9.5 Area & Perimeter
on Coordinate Plane

Name: _____

1.
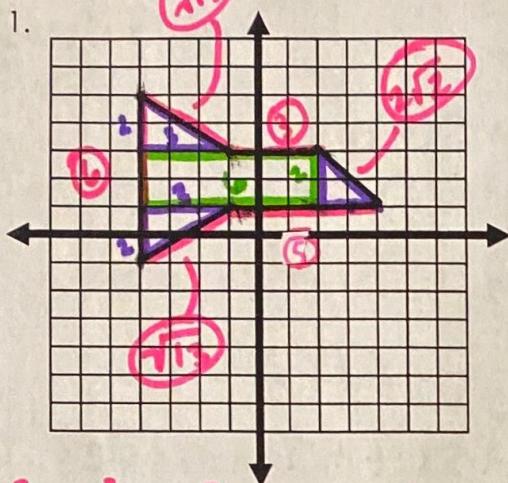
$2^2 + 3^2 = c^2$ $2^2 + 2^2 = c^2$

$\sqrt{13} = \sqrt{c^2}$ $\sqrt{8} = \sqrt{c^2}$

$c = \sqrt{13}$ $c = 2\sqrt{2}$

Method 1:
Divide up the shape into different regions and then __add__ the areas of the regions for the total area.

$\square \quad A = bh \rightarrow 6(2) = 12$

$\triangle \quad A = \frac{1}{2}bh \rightarrow \frac{1}{2}(3)(2) = 3$

$\frac{1}{2}(3)(2) = 3$

$\frac{1}{2}(2)(2) = 2$

Area: __$12 + 3 + 3 + 2 = 20$ units²__

Perimeter: __$6 + 3 + 5 + \sqrt{13} + \sqrt{13} + 2\sqrt{2} =$__

Exact: $14 + 2\sqrt{13} + 2\sqrt{2}$

Approx: 24.04 units

2.
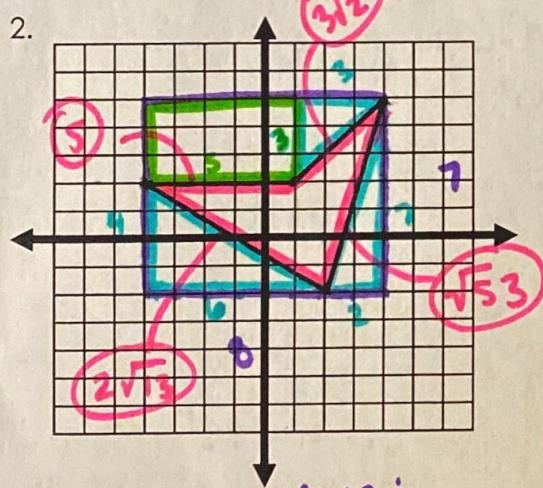
Area:
$56 - 15 - 4.5 - 7 - 12 =$
17.5 units²

Perimeter:
$5 + 3\sqrt{2} + \sqrt{53} + 2\sqrt{13} =$

$3^2 + 3^2 = c^2$ $7^2 + 2^2 = c^2$ $4^2 + 6^2 = c^2$

$\sqrt{18} = \sqrt{c^2}$ $\sqrt{53} = \sqrt{c^2}$ $\sqrt{52} = \sqrt{c^2}$

$c = 3\sqrt{2}$ $c = \sqrt{53}$ $c = 2\sqrt{13}$

Method 2:
-Draw a box around the figure and find the area of the box.
-Find the areas of the regions in between the box and figure.
-Once you find the areas, __Subtract__ from the area of the box.

$\square \quad A = bh \rightarrow 8(7) = 56$

$\square \quad A = bh \rightarrow 5(3) = 15$

$\triangle \quad A = \frac{1}{2}bh \rightarrow \frac{1}{2}(3)(3) = 4.5$

$\frac{1}{2}(2)(7) = 7$

$\frac{1}{2}(4)(6) = 12$

Area: __17.5 units²__

Perimeter: __Exact: $5 + 3\sqrt{2} + \sqrt{53} + 2\sqrt{13}$__

Approx: 23.73

3.

$2^2+3^2=c^2$ $\quad$ $2^2+3^2=c^2$
$\sqrt{13}=\sqrt{c^2}$ $\quad$ $\sqrt{13}=\sqrt{c^2}$
$c=\sqrt{13}$ $\qquad$ $c=\sqrt{13}$

Area: $\underline{20+9+3+3=35\ un^2}$

Perimeter: $\underline{22+2\sqrt{13}}$ or

$\qquad\qquad$ **29.21 units**
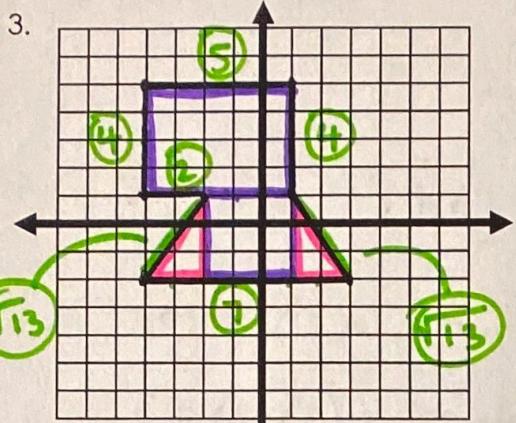
Area:

$\square$ $bh \rightarrow 5(4)=20$
$\qquad\qquad 3(3)=9$

$\triangle\ \frac{1}{2}bh \rightarrow \frac{1}{2}(2)(3)=3$
$\qquad\qquad\quad \frac{1}{2}(2)(3)=3$

Perimeter: $4+5+4+\sqrt{13}+7+\sqrt{13}+2=$

4.

Perimeter: $10+\sqrt{53}+5+5+\sqrt{37}$
$2^2+7^2=c^2$ $\quad$ $4^2+3^2=c^2$ $\quad$ $4^2+3^2=c^2$
$c=\sqrt{53}$ $\qquad\quad$ $c=5$ $\qquad\quad$ $c=5$

Area: $\underline{\text{68 units}^2}$

Perimeter: $\underline{20+\sqrt{53}+\sqrt{37}}$ or

$\qquad\qquad$ **33.36**

Area:

$\square$ $bh \rightarrow 10(10)=100$

$\triangle\ \frac{1}{2}bh \rightarrow \frac{1}{2}(2)(7)=7$

$100-7-6-6-3-6-4:$ $\qquad \frac{1}{2}(3)(4)=6$
$\ \ =68\ units^2$ $\qquad\qquad\quad \frac{1}{2}(3)(4)=6$

$1^2+6^2=c^2$ $\qquad\quad \frac{1}{2}(1)(6)=3$

$\square\ bh \rightarrow 3(2)=6$
$c=\sqrt{37}$ $\qquad\qquad\quad 1(4)=4$

5.

$3^2+2^2=c^2$
$c=\sqrt{13}$

$1^2+7^2=c^2$
$c=5\sqrt{2}$
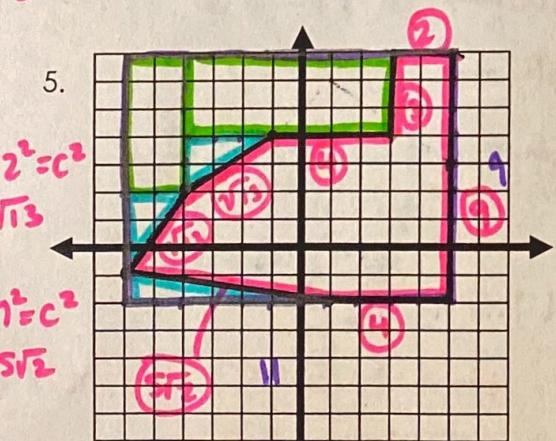
P: $4+9+2+3+4+\sqrt{13}+\sqrt{13}+5\sqrt{2}$
Exact: $22+2\sqrt{13}+5\sqrt{2}$ Approx: 36.28

Area: $\underline{\text{58.5 units}^2}$

Perimeter: $\underline{22+2\sqrt{13}+5\sqrt{2}}$ or 36.28

$\square\ bh \rightarrow 11(9)=99$ $\qquad$ Area:

$\square\ bh \rightarrow 2(5)=10$ $\qquad$ $99-10-21-3-3-3.5:$
$\qquad\qquad 3(7)=21$ $\qquad\qquad$ 58.5

$\triangle\ \frac{1}{2}bh \rightarrow \frac{1}{2}(2)(3)=3$
$\qquad\qquad\quad \frac{1}{2}(2)(3)=3$
$\qquad\qquad\quad \frac{1}{2}(1)(7)=3.5$