Accelerated Geometry B/Algebra II A
Unit 4 Test Study Guide

Name: ____________________'s favorite game is:

*Directions: Find the perimeter of the figure given the points on a coordinate plane.*

1. $A(2, 3)$, $B(5, -3)$, $C(2, -3)$

AB: $\sqrt{(5-2)^2+(-3-3)^2} = \sqrt{3^2+(-6)^2} = \sqrt{9+36} = \sqrt{45} = 3\sqrt{5}$

$5 \quad 9$

$3 \quad 3$

BC: $\sqrt{(2-5)^2+(-3-(-3))^2} = \sqrt{(-3)^2+0^2} = \sqrt{9} = 3$

AC: $\sqrt{(2-2)^2+(-3-3)^2} = \sqrt{0^2+(-6)^2} = \sqrt{36} = 6$

$\boxed{9+3\sqrt{5} \text{ units}}$

2. $C(0, 3)$, $A(-1, -1)$, $K(4, 2)$, $E(3, -2)$

CA: $\sqrt{(-1-0)^2+(-1-3)^2} = \sqrt{(-1)^2+(-4)^2} = \sqrt{1+16} = \sqrt{17}$

AK: $\sqrt{(4-(-1))^2+(2-(-1))^2} = \sqrt{5^2+3^2} = \sqrt{25+9} = \sqrt{34}$

$\boxed{2\sqrt{17}+2\sqrt{34} \text{ units}}$

KE: $\sqrt{(3-4)^2+(-2-2)^2} = \sqrt{1^2+(-4)^2} = \sqrt{1+16} = \sqrt{17}$

EC: $\sqrt{(3-0)^2+(-2-3)^2} = \sqrt{3^2+(-5)^2} = \sqrt{9+25} = \sqrt{34}$

3. $P(5, -1)$, $L(1, 2)$, $U(9, -4)$, $M(4, 4)$

PL: $\sqrt{(1-5)^2+(2-(-1))^2} = \sqrt{(-4)^2+3^2} = \sqrt{16+9} = \sqrt{25} = 5$

LU: $\sqrt{(9-1)^2+(-4-2)^2} = \sqrt{8^2+(-6)^2} = \sqrt{64+36} = \sqrt{100} = 10$

$\boxed{15+\sqrt{26}+\sqrt{89} \text{ u}}$

UM: $\sqrt{(4-9)^2+(4-(-4))^2} = \sqrt{(-5)^2+8^2} = \sqrt{25+64} = \sqrt{89}$

PM: $\sqrt{(4-5)^2+(4-(-1))^2} = \sqrt{(-1)^2+5^2} = \sqrt{1+25} = \sqrt{26}$

4. $S(0, 3)$, $M(-4, 3)$, $I(2, 5)$, $T(-8,1)$, $E(6, 2)$

SM: $\sqrt{(-4-0)^2+(3-3)^2} = \sqrt{(-4)^2+0^2} = \sqrt{16} = 4$

$\sqrt{40} = 2\sqrt{10}$

MI: $\sqrt{(2-(-4))^2+(5-3)^2} = \sqrt{6^2+2^2} = \sqrt{36+4} = \sqrt{40} = 2\sqrt{10}$

$4 \quad 10$

$2 \; 2 \quad 2 \; 5$

IT: $\sqrt{(-8-2)^2+(1-5)^2} = \sqrt{(-10)^2+(-4)^2} = \sqrt{100+16} = \sqrt{116} = 2\sqrt{29}$

$\sqrt{116}$

$4 \quad 29$

$2 \; 2$

TE: $\sqrt{(6-(-8))^2+(2-1)^2} = \sqrt{14^2+1^2} = \sqrt{196+1} = \sqrt{197}$

ES: $\sqrt{(6-0)^2+(2-3)^2} = \sqrt{6^2+(-1)^2} = \sqrt{36+1} = \sqrt{37}$

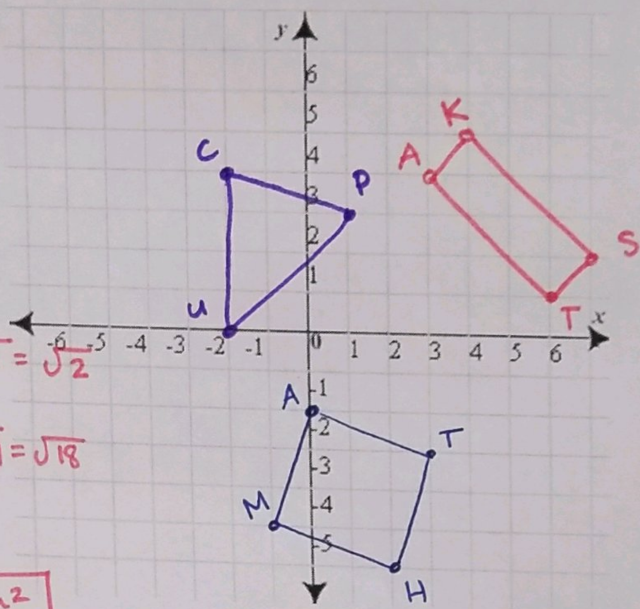
$\boxed{4+2\sqrt{10}+2\sqrt{29}+\sqrt{197}+\sqrt{37} \text{ units}}$

**Directions: Find the area of each polygon with the given coordinates.**

5. $C(-2, 4)$, $U(-2, 0)$, $P(1, 3)$

b: 4
h: 3

$A = \frac{1}{2}bh \Rightarrow \frac{1}{2}(4)(3) = 6u^2$




6. $K(4, 5)$, $A(3, 4)$, $T(6, 1)$, $S(7, 2)$

KA: $\sqrt{(3-4)^2+(4-5)^2} = \sqrt{(-1)^2+(-1)^2} = \sqrt{1+1} = \sqrt{2}$

AT: $\sqrt{(6-3)^2+(1-4)^2} = \sqrt{3^2+(-3)^2} = \sqrt{9+9} = \sqrt{18}$

$\sqrt{18} = 3\sqrt{2}$

2 9

3 3

$3\sqrt{2} \cdot \sqrt{2} =$

$3\sqrt{4} = 3 \cdot 2 = \boxed{6u^2}$

7. $M(-1, -5)$, $A(0, -2)$, $T(3, -3)$, $H(2, -6)$

MA $= \sqrt{(0-(-1))^2+(-2-(-5))^2} = \sqrt{2^2+3^2} = \sqrt{4+9} = \sqrt{13}$

MH: $\sqrt{(2-(-1))^2+(-6-(-5))^2} = \sqrt{3^2+(-1)^2} = \sqrt{9+1} = \sqrt{10}$

$\sqrt{13} \cdot \sqrt{10} = \boxed{\sqrt{130}\,u^2}$

**Directions: Find the coordinates that partitions the segment at the given ratio.**

8. Partition the line segment $\overline{WM}$ at a ratio of $\overset{a}{2}:\overset{b}{5}$, where $W(-4, 2)$ and $M(3, 9)$.

$\left(-4+\frac{2}{7}(3-(-4)), 2+\frac{2}{7}(9-2)\right) \rightarrow \left(-4+\frac{2}{7}(7), 2+\frac{2}{7}(7)\right) \rightarrow (-4+2, 2+2)$

$\boxed{(-2, 4)}$

9. Partition the directed line segment $GM$ at point $Q$, such that Q lies $\frac{2}{5}$ of the way, given $G(-2, -3)$ and $M(1, 7)$.

$\left(-2+\frac{2}{5}(1-(-2)), -3+\frac{2}{5}(7-(-3))\right) \rightarrow \left(-2+\frac{2}{5}(3), -3+\frac{2}{5}(10)\right)$

$\boxed{\left(-\frac{4}{5}, 1\right)}$

10. Find the coordinates of point $T$ that lies $\frac{1}{3}$ of the way on the directed line segment $\overline{GA}$, where $G(4, 6)$ and $A(5, -1)$.

$\left(4+\frac{1}{3}(5-4), 6+\frac{1}{3}(-1-6)\right) \rightarrow \left(4+\frac{1}{3}(1), 6+\frac{1}{3}(-7)\right)$

$\boxed{\left(4\frac{1}{3}, 3\frac{2}{3}\right)}$ or $\left(\frac{13}{3}, \frac{11}{3}\right)$

*Directions: Write the equation of the line with the given information.*

11. A line parallel to $y=3x+4$ and goes through point (-1, -2).

$m: 3$ $\quad$ $x_1: -1$ $\quad$ $y_1: -2$

$y-(-2)=3(x-(-1))$

$y+2=3(x+1)$

$y+2=3x+3$

$y=3x+1$

12. A line perpendicular to $3y+2x=6$ and goes through the point (3, 3).

$m: \frac{3}{2}$ $\quad$ $x_1: 3$ $\quad$ $y_1: 3$

$y-3=\frac{3}{2}(x-3)$

$y-3=\frac{3}{2}x-\frac{9}{2}$

$y=\frac{3}{2}x-1.5$

13. A line parallel to the line that goes through points (4, 2) and (0, 8) and goes through the point (1, 1).

$\frac{8-2}{0-4}=\frac{6}{-4}=-\frac{3}{2}$

$m: -\frac{3}{2}$ $\quad$ $x_1: 1$ $\quad$ $y_1: 1$

$y-1=-\frac{3}{2}(x-1)$

$y-1=-\frac{3}{2}x+\frac{3}{2}$

$y=-\frac{3}{2}x+2.5$

14. A line perpendicular to the line that goes through points (3, 0) and (-1, -1) and goes through point (4, 1).

$\frac{-1-0}{-1-3}=\frac{-1}{-4}=\frac{1}{4}$

$m: -4$ $\quad$ $x_1: 4$ $\quad$ $y_1: 1$

$y-1=-4(x-4)$

$y-1=-4x+16$

$y=-4x+17$

15. A line perpendicular to the line that passes through (1, 2) (1, -4) and goes through the point (4, 3).

$\frac{-4-2}{1-1}=\frac{}{0}=$ vertical $\perp \rightarrow$ m: horizontal (0 slope)

$x_1: 4$ $\quad$ $y_1: 3$

$y-3=0(x-4)$

$y-3=0$

$y=3$

16. A line parallel to the line $4y+3=2x$ and goes through the point (-2, -5).

$m: \frac{1}{2}$

$x_1: -2$

$y_1: -5$

$y-(-5)=\frac{1}{2}(x-(-2))$

$y+5=\frac{1}{2}(x+2)$

$y+5=\frac{1}{2}x+1$

$y=\frac{1}{2}x-4$