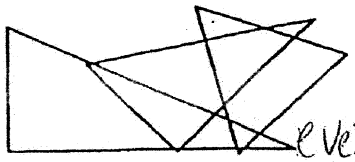
ea and Perimeter

e Area of Triangles

each "square" is 1 units squared



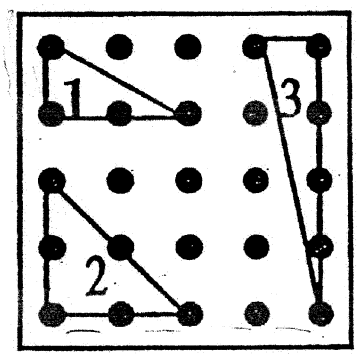
every right △ is $\frac{1}{2}$ of a rectangle

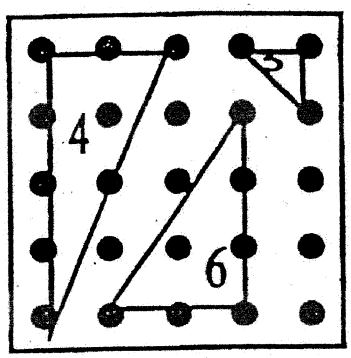
leg · leg / 2

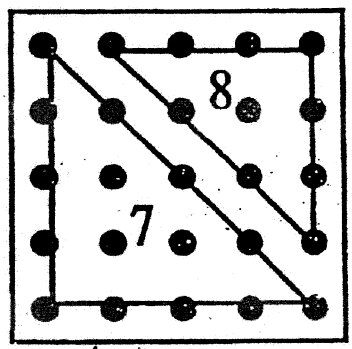
xploration Activity: Surrounding Rectangles

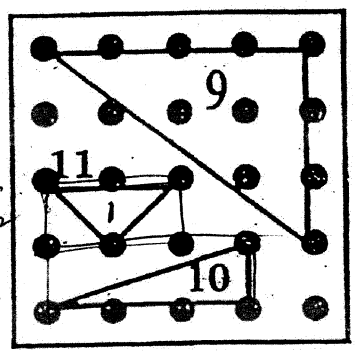
ake each triangle on your geoboard, find its area, and record the number of square units it contains.

	1 unit²
	2
	2
	4
	1/2 or .5
	3
	8
	4.5
	6
0.	1.5 un²
1.	1
2.	3
3.	2
4.	1
5.	5.5
6.	1/2
7.	2
8.	2
9.	.5
0.	3

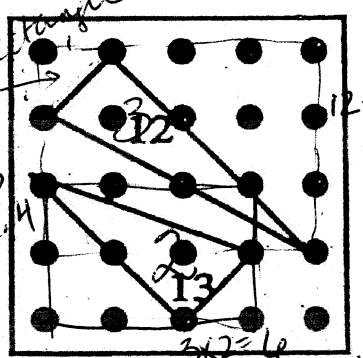








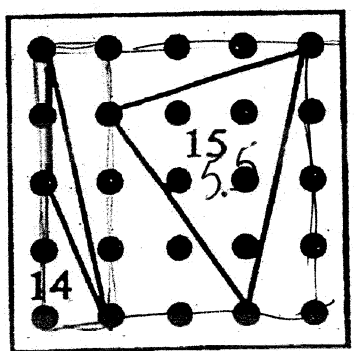
rect = 2
$-\frac{1}{2}-\frac{1}{2}$
$\frac{1}{2}\cdot 4\cdot 1$
$= 2$



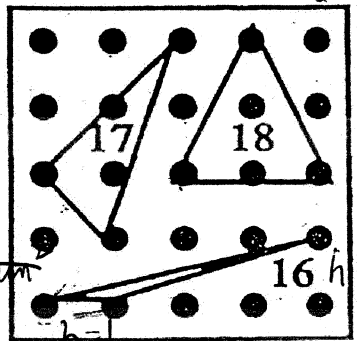
3x4 rectangle
$-\frac{1}{2}\cdot 4\cdot 1$
$-\frac{1}{2}\cdot 3\cdot 3$
$1 - \frac{1}{2}\cdot 2\cdot 4$

$12 - \frac{1}{2} - 4\frac{1}{2}$
$- 4 =$
3

$3\times 2 = 6$

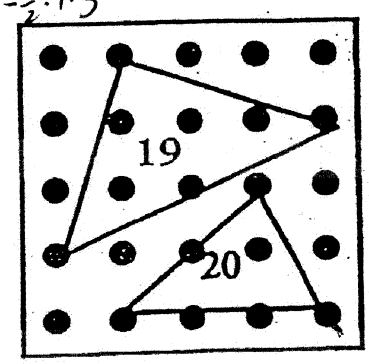


$6 - \frac{1}{2}\cdot 2\cdot 2 - \frac{1}{2}\cdot 1\cdot 3$



$b = 1$

16) $\frac{1}{2}\cdot 1\cdot 1 = \frac{1}{2}$



do 10–14
check answers
use 1 cm graph paper to draw 4x4 rectangles for each "board"

#14 example
circumscribe a rectangle
1x4 = 4
subtract 2 right 4's
$\frac{1}{2}\cdot 2\cdot 1 = 1$
$\frac{1}{2}\cdot 1\cdot 4 = 2$
$4 - 1 - 2 = 1$ un

15) $3\times 4 = 12$
$-\frac{1}{2}\cdot 1\cdot 3 - \frac{1}{2}\cdot 1\cdot 4$
$-\frac{1}{2}\cdot 2\cdot 3$
$12 - 1.5 - 2 - 3$
5.5

turn over

Performance Assessment

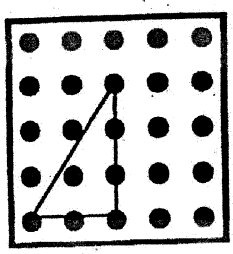
Finding the Area of Shapes Using Surrounding Rectangles.

Use same strategy on these.

1. 6 7 11 15 14

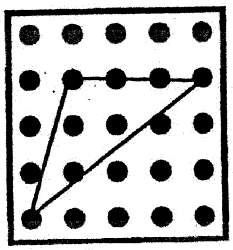
Make each shape on your geoboard. For each shape construct the surrounding rectangle and draw it on the same diagram. Find and record the area of each shape in square units.

1.



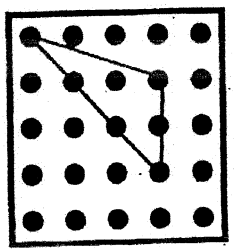
A=_____

2.



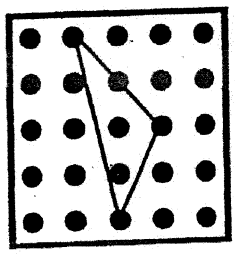
A=_____

3.



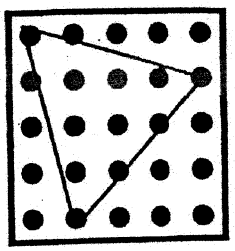
A=_____

4.



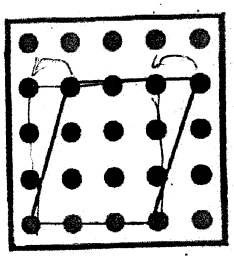
A=_____

5.



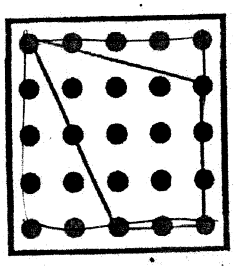
A=_____

6.



A= $3 \cdot 3 = 9\ un^2$

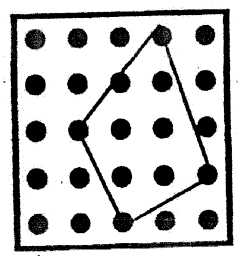
7.



A= $16 - \frac{1}{2} \cdot 2 \cdot 4 - \frac{1}{2} \cdot 1 \cdot 4$

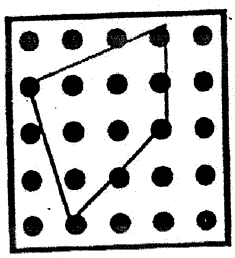
$16 - 4 - 2 = \boxed{10\ un^2}$

8.



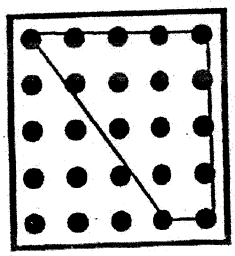
A=_____

9.



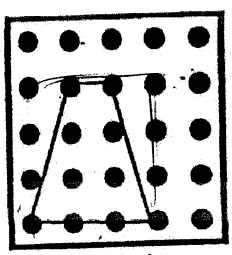
A=_____

10.



A=_____

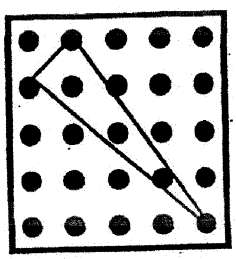
11.



A= $3 \cdot 3 = 9 - \frac{1}{2} \cdot 1 \cdot 3 - \frac{1}{2} \cdot 1 \cdot 3$

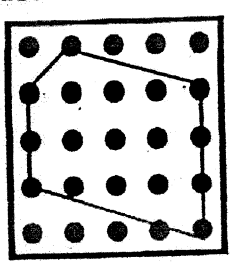
$= 6\ un^2$

12.



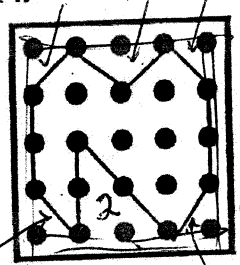
A=_____

13.



A=_____ 7

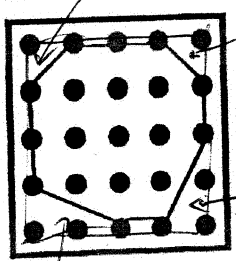
14.



A= $16 - 5 =$

$11\ un^2$

15.



A= $13\ un^2$ $16 - .5 - .5 - 1 - 1$

Total points for Drawing **Total points for Calculations**

Scoring
1 point for drawing each surrounding shape
1 point for calculation each area

Standard
12 out of 15 correct
80% correct

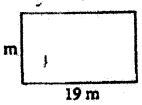
_____ out of 15 correct. _____ out of 15 correct.

6) $9\ un^2$
7)

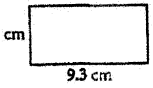
In Exercises 1–6, each quadrilateral is a rectangle. A represents area and P represents perimeter. Use the appropriate unit in each answer.

Assignment #2 (Block 2)

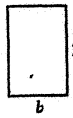
1. $A = ?$ $12 \cdot 19 = 228\,m^2$



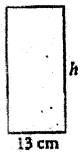
2. $A = ?$ $4.5 \cdot 9.3 = 41.85\,cm$



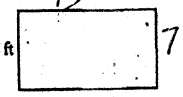
3. $A = 96\ yd^2$, $b = ?$ $A = 126$, $96 = 126$, $b = 8\,yd$



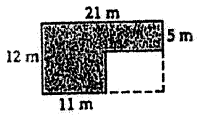
4. $A = 273\ cm^2$, $h = ?$ $13h = 273$, $h = 21\,cm$



5. $P = 40$ ft, $A = ?$ $A = 13 \cdot 7 = 91\,ft^2$

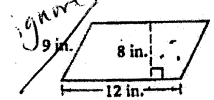


6. Shaded area = ? $252 - 70 = 182\,m^2$

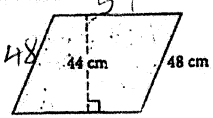


In Exercises 7–9, each quadrilateral is a parallelogram.

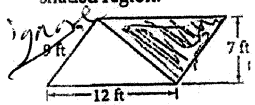
7. $A = ?$ $12 \cdot 8 = 96\,cm^2$



8. $A = 2508\ cm^2$, $P = ?$ $P = 57 \cdot 2 + 48 \cdot 2 = 96 + 114 = 210\,cm$



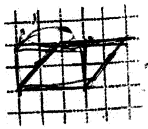
9. Find the area of the shaded region. $\frac{1}{2} \cdot 12 \cdot 7 = 42\,ft^2$



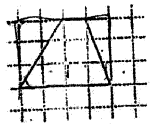
10. Sketch and label two different rectangles, each with area 48 cm². ⓗ

In Exercises 11 and 12, find the area of the figure and explain your method.

11. $3 \cdot 2 = 6\,cm^2$



12. $3 \cdot 4 = 12$, $-\frac{1}{2} \cdot 3 \cdot 2$, $-\frac{1}{2} \cdot 3 \cdot 1$, $12 - 3 - 1.5$, $7.5\,cm^2$



16. What is the total area of the four walls of a rectangular room 4 meters long by 5.5 meters wide by 3 meters high? Ignore all doors and windows.

17. APPLICATION Ernesto plans to build a pen for his pet iguana. What is the area of the largest rectangular pen that he can make with 100 meters of fencing? $10' \times 10'$

18. The big event at George Washington High School's May Festival each year is the Cow Drop Contest. A farmer brings his well-fed bovine to wander the football field until—well, you get the picture. Before the contest, the football field, which measures 53 yards wide by 100 yards long, is divided into square yards. School clubs and classes may purchase square yards. If one of their squares is where the first dropping lands, they win a pizza party. If the math club purchases 10 squares, what is the probability that the club wins? $\frac{10}{5300}$, $1 \text{ in } 530$

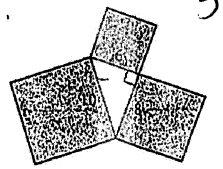
16) $3 \cdot 4 \cdot 2$ walls $= 24$

19. APPLICATION Sarah is tiling a wall in her bathroom. It is rectangular and measures 4 feet by 7 feet. The tiles are square and measure 6 inches on each side. How many tiles does Sarah need? ⓗ $4 \cdot 7 = 28$

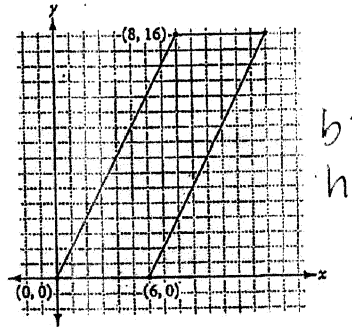
there are 4 tiles in each ft² $28 \cdot 4 = 112$ tiles

$16.5 \cdot 2 = 33$, 5.5, $33 + 24$, $57\,m^2$

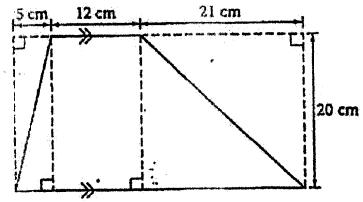
22. A right triangle with sides measuring 6 cm, 8 cm, and 10 cm has a square constructed on each of its three sides, as shown. Compare the area of the square on the longest side to the sum of the areas of the two squares on the two shorter legs. $6^2 + 8^2 = 10^2$



23. What is the area of the parallelogram? $b = 6$, $h = 16$, $96\,cm^2$



24. What is the area of the trapezoid? $\frac{1}{2} \cdot 5 \cdot 20 + 12 \cdot 20 + \frac{1}{2} \cdot 21 \cdot 20$, $50 + 240 + 210$, $500\,cm^2$



Area of rectangle or parallelogram = base · height (height is perpendicular to base)

Use any strategy you want.