Geometry Summer Packet for Incoming HHS9 Students

The Geometry team at HHS9 has determined that there are 6 areas of Algebra I and 8th Grade Math skills that are vital for a student to be successful in Geometry. To ensure that every student is fully prepared to enter the rigor of a high school math class, we are providing this summer packet to help students review these skills. You will be more comfortable and successful in Geometry if you complete this packet before school starts. Below are some helpful videos that cover each topic.

Topic 1: Solving Equations

1. Solve equations with variables on both sides
   https://youtu.be/f15zA0PhSek

2. Solve equations with fractions
   https://youtu.be/10TJfOy3H-w

3. Solve multi-step equations
   https://youtu.be/vwqprHMCles

Topic 2: Factoring Polynomials

There are many different methods of factoring. Several methods are listed below to help you review factoring. Hopefully, at least one method looks familiar to you.

1. Factor using the AC Method
   https://youtu.be/AYkaCZUT4O4

2. Factor using the Box Method
   https://youtu.be/YFf7oDJp1pQ

3. Factor using the X Method
   https://youtu.be/aSMSIZZ0uR4

4. Factoring Special Products
   https://youtu.be/wmnd4fwxSus

Topic 3: Solving Quadratics

1. Solve by Factoring
   https://bit.ly/3eXnQdp
   https://youtu.be/2ZzuZvz33X0

2. Solve using the Quadratic Formula
   https://bit.ly/3hBY68m
   https://youtu.be/i7idZfS8t8w

Topic 4: Solving Systems of Equations

1. Solve SOE by Substitution
   https://bit.ly/3uYyoOV

2. Solve SOE by Elimination

   https://bit.ly/3ynfYtm
   https://bit.ly/3tWTlbX

Topic 5: Simplifying & Multiplying Radicals

1. Simplifying Radicals

   https://bit.ly/3yoRzUy

2. Multiplying Radicals

   https://bit.ly/33RJE3Z

Topic 6: Finding Area, Surface Area and Volumes

https://bit.ly/3wi7nGO

Topic 1: Solving Equations

Solve the following equations that have variables on both sides:

1. $6r + 7 = 13 + 7r$
2. $5 + 2x = 2x + 6$
3. $-7x - 3x + 2 = -8x - 8$
4. $-8n + 4(1+5n) = -6n - 14$
5. $-14 + 6b + 7-2b = 1 + 5b$
6. $4n - 40 = 7(-2n + 2)$
7. $n - 3n = 14 - 4n$
8. $-31 - 4x = -5 - 5(1 + 5x)$

Solve the following equations with fractions:

1. $\frac{3}{4}t = \frac{2}{3}$
2. $y - \frac{2}{5} = -\frac{1}{3}$
3. $\frac{2}{3} = -\frac{3}{5}t$
4. $\frac{1}{4} + \frac{1}{2}t = 4$
5. $\frac{3}{4}x = \frac{1}{2}$
6. $\frac{1}{4}x + x = -3 + \frac{1}{2}x$
7. $\frac{-5}{6}x = \frac{3}{4}$
8. $\frac{1}{3} + 2m = m - \frac{3}{2}$
9. $2y - \frac{3}{5} = \frac{1}{2}$
10. $m + \frac{2}{3} = \frac{1}{4}m - 1$

Solve the following multi-step equations:

1. $6(3m + 5) = 66$
2. $3p - 4 = 31$
3. $3(4y - 8) = 12$
4. $x - 2(x + 10) = 12$
5. $-5(x - 3) = -25$
6. $-15 = 5(3q - 10) - 5q$
7. $42 = 3(2 - 3h)$
8. $-3 = -3(2t - 1)$
9. $-10 = 5(2w - 4)$
10. $11.3 - 7.2f = -3.82$

Topic 2: Factoring Polynomials

Factor the polynomials below completely:

1. $x^2 + 5x + 6$
2. $x^2 - 2x - 3$
3. $x^2 - 5x$
4. $x^2 - 4$
5. $2x^2 - 18x - 72$
6. $x^2 - 12x - 28$
7. $4x^2 - 20x + 25$
8. $24x^2 - 6$
9. $2x^2 - x - 3$
10. $8x^2 - 10x - 3$
8. $2x^2 - 11x + 21$
12. $6x^2 + 26x + 24$

Topic 3: Solving Quadratics

Solve the following quadratics by factoring:

1. $x^2 - 11x + 19 = -5$
2. $n^2 + 7n + 15 = 5$
3. $n^2 + 3n - 12 = 6$
4. $9x^2 - 24x + 16 = 0$
5. $7r^2 - 14r = -7$
6. $2x^2 - 3x - 2 = 0$

Solve the following quadratic equations using the Quadratic Formula:

1. $6x^2 + 11x - 35 = 0$
2. $f^2 + 9f + 4 = 0$
3. $m^2 - 3m - 1 = 0$
4. $3x^2 + 8x + 2 = 0$
5. $4t^2 - 9t + 1 = 0$
6. $3w^2 + 8w + 3 = 0$

Topic 4: Solving Systems of Equations

Solve the following Systems of Equations Using Substitution:

1. $2x - 9y = 14$
   $x - 7 = -6y$

2. $-5x + 2y = 9$
   $y - 7x = 0$

3. $3x + 4y = -23$
   $x - 3y = 1$

4. $x + 3y = 25$
   $4x + 5y = 9$

5. $-5x + y = -2$
   $-3x + 6y = -12$

6. $-7x - 2y = -13$
   $x - 2y = 11$

Solve the following Systems of Equations by Elimination:

1. $-5x + 8y = 0$
   $-7x - 8y = -96$

2. $-7y - 4x = 1$
   $7y - 2x = 53$

3. $x - 2y = 14$
   $x + 3y = 9$

4. $8y - 9x = -3$
   $5y - 8x = 10$

5. $-5y + 6x = 40$
   $3y - 8x = -46$

6. $-9y + 4x - 11 = 0$
   $-3y + 10x + 31 = 0$

Topic 5: Simplifying & Multiplying Radicals

Simplify the following radicals:

1. $\sqrt{60}$

2. $-\sqrt{128}$

3. $5\sqrt{320}$

4. $2\sqrt{45}$

5. $\dfrac{20\sqrt{50}}{4\sqrt{2}}$

6. $\dfrac{\sqrt{21}}{7\sqrt{2}}$

Multiply and then simplify the following radicals:

1. $\sqrt{5} \cdot \sqrt{45}$

2. $(\sqrt{5})^2$

3. $\sqrt{6} \cdot \sqrt{30}$

4. $4(\sqrt{10})^2$

5. $\sqrt{6} \cdot \sqrt{2}$

6. $\sqrt{25} \cdot \sqrt{25}$

Topic 6: Finding Area, Surface Area and Volume

AREA

Triangle	$A = \frac{1}{2}bh$
Rectangle or Parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$

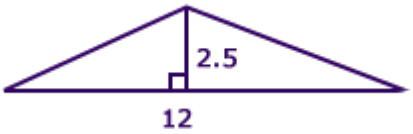
SURFACE AREA	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Pyramid	$S = \frac{1}{2}Pl$	$S = \frac{1}{2}Pl + B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$

VOLUME

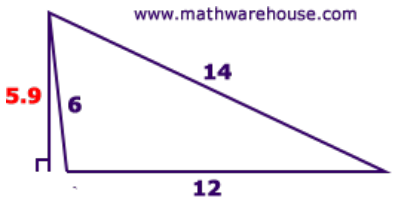
Prism or Cylinder	$V = Bh$
Pyramid or Cone	$V = \frac{1}{3}Bh$

In this section, be sure to write each formula, show the values you substitute in, and then write your answer with proper units of measure.

1. Find the area of the triangle.

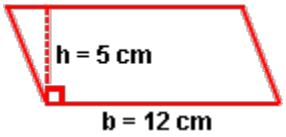


2. Find the area of the triangle.

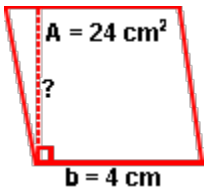


3. The perimeter of a rectangle is 20 centimeters. The length is 6 centimeters. What is the area of the rectangle? Be sure to draw and label a diagram.

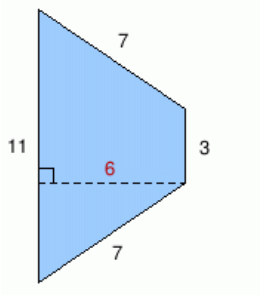
4. Find the area of the parallelogram.



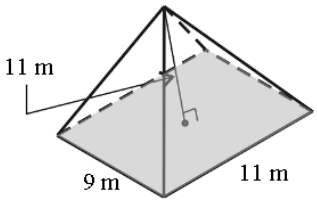
5. Find the height of the parallelogram.



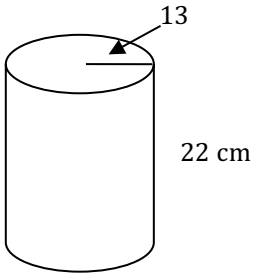
6. Find the area of the trapezoid.



7. Find the volume of the pyramid. The base is rectangular.



8. A cylinder has a radius of 13 cm and a height of 22 cm. Find the surface area and volume.



9. Find the surface area and volume of the triangular prism below.