

**Accelerated Geometry and Alg II: Summer Work**

Name \_\_\_\_\_

Welcome to Accelerated Geometry B and Algebra II at Starr's Mill High School:

We hope you have a great summer. Since it would be in your best interest to review some mathematics this summer in preparation for this challenging and fun class, we're providing you with a few review problems over material covering critical prerequisite topics. You should have attained mastery of the skills required to solve these problems in order to be successful next year. We expect our students to have a strong grasp of quadratics and basic geometry (mainly dealing with right triangles). If you need a refresher on any topics, we recommend visiting [www.khanacademy.org](http://www.khanacademy.org) and work through the modules relating to the topic. You will find helpful instructional videos on many mathematical topics on this site also. (A copy of this assignment is posted on the SMHS website under the AGAII page.)

Please write neatly and put the problem number outside the margin of the paper. Start your year off on the right track by completing these problems before school starts!

***Quadratics: (ALL students should be able to factor QUICKLY and ACCURATELY.)***

Factor each of the following COMPLETELY.

1.  $x^2 + 4x - 21$

2.  $6x^2 - 7x - 5$

3.  $100x^2 - 9$

4.  $9x^2 + 12x + 4$

5.  $2x^2 - 72$

6.  $6x^2 + 5x - 6$

7.  $4x^2 - 19x - 5$

8.  $3x^2 - 14x + 15$

9.  $5x^2 + 10x - 40$

10.  $3x^2 - 3$

11.  $8x^3 - 4x^2 - 60x$

12.  $10x^2 + 8x - 15x - 12$

***Solve each equation by factoring to find the zeros.***

13.  $x^2 = 3x$

14.  $x^2 - 26x + 169 = 0$

15.  $12x^2 = 5 - 17x$

16.  $0 = 36x^2 - 12x + 1$

17.  $x^2 + 6x = 16$

18.  $8x^2 = 32x$

Solve the following by using the quadratic formula. Leave answers in exact form (simplify radicals without the calculator).

19.  $8x^2 - 6x - 9 = 0$

20.  $4x = 3x^2 - 2$

21.  $(x + 4)(x + 3) = 15$

**Operations with Radicals:**

Simplify.

22.  $-3\sqrt{12} + 3\sqrt{3} + 3\sqrt{20}$

23.  $-2\sqrt{45} - 3\sqrt{20} - 2\sqrt{6}$

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

25.  $4\sqrt{15}(\sqrt{6} + \sqrt{5})$

26.  $3\sqrt{3}(4 - 3\sqrt{5})$

27.  $-\sqrt{2}(\sqrt{10} - 4\sqrt{6})$

**Geometry:**

Use the translation  $(x, y) \rightarrow (x + 2, y - 3)$ .

28. What is the image of A(1,0)?

29. What is the preimage of C'(-3,-9)?

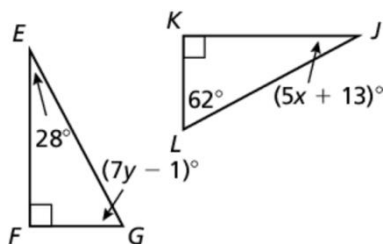
**Give the coordinates of  $\triangle A'B'C'$  after the given transformation.**

30. A(-8,6), B(-5,-2), C(0,9), reflected over the x-axis

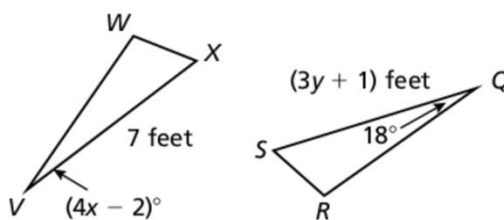
31. A(7,1), B(-1,-7), C(4,-6), rotated  $90^\circ$  about the origin

**In Exercises 32-33, find the values of  $x$  and  $y$ .**

32.  $\triangle EFG \cong \triangle JKL$



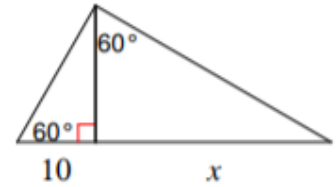
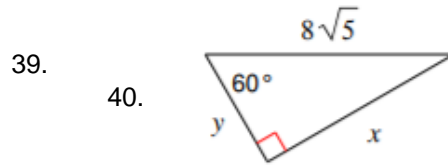
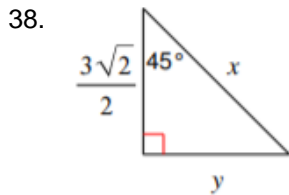
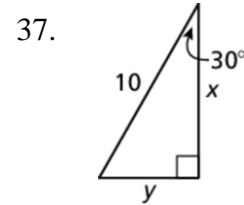
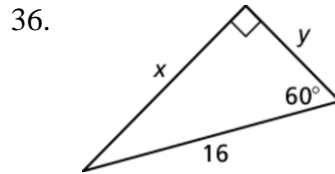
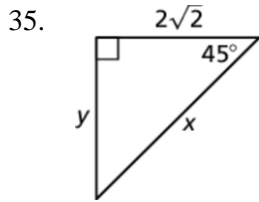
33.  $\triangle VWX \cong \triangle QRS$



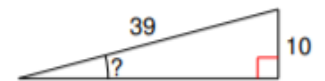
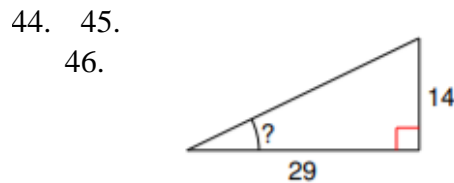
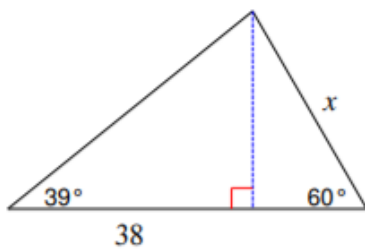
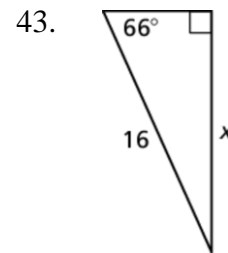
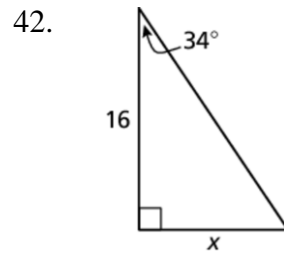
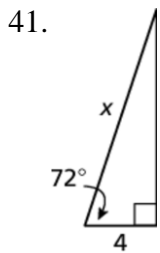
34. A line segment AC is bisected by point B. The length of AB is  $8x + 12$  and the length of BC is  $6x + 18$ .

- What is the value of  $x$ ?
- What is the length of  $\overline{AB}$ ?
- What is the length of  $\overline{AC}$ ?

**Find the values of  $x$  and  $y$ . Write your answer in simplest form.**



**Find the value of  $x$ . Round your answer to the nearest tenth.**



47. A wheelchair ramp is 4.2 meters long. It rises up 0.7 meters. What is the angle of elevation to the nearest tenth of a degree?