# Finding Area on the Coordinate Plane

Area on the coordinate plane: Applications and decisions

**Name** _____ **Date** _____ **Score** _____ / 6

## QUICK REVIEW

Find lengths from coordinate differences, then use the matching area formula. A rectangle from $x = -2$ to $3$ and $y = 1$ to $4$ has width $5$, height $3$, area $15$ square units. A right triangle with the same perpendicular base and height has half that area, $7.5$. Count a gap across zero by adding distances.

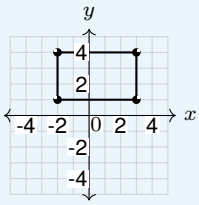
**Worked example**

Use coordinate differences. Plot and connect $(-2, 1)$, $(3, 1)$, $(3, 4)$, $(-2, 4)$ in order. Find the area.

**1.** Horizontal base $= 3 - (-2) = 5$ units; perpendicular height $= 4 - (1) = 3$ units.

**2.** Rectangle area $= 5 \times 3 = 15$ square units.

**Answer:** $15$ square units.

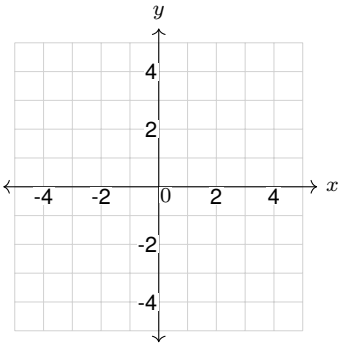



## Practice Problems

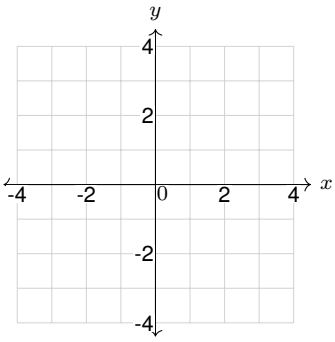
Show your thinking.

**1.** A garden plan needs an area estimate in square grid units. The vertices in order are $(-4, -2)$, $(2, -2)$, $(2, 2)$, $(-4, 2)$. Find the area using coordinate differences. One seed packet covers $4$ square units. How many packets cover the garden?

**2.** Design a triangular planting zone using the vertices. Plot and connect $(-3, 1)$, $(1, 1)$, $(1, 4)$ in order. Find the area. Material costs $2$ dollars per square unit. Find the cost.

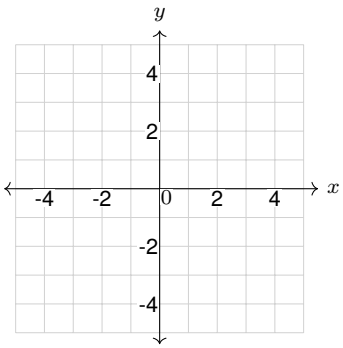



**3.** Plot the garden boundary $(-3, -2), (3, -2), (3, 0), (0, 0), (0, 3), (-3, 3)$. A bag covers $20$ square units. Find area and decide if one bag is enough.

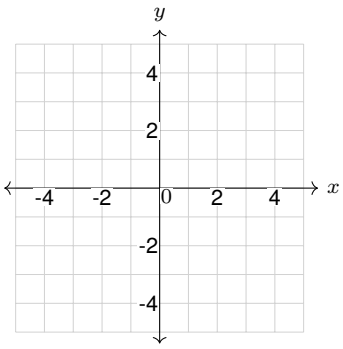



**4.** A sign is half a coordinate rectangle. The vertices in order are $(-2, -2)$, $(3, -2)$, $(3, 3)$. Find the area using coordinate differences.

**5.** A builder needs side lengths before finding the area. Plot and connect $(-4, -3)$, $(-1, -3)$, $(-1, 2)$, $(-4, 2)$ in order. Find the area.




**6.** A proposed triangle area is $9$ square units. Test and repair it. Plot and connect $(1, -4)$, $(4, -4)$, $(4, -1)$ in order. Find the area.



# Answer Key

1. $24$ square units. $6$ packets.
2. $6$ square units. $12$ dollars.
3. $21$ square units; no, $1$ square unit more is needed.
4. $\frac{25}{2}$ square units.
5. $15$ square units.
6. $\frac{9}{2}$ square units.

## Step-by-Step Solutions

Follow each calculation, then check your own work.

### Problem 1

**1.** Horizontal base $= 2 - (-4) = 6$ units; perpendicular height $= 2 - (-2) = 4$ units.

**2.** Rectangle area $= 6 \times 4 = 24$ square units.

**3.** The rectangle has area $6 \times 4 = 24$ square units; $24/4 = 6$ packets cover it.

### Problem 2

**1.** Horizontal base $= 1 - (-3) = 4$ units; perpendicular height $= 4 - (1) = 3$ units.

**2.** Triangle area $= 4 \times 3/2 = 6$ square units.

**3.** Triangle area $= 4 \times 3/2 = 6$ square units, so cost $= 6 \times 2 = 12$ dollars.

### Problem 3

**1.** Bottom rectangle area $= 6 \times 2 = 12$; upper-left rectangle area $= 3 \times 3 = 9$.

**2.** Total area $= 12 + 9 = 21$ square units; uncovered area $= 21 - 20 = 1$ square unit.

### Problem 4

**1.** Horizontal base $= 3 - (-2) = 5$ units; perpendicular height $= 3 - (-2) = 5$ units.

**2.** Triangle area $= 5 \times 5/2 = \frac{25}{2}$ square units.

### Problem 5

**1.** Horizontal base $= -1 - (-4) = 3$ units; perpendicular height $= 2 - (-3) = 5$ units.

**2.** Rectangle area $= 3 \times 5 = 15$ square units.

### Problem 6

**1.** Horizontal base $= 4 - (1) = 3$ units; perpendicular height $= -1 - (-4) = 3$ units.

**2.** Triangle area $= 3 \times 3/2 = \frac{9}{2}$ square units.

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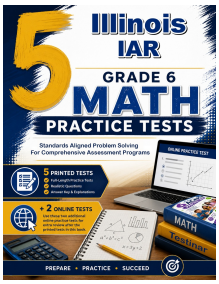


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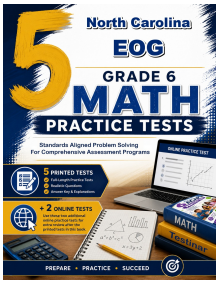


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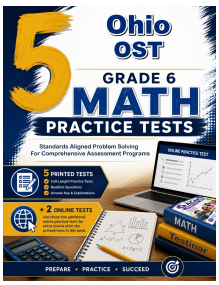


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