Thoreau Middle School

Geometry Honors – Summer Enrichment Packet

Welcome to Geometry Honors!

This is a summer enrichment packet for all students enrolled in Geometry Honors at Thoreau Middle School for Fall 2021. This packet contains concepts that were taught in Algebra 1 Honors. It is important that you know and understand these concepts, as we will build on them in Geometry. **Be sure to show ALL of your work!**

Purpose: Summer enrichment opportunities can provide students access to review and support meaningful learning experiences aligned to course objectives.

The purpose of optional summer enrichment might be to

- activate students' background knowledge and skills
- provide opportunity to review introductory topics/prerequisites for the course
- create or enhance enthusiasm and interest in a subject or to serve as a springboard for future learning.

Please spend some time this summer keeping these skills and concepts fresh in your mind.

Have a great summer and see you in August!

From,

The Geometry Honors Teachers

Show all supporting work

Section 1 - Factoring

1. $x^2 - 6x - 27$
2. $3x^2 + 8x - 16$
3. $2x^4 - 32$
4. $10x^2 + x - 12$

Section 2 - Simplifying Radical Expressions

Simplify each radical expression completely. Leave no perfect square in the radicand.

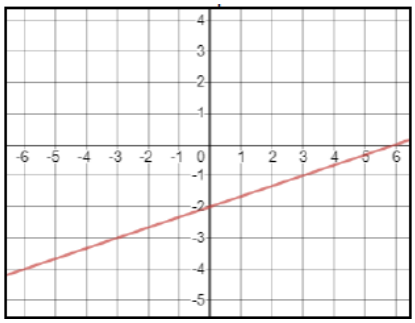
1. $\sqrt{588x^{16}y^{9}}$
2. $\sqrt[3]{1800a^{6}b^{21}}$
3. $\sqrt{\frac{14x^{5}}{5x^{7}}}$
4. $\frac{1}{4}\sqrt{140} \bullet 2\sqrt{35}$

Section 3 - Forms of a Line/Parallel and Perpendicular Lines

1. Write the equations of a line in slope-intercept form that goes through the points (3, -5) and (-2, 15).

2. Write the equation of a line in point-slope form that goes through the points (14, -1) and (12, -5). Use the first point in your final equation.

3. Write the equation of the line shown on the coordinate plane in standard form.



4. Write the equation of a line in slope-intercept form that is parallel to 6x - 4y = 12 and goes through the point (8, 24).

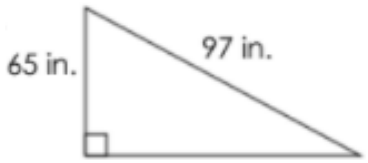
5. Write the equation of a line in point-slope form that is perpendicular to y = 7x - 5 and goes through the point (-3, 6).

Section 4 -Pythagorean Theorem

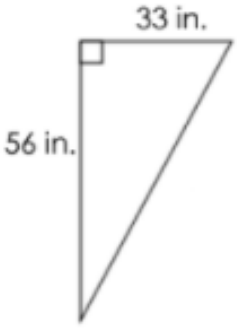
1. Prove whether or not the following lengths will form a right triangle:
   {9 cm, 15 cm, 12 cm}

2. Identify the length of the missing side of the right triangles. If the answer is not a rational number, leave your answer in simplified radical form.

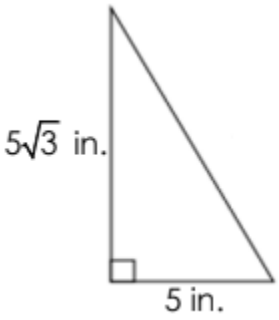
a.



b.



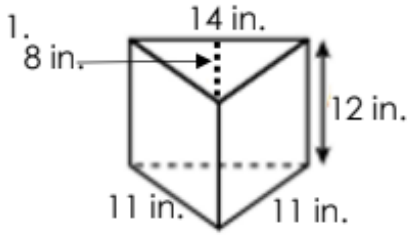
c.



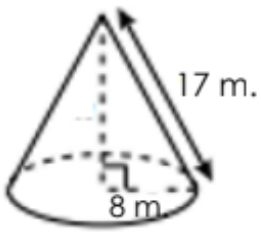
Section 5 - Surface Area and Volume of Solids (formula sheet follows)

Calculate the Surface Area and Volume of each solid.

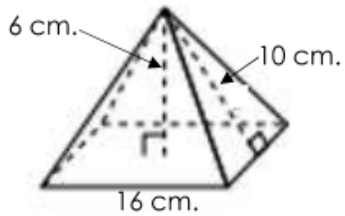
1.



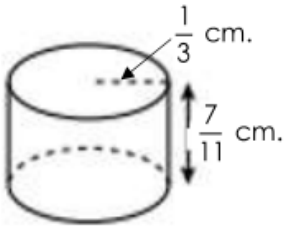
2.



3.

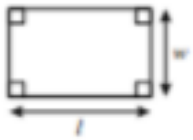


4.

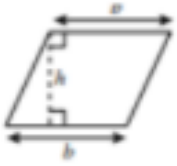


(Question #4: Answer as a simplified fraction Use $\frac{22}{7}$ for π)

$$A = \frac{1}{2}bh$$



$$p = 2l + 2w$$
$$A = lw$$

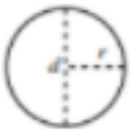


$$A = bh$$

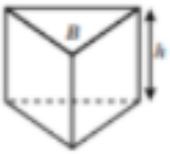
$$A = \frac{1}{2}h(b_1 + b_2)$$

Regular Hexagon

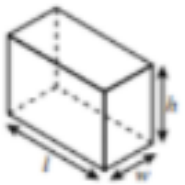
$$A = \frac{3\sqrt{3}}{2}s^2$$
$$A = \frac{1}{2}pa$$



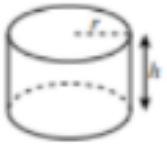
$$C = 2\pi r$$
$$C = \pi d$$
$$A = \pi r^2$$



$$V = Bh$$
$$L.A. = hp$$
$$S.A. = hp + 2B$$



$$V = lwh$$
$$S.A. = 2lw + 2lh + 2wh$$



$$V = \pi r^2 h$$
$$L.A. = 2\pi rh$$
$$S.A. = 2\pi r^2 + 2\pi rh$$

$$V = \frac{4}{3}\pi r^3$$
$$S.A. = 4\pi r^2$$

$$V = \frac{1}{3}\pi r^2 h$$
$$L.A. = \pi rl$$
$$S.A. = \pi r^2 + \pi rl$$

$$V = \frac{1}{3}Bh$$
$$L.A. = \frac{1}{2}lp$$
$$S.A. = \frac{1}{2}lp + B$$