Geometry Unit 9: Dilation and similarity

Bronx Early College Academy

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13 March 2023 - 31 March 2023

Learning Target: I can dilate a triangle

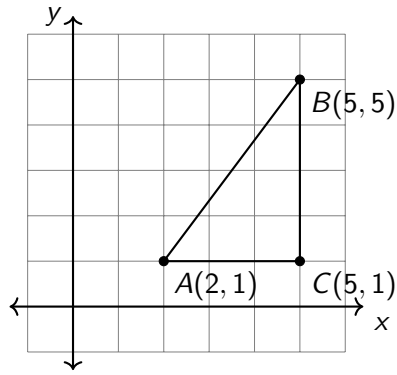
HSG.SRT.B.5 Use similarity criteria for triangles to solve problems

9.1 Monday 13 March

Do Now

1. Review your Jumprope grades
2. Right $\triangle ABC$ with $m\angle A = 53°$. Find $m\angle B$

Lesson: Internal and external triangle angle measures
Homework: Complete the classwork practice, Deltamath problem set



Dilation, similarity, and scaled proportions

Write this information in your notebook

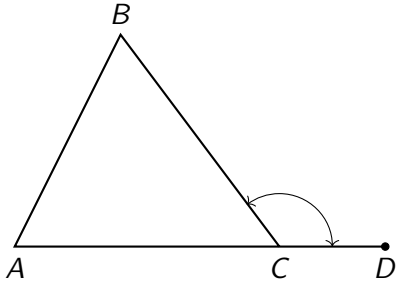
Similarity Objects with the same shape, but not necessarily the same size, are similar. Their corresponding angles are congruent and their corresponding sides are proportional.

Notation This is the symbol for similar triangles: $\triangle ABC \sim \triangle DEF$

Dilation A transformation that stretches objects on the plane by a factor away from a point

Scale factor The ratio of the lengths of the corresponding sides of dilated figures

Definition Two figures are similar if one or more rigid motions and a dilation will carry

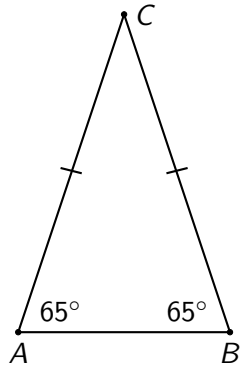


Learning Target: I can work with parallel lines

HSG.CO.A.5 Congruence transformations 8.2 Tuesday 14 February

Do Now: Isosceles $\triangle ABC$ has two angles measuring $65°$. Find the measure of the 3rd angle, $m\angle C$.

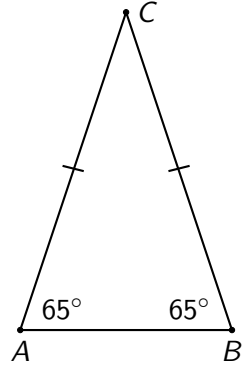
Lesson: Isosceles triangles, parallel lines and transversals
Homework: Complete classwork, Deltamath assignment



Isosceles base theorem: Sides $\cong$ *iff* angles $\cong$

Isosceles $\triangle ABC$ has two angles measuring 65°. Find the measure of the 3rd angle, $m\angle C$.

$65^\circ + 65^\circ + x = 180^\circ$
$130^\circ + x = 90^\circ$
$x = 30^\circ$



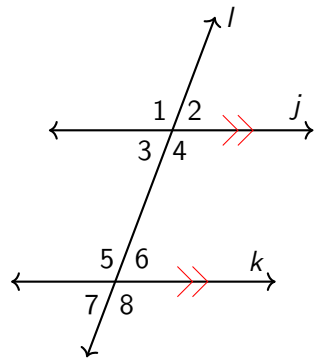
Two parallel lines and a transversal intersecting them

Vertical angles at intersections, opposite angles are $\cong$

Corresponding angles are congruent ($\angle 2 \cong \angle 6$)

Alternate interior angles inside parallels, not on the same side, are congruent ($\angle 3 \cong \angle 6$)

Same side exterior angles outside the transversal, on the same side, are supplementary ($m\angle 1 + m\angle 7 = 180^\circ$)



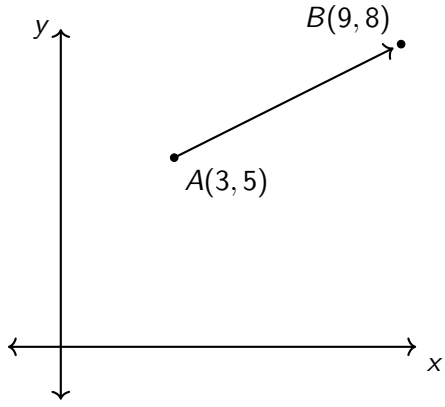
Learning Target: I can partition a line segment

HSG.GPE.B.6 Partition a segment in a given ratio

8.3 Thursday 16 February

Do Now:
Given $T_{+a,+b}$ maps $(3,5) \rightarrow (9,8)$
Find a and b

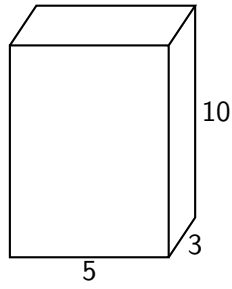
Lesson: Ratios, partitioning a line segment
Homework: Complete classwork, Deltamath assignment



Learning Target: I can calculate area and volume

HSG.GMD.A.3 Use volume formulas to solve problems 8.4 Monday 27 February

Do Now: Find the volume of the box with dimensions:
length = 5 cm
width = 3 cm
height = 10 cm



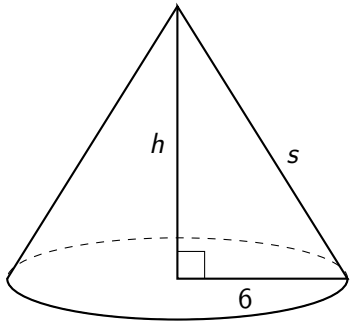
Lesson: Area, perimeter, volume, density, solids, cross sections
Homework: Complete classwork, Deltamath assignment

Use the Regents formula sheet or your notebook for formulas

$V_{cone} = \frac{1}{3}\pi r^2 h$

Given a cone with radius $r = 6$ inches, volume $V = 96\pi$ cubic inches, and density $D = 0.0267$ pounds per cubic inch

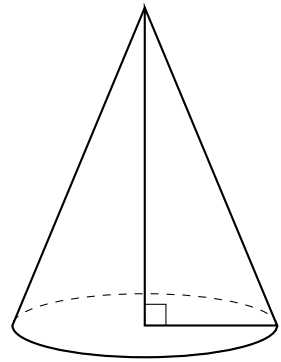
1. Solve for the height h of the cone
2. Find the *slant height* s using $a^2 + b^2 = c^2$
3. Find the cone's weight W to the *nearest pound*



slant height The diagonal length of the side of a cone or pyramid

The study of 3-dimensional shapes are called solid geometry

What 3-dimensional shape is made when a right triangle is rotated around its longer edge?



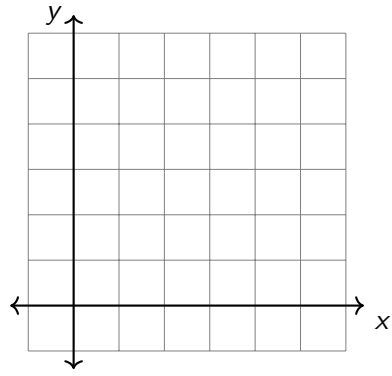
cross section the shape made by a plane intersecting a solid

Learning Target: I can graph linear equations and systems

HSA.REI.C.6 Solve systems of linear equations 8.5 Friday 3 March

Do Now: Graph the line $y = \frac{1}{2}x + 2$

Lesson: slope-intercept form, systems
Homework: Complete classwork, Deltamath assignment



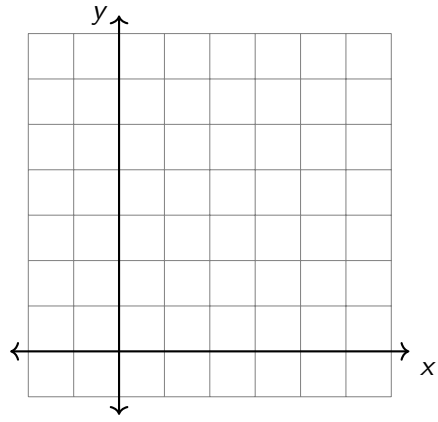
Solving a system using a graphing calculator

$$f(x) = -\frac{1}{2}x + 6$$

$$g(x) = \frac{3}{4}x + 1$$

system two or more equations with the same variables

intersection the point where two lines cross, or the (x, y) values that satisfy both equations

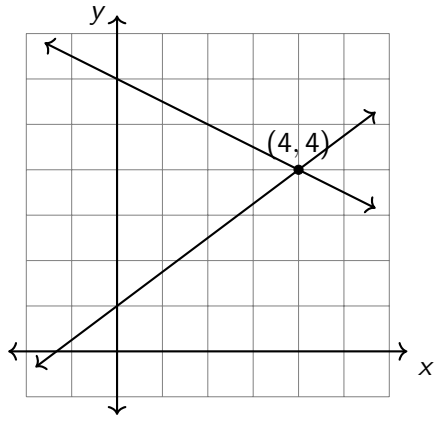


Solving a system using a graphing calculator

$$f(x) = -\frac{1}{2}x + 6$$

$$g(x) = \frac{3}{4}x + 1$$

$f(4) = -\frac{1}{2}(4) + 6 = -2 + 6 = 4$
$g(4) = \frac{3}{4}(4) + 1 = 3 + 6 = 4$



Learning Target: I can use slope to solve problems

HSG.GPE.B.5 Use slope to solve geometric problems

8.6 Monday 6 March

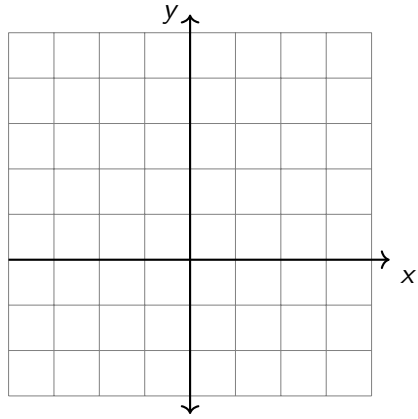
Do Now: Solve the system in your graphing calculator:

$$f(x) = -x + 2$$

$$g(x) = -3x - 2$$

Lesson: Perpendicular and parallel slopes, applications

Homework: Complete classwork, Deltamath assignment



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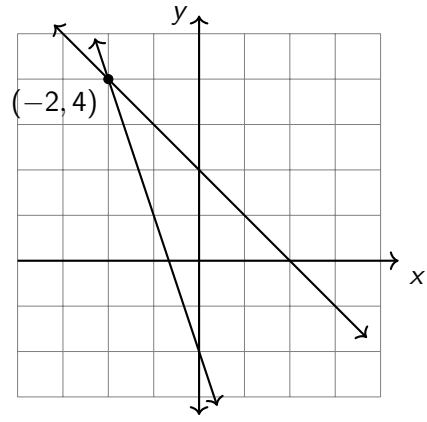
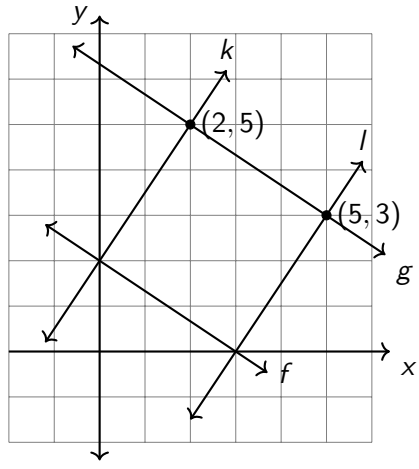


Use slopes to prove special polygons

Find each line's equation and their relationships

1. Find the equation of line f
2. Find the equation of line k
3. Show that $f \perp k$ because $m_f \times m_k = -1$
4. Find and label the slopes of g and l
5. Show the polygon is a rectangle



Learning Target: I can calculate distance in context

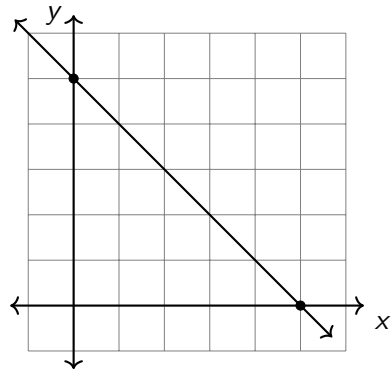
HSG.GPE.B.7 Use coordinates to compute perimeters of polygons

8.7 Tuesday 7 March

Do Now: Find the distance between the intercepts of the line show on the graph

Lesson: Distance formula, applications, simplifying radicals
Homework: Complete classwork, Deltamath assignment

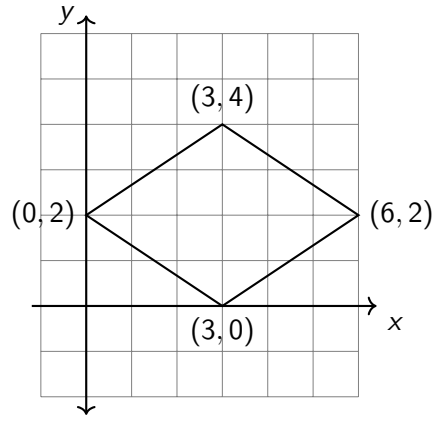
Unit test Friday, Deltamath and problem sets due



Use distance to prove special polygons

Prove the quadrilateral is a rhombus

1. Apply the distance formula to each pair of points
2. State the equality of the side lengths and the congruence of the sides
3. State the conclusion, that the quadrilateral is a rhombus



Learning Target: I can use volume formulas to solve problems

HSG.GMD.A.3 Use volume formulas to solve problems 8.8 Thursday 9 March

Do Now: Write in your notebook

1. Your strongest two skills in this unit
2. Your weakest 2 topics (and why)
3. Your current Jumprope grade
4. Your goal for this trimester's report card grade in Geometry

Lesson: Unit review
Notebook check, uniforms professionalism grade

Unit test tomorrow, Deltamath and problem sets due

Notebook check scoring

Start quickly at the beginning of class: notebook, pencil, folder, calculator; get to work

Jumprope mastery score

1. I have a notebook $\rightarrow$ 1
2. I have class notes $\rightarrow$ 2
3. I have stars indicating I quickly sit down and write the learning target $\rightarrow$ 3
4. I have stars and I complete the Do Now right away $\rightarrow$ 4