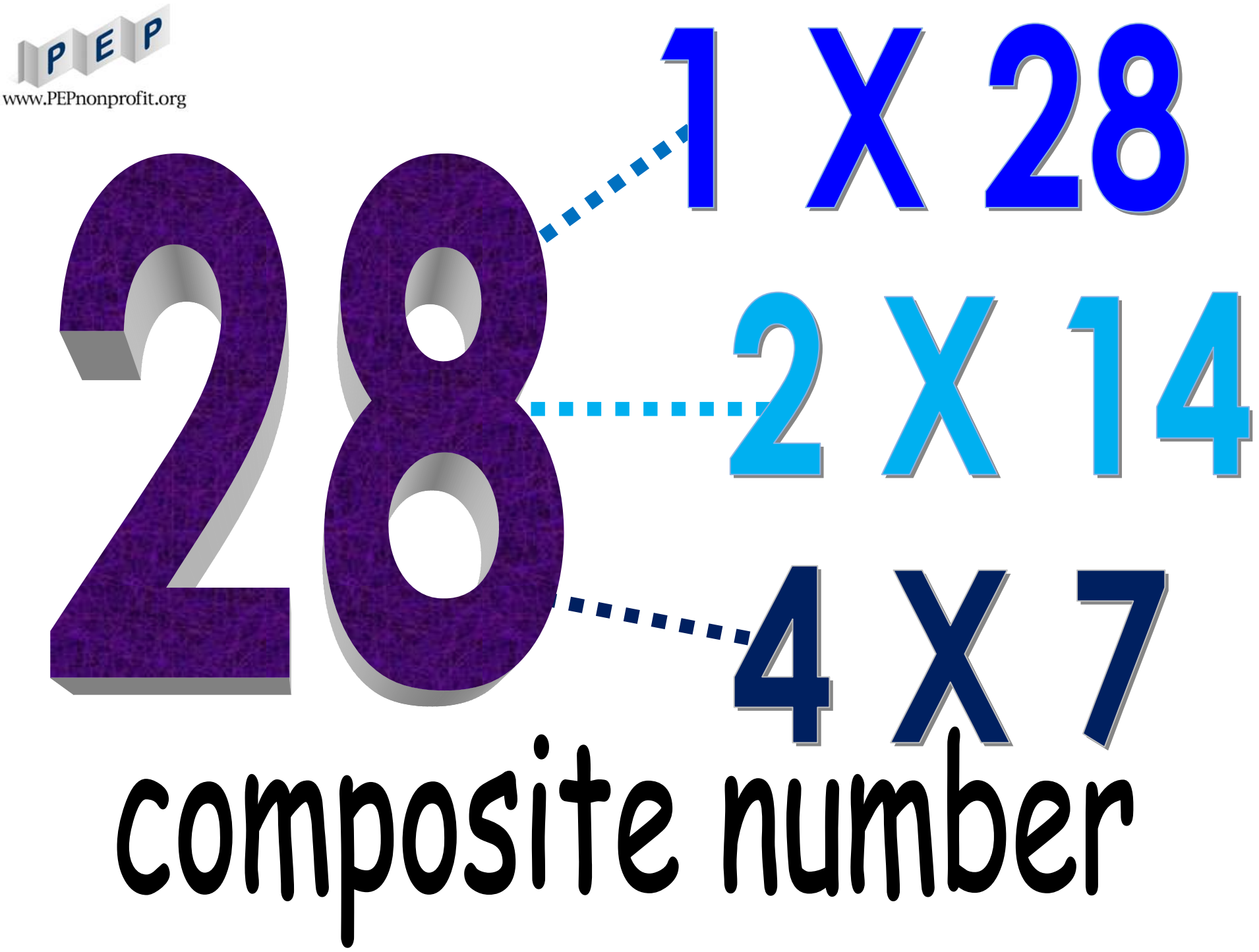


Question: What is a composite number?

Answer: A composite number is a number that has more than two different factors.

Gesture: Say any composite number and show the factors with your fingers. Example: 10. Hold up 2 fingers. Cross both arms together to form a multiplication sign. Hold up 5 fingers for 2 x 5. Hold up 1 finger. Cross both arms together to form a multiplication sign. Hold 10 fingers for 1 x 10.

Examples: Go to www.PEPnonprofit.org and download **Prime and Composite Lines**. It is a game designed to reinforce both composite and prime numbers.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28
1 X 28
2 X 14
4 X 7
composite number

Cone

Question: What is a cone?

Answer: A cone is a solid (3-dimensional) object that has a circular base and one vertex.

Gesture: Pretend to hold an ice cream cone and draw a circle with your finger to show the base.

Examples: Bring in different 3D objects (cone, pyramid, sphere, cylinder, rectangular prism, cube) and have the kids sort them into different categories. What similarities do we see between a sphere and a cone? What differences?

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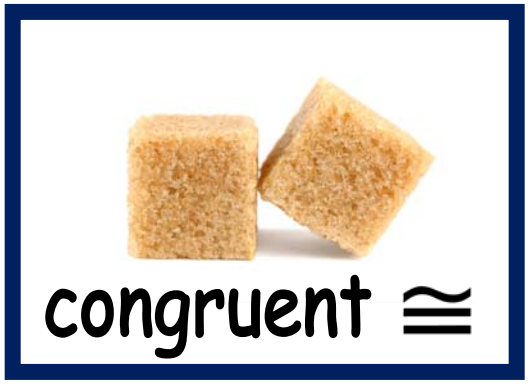
cone

Congruent



Question: What is the meaning of congruent?

Answer: Two objects are congruent if they have the same size and shape.

Gesture: Hold up two fists and show they are the same size and shape.

Examples: Show a basketball and a tennis ball to the class. Ask the class: "How are these two figures alike?" "How are they different?" Explain to the students that the basketball and tennis ball are similar. Write the definition: Similar figures have the same shape but different sizes. Next, show two-same sized oranges. Ask the class: "How are these oranges the same?" Explain to the students that the oranges are congruent figures. Write the definition: Congruent figures have the same size and same shape. Referring back to the two oranges, have students explain why all congruent figures are similar but not all similar figures are congruent.

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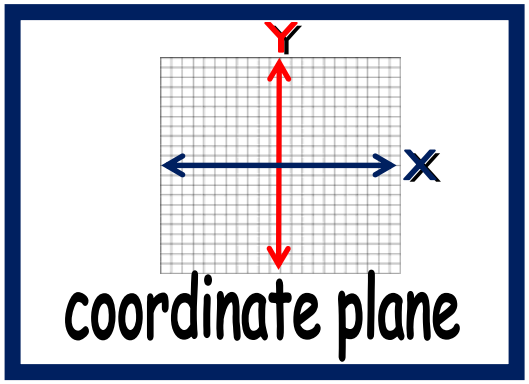
congruent ≅

Coordinate Plane



Question: What is a coordinate plane?

Answer: A coordinate plane is a two-dimensional surface containing an “x” axis and “y” axis.

Gesture: Cross your middle and pointing finger and then hold your arm horizontal to the ground (x axis). Put both arms over your head (to look like the letter Y) and then hold your arm straight up and down (y axis).

Examples: Go to www.PEPnonprofit.org and download **Coordinate Fours**. It is a game designed to reinforce plotting points on all four quadrants of a coordinate plane.

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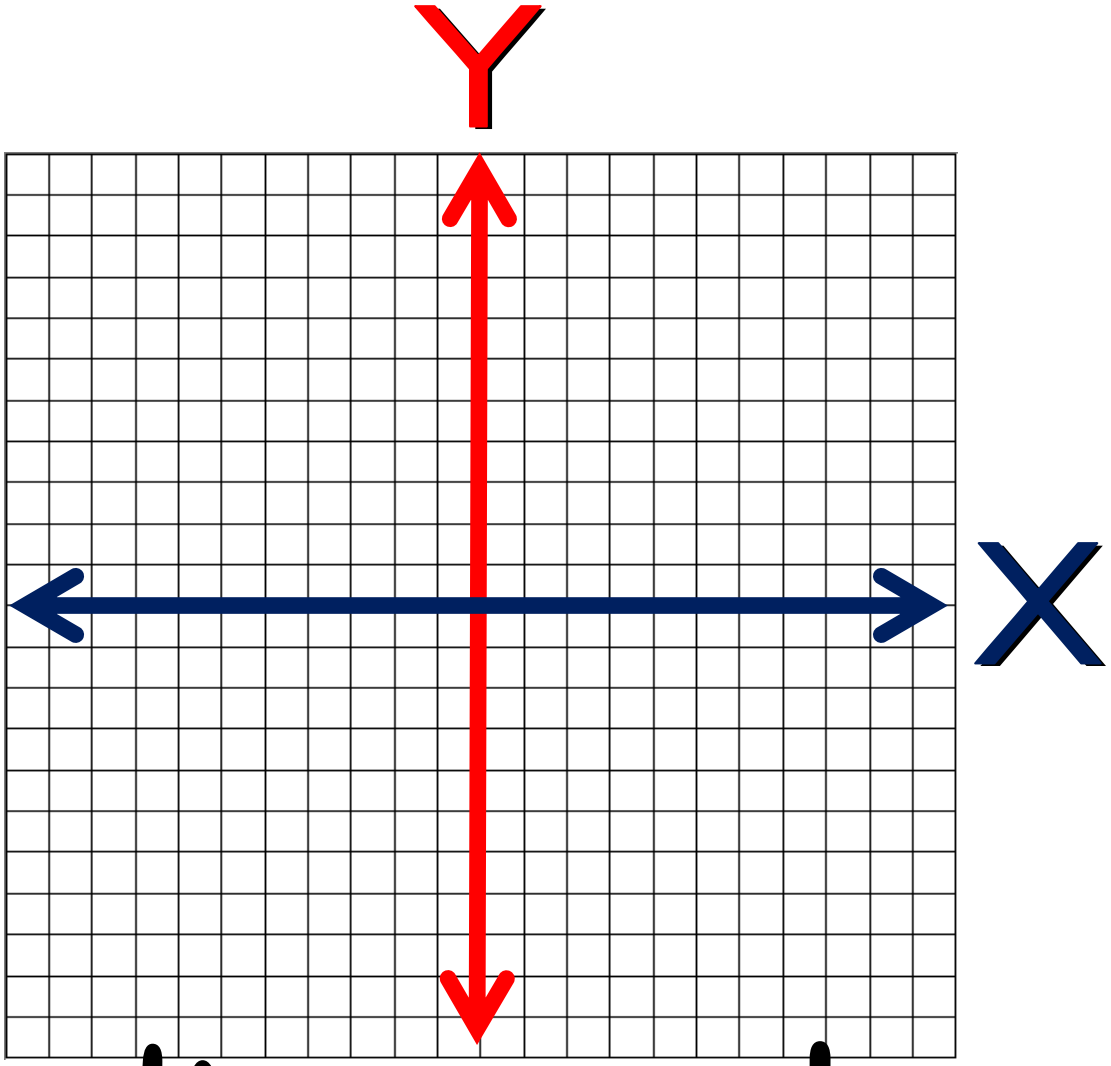
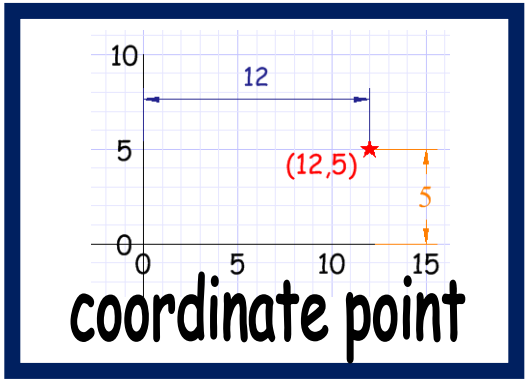


coordinate plane

Coordinate Point



Question: What is a coordinate point?

Answer: A coordinate point is a pair of numbers that give an exact position. Example: the point (12,5) is 12 units along, and 5 units up.

Gesture: Say 12 and hold your arms horizontal to the ground (x axis). Say 5 and point up and down (y axis).

Examples: Go to www.PEPnonprofit.org and download **Coordinate Fours**. It is a game designed to reinforce plotting points on all four quadrants of a coordinate plane.

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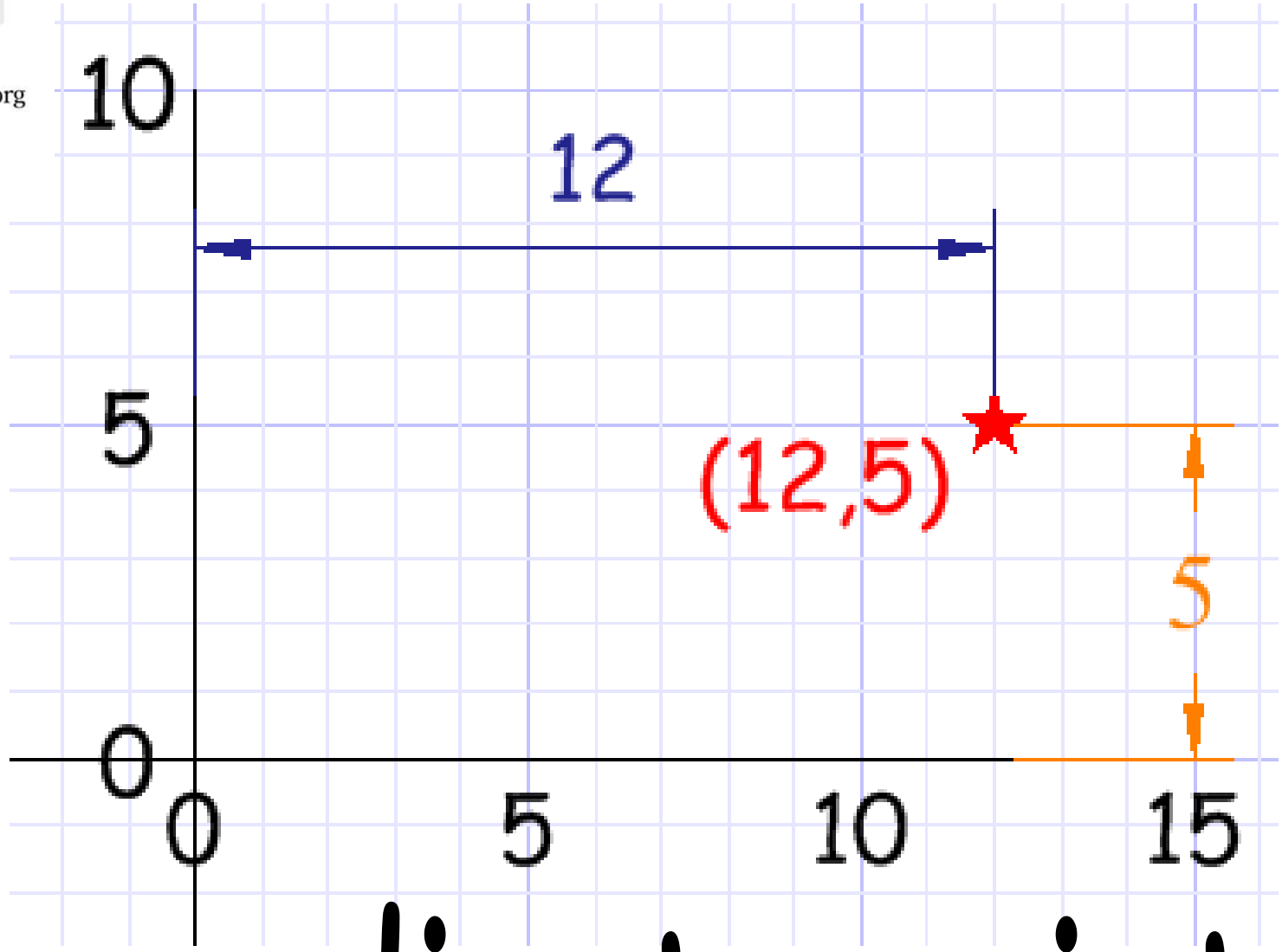

coordinate point

Cube

Question: What is a cube?

Answer: A cube is a box-shaped solid object that has six identical square faces.

Gesture: Pretend as if you are holding a cube. With two hands, hold the top and bottom, side and side, front and back.

Examples: Bring in different 3D objects (cone, pyramid, sphere, cylinder, rectangular prism, cube) and have the kids sort them into different categories. What similarities do we see between a cube and a rectangular prism? What differences?

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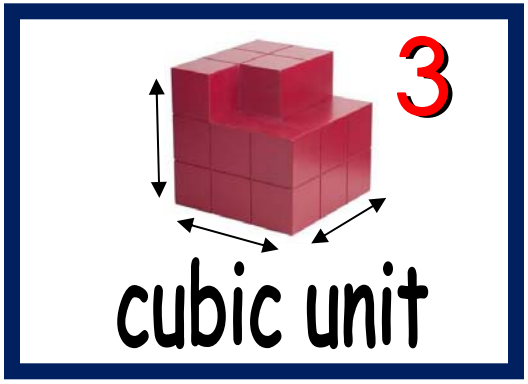
cube

Cubic Unit



Question: What is a cubic unit?

Answer: A cubic unit is a unit that measures volume (in 3 dimensions)

Gesture: Point up, spread arms wide, and then spread them to show length. Hold up 3 fingers for the 3 dimensions.

Examples: Display the collection of objects and ask students questions to discuss measurable attributes. What does 3 cu. ft. on a bag of mulch mean? (Students may relate cubic and cube. Ask them to describe a cube.) Another question is Tom needs to fill a hole in his yard with concrete. What does he need to know about the hold before ordering the concrete? (Volume, cubic) Would it be easier to fill the hole with squares or cubes?

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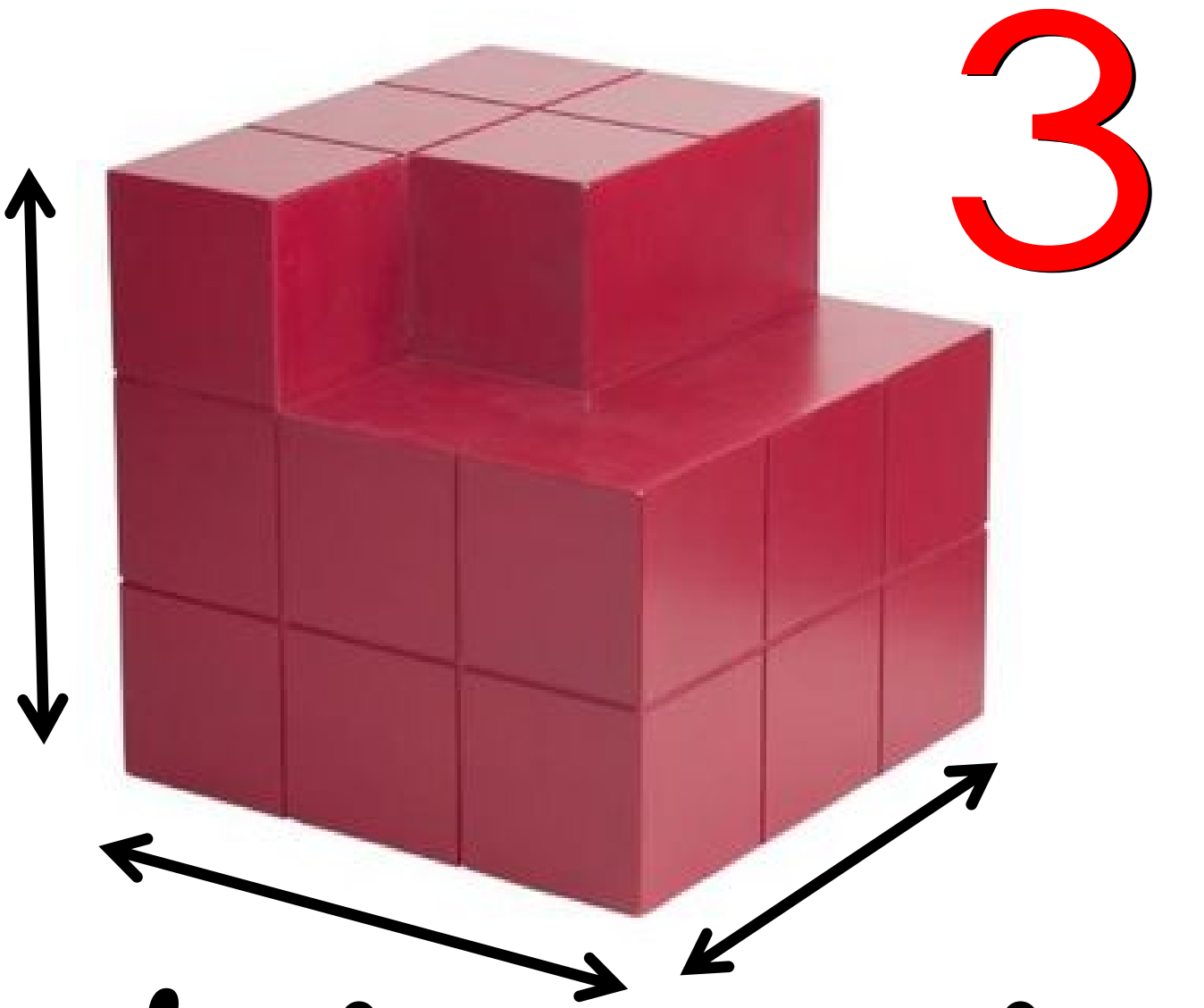

3

cubic unit

Cup

Question: What is a cup?

Answer: A cup measures 8 fluid ounces. When measuring a liquid, there are 2 cups in a pint, 4 cups in a quart and 16 cups in a gallon.

Gesture: Pretend to hold a cup, then hold up two fingers to represent that there are two cups in a pint. Finally, tap those two fingers on your forearm (the forearm is the gesture for pint).

Examples: Show a measuring cup and explain that a cup is a unit of measurement. Show a mug or a plastic cup and remind your children that while they are both cups, they are not the standard size used in measurement. Some cups may hold more than a cup! Fill a measuring cup and model how to write the measurement 1 c. Remind your students that we use the abbreviation "c" to stand for cups. Challenge your students to think of items that come in cup-sized containers such as single servings of yogurt or small school milk cartons.

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cup

Cylinder

Question: What is a cylinder?

Answer: A cylinder is a closed solid that has two circular bases connected by a curved surface.

Gesture: Create two circles with your tow hands then roll your hands over and over each other to show a cylinder rolling in one direction.

Examples: Bring in different 3D objects (cone, pyramid, sphere, cylinder, rectangular prism, cube) and have the kids sort them into different categories. What similarities do we see between a cylinder and a sphere? What differences?

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cylinder