MATH 247
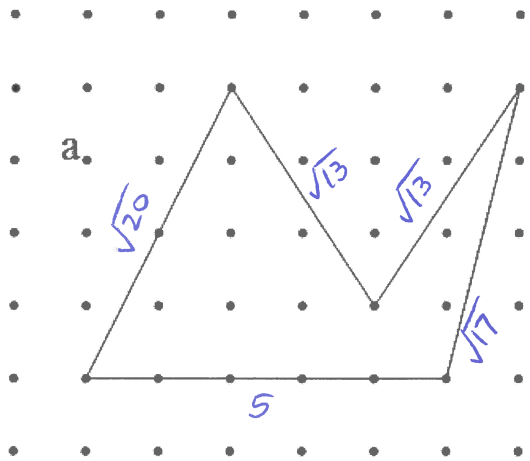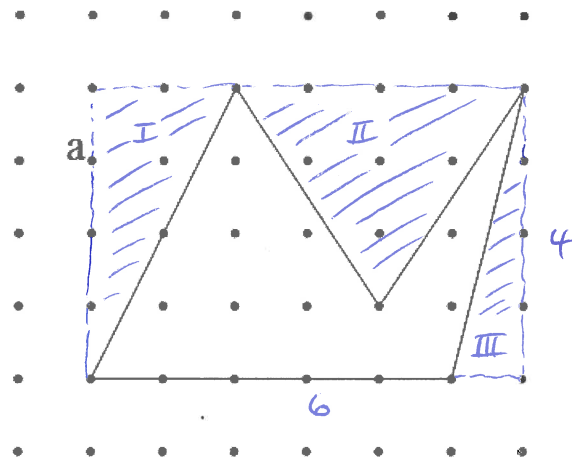**Area/Perimeter (Solutions)**

Find the <u>perimeter</u> of each shape. Then choose your favorite one and find its enclosed <u>area</u>. Give both an exact answer (with things like 5π and $\sqrt{7}$) and a decimal approximation (round to the hundredths place).

a.

$\sqrt{20}$ $\sqrt{13}$ $\sqrt{13}$ $\sqrt{17}$

5

a.

I   II

4

III

6

<u>Perimeter</u>

$\sqrt{20} + \sqrt{13} + \sqrt{13} + \sqrt{17} + 5$

$\boxed{\sqrt{20} + 2\sqrt{13} + \sqrt{17} + 5}$
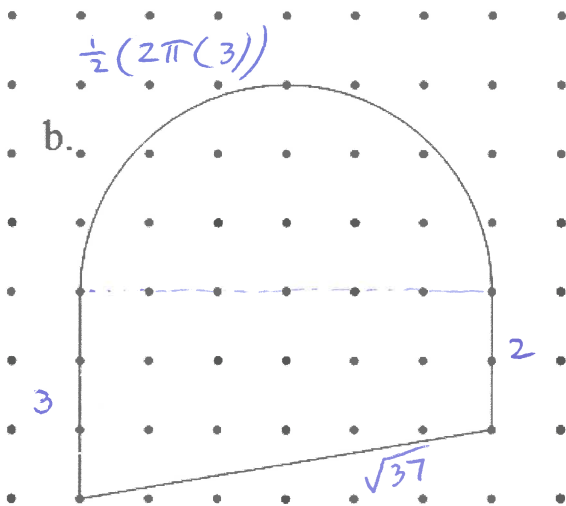
<u>Area</u> $6 \cdot 4 = 24$

$I = \frac{1}{2}(2)(4) = 4$

$II = \frac{1}{2}(4)(3) = 6$

$III = \frac{1}{2}(4)(1) = 2$
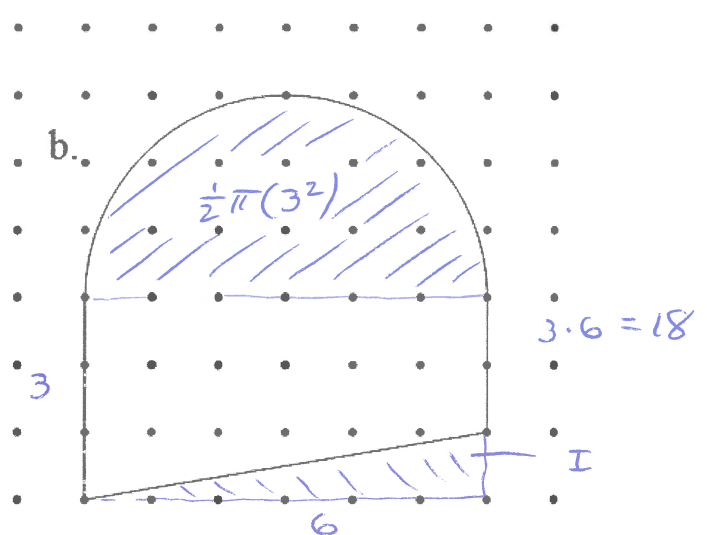
$24 - 4 - 6 - 2 = \boxed{12}$

b.

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

3

2

$\sqrt{37}$

b.

$\frac{1}{2}\pi(3^2)$

3

$3 \cdot 6 = 18$

I

6

<u>Perimeter</u>

$3\pi + 3 + 2 + \sqrt{37}$

$\boxed{3\pi + 5 + \sqrt{37}}$

<u>Area</u>

$I = \frac{1}{2}(6)(1) = 3$

$9\pi/2 + 18 - 3$
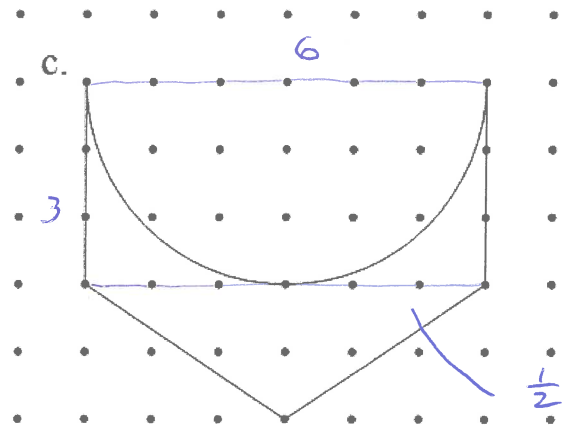
$= \boxed{9\pi/2 + 15}$

c.

3

$\pi(3)$ ↓

3
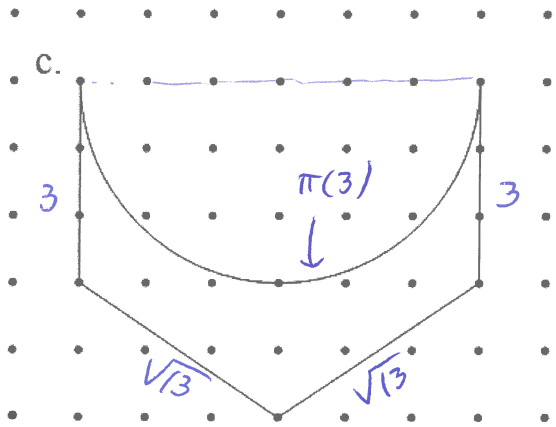
$\sqrt{13}$ $\sqrt{13}$

Perimeter

$$3\pi + 3 + 3 + \sqrt{13} + \sqrt{13}$$

$$\boxed{3\pi + 6 + 2\sqrt{13}}$$

c.

6

$3 \cdot 6 = 18$

3
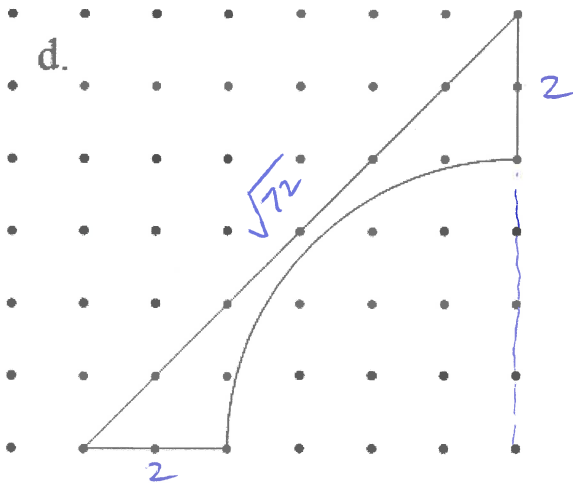
$\frac{1}{2}(6)(2) = 6$

Area

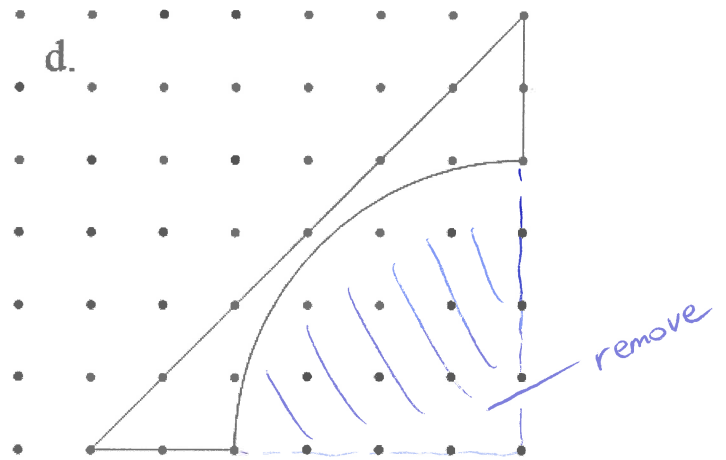$$\frac{1}{2}\pi(3)^2 = 9\pi/2$$

$$18 - \frac{9\pi}{2} + 6$$

$$= \boxed{24 - 9\pi/2}$$

d.

2

$\sqrt{72}$

2

Perimeter

$$\sqrt{72} + 2 + 2 + \frac{1}{4}(2\pi \cdot 4)$$

$$\boxed{\sqrt{72} + 4 + 2\pi}$$

d.

remove

Area

$$\frac{1}{2}(6)(6) - \frac{1}{4}\pi \cdot 4^2$$

$$\boxed{18 - 4\pi}$$