

Answers should be written in the spaces provided. All students must write legibly in the correct blanks on the answer sheet and in simplest form. **Exact** answers are to be given unless otherwise



4. In the diagram, $\overline{EB} \perp \overline{AC}$ and points $A, B,$ and C are collinear. \overline{BF}



bisects $\angle GFE$. If $\angle GBE = 38^\circ$ and $\angle CBD = 44^\circ$, find the

5. In $\triangle ABC$, $\angle A = 15^\circ$, $\angle B = 30^\circ$, and $\angle C = 135^\circ$. Find the

8. If the exterior angle of a triangle is increased by 4 units, such that the sum of the interior angles is 180, find the measure of the

10. Find the integer solutions of the system of equations $x^2 + y^2 = 10$ and $x + y = 4$.

19. If $\frac{a + b\sqrt{3}}{3 - \sqrt{3}} = \frac{c + d\sqrt{3}}{d}$ where $a, b, c,$ and d are integers and $d \neq 0$, and the minimum value of $a^2 + b^2 + c^2 + d^2$ is 100 , find $a + b + c + d$.
20. Circle A has center $(6, -2)$ and radius 5 . Circle B has center $(-3, 4)$ and radius 3 . Find the exact length of the

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2.

12.

5. _____

15. _____

6. _____

16. _____

7. _____

17. _____

8. _____

18. _____

10. _____

20. _____

7. 342 Dollar sign optional

17. 1000

8. 3

18. 1680

9. 507

19. 324

10. 360

20. $\sqrt{53}$ Must be in