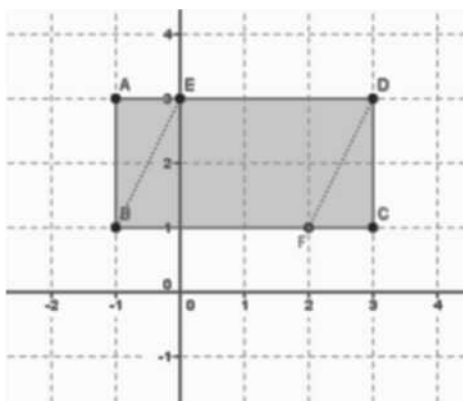Name _____   Date _____
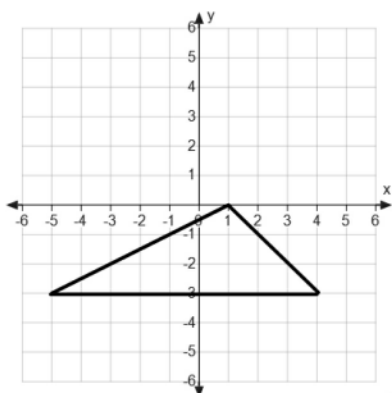
Unknown Area Problems on the Coordinate Plane

The figure $ABCD$ is a rectangle. $AB = 2$ units, $AD = 4$ units, and $AE = FC = 1$ unit.
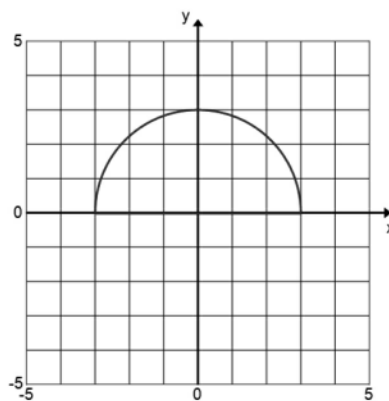

1. Find the area of rectangle $ABCD$.

2. Find the area of triangle ABE.   3. Find the area of triangle DCF.

4. Find the area of the parallelogram $BEDF$ two different ways.
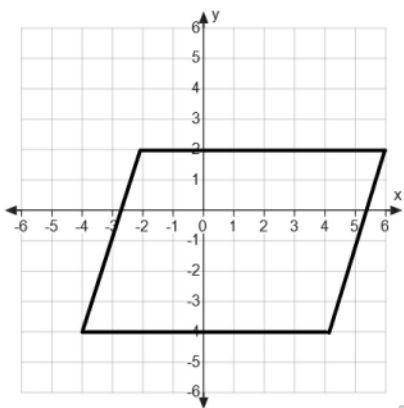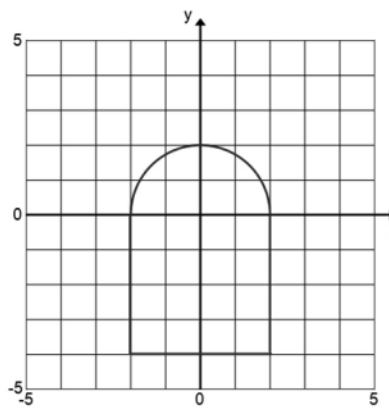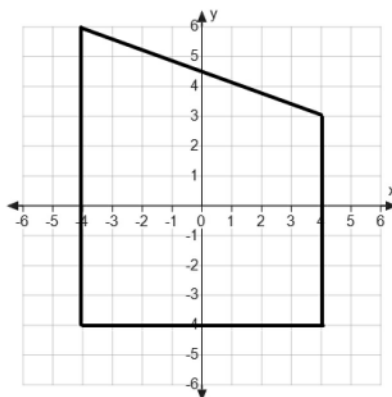
Find the area of each figure.
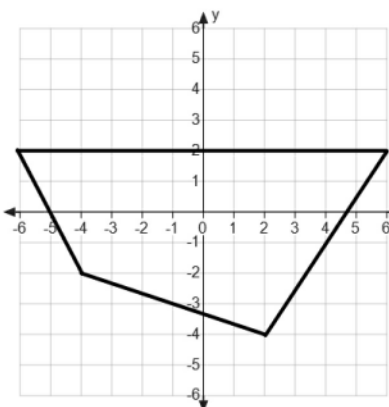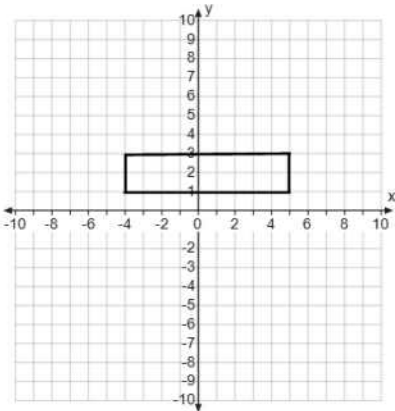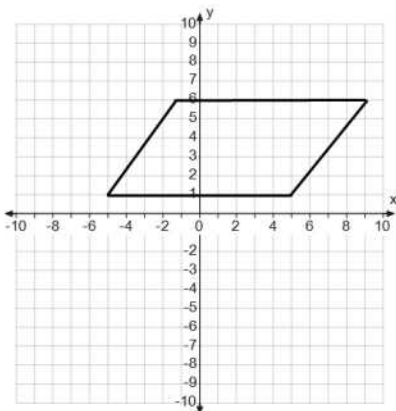
1.

2.

3.

4.

5.

6.

For Problems 7–9, draw a figure in the coordinate plane that matches each description.
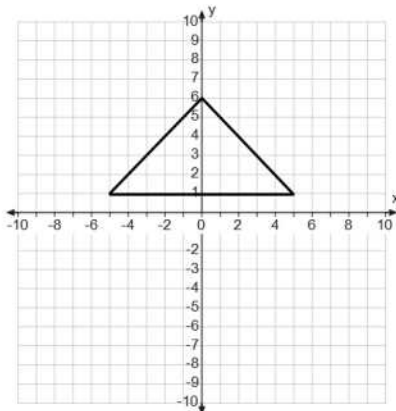
7. A rectangle with area = 18 sq. units
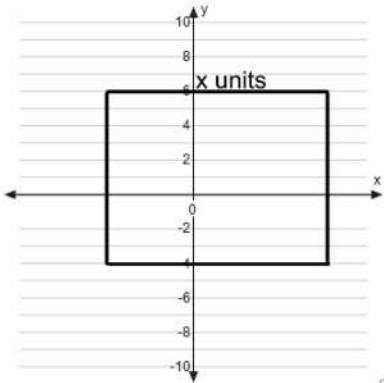
8. A parallelogram with area = 50 sq. units

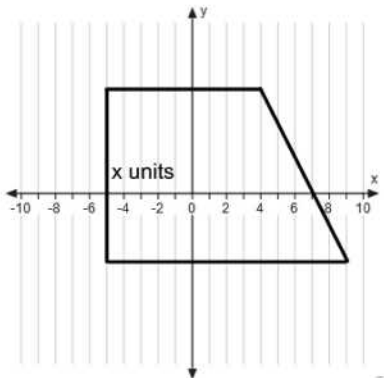9. A triangle with area = 25 sq. units

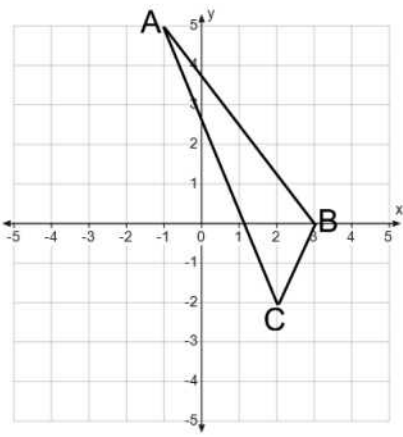Find the unknown value labelled as x on each figure.

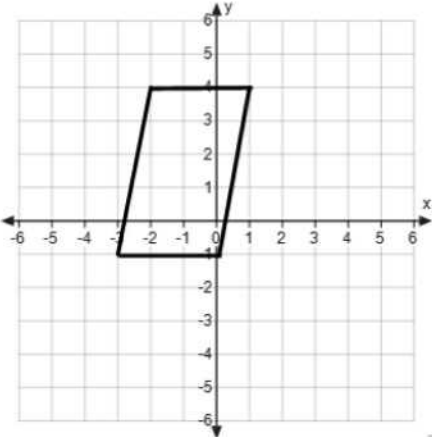10. The rectangle has an area of 80 sq. units.

11. The trapezoid has an area of 115 sq. units.

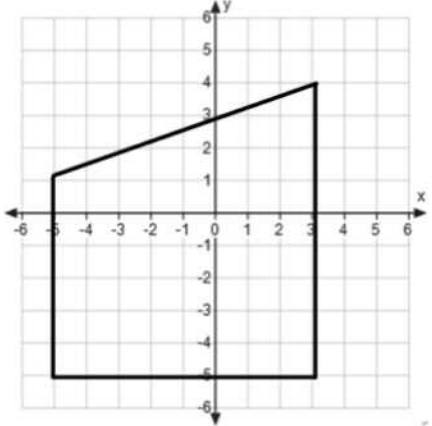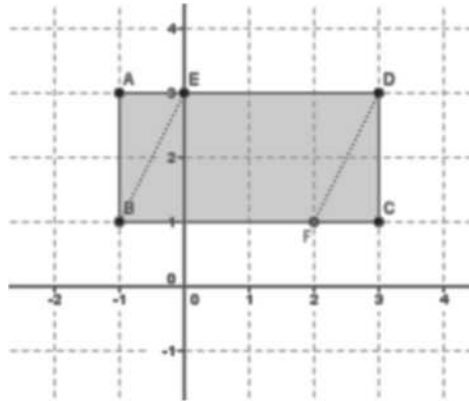12. Find the area of triangle ABC.

13. Find the area of the quadrilateral using two different methods. Describe the methods used and explain why they result in the same area.

14. Find the area of the quadrilateral using two different methods. What are the advantages or disadvantages of each method?

The figure $ABCD$ is a rectangle. $AB = 2$ units, $AD = 4$ units, and $AE = FC = 1$ unit.

1. Find the area of rectangle $ABCD$.

   Area = 4 units × 2 units = 8 sq. units

2. Find the area of triangle ABE.

   Area $= \frac{1}{2} \times 1$ unit $\times$ 2 units = 1 sq. unit

3. Find the area of triangle DCF.

   Area $= \frac{1}{2} \times 1$ unit $\times$ 2 units = 1 sq. unit

4. Find the area of the parallelogram $BEDF$ two different ways.

   Area = Area of ABCD – Area of ABE – Area of DCF

   = (8 − 1 − 1) sq. units = 6 sq. units

   Area = base × height

   = 3 units × 2 units = 6 sq. units

Find the area of each figure.

1.
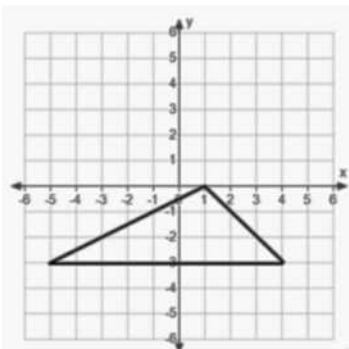
Area = 13.5 sq. units

2.
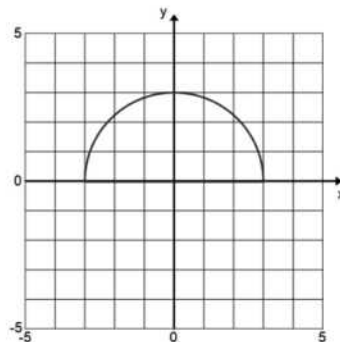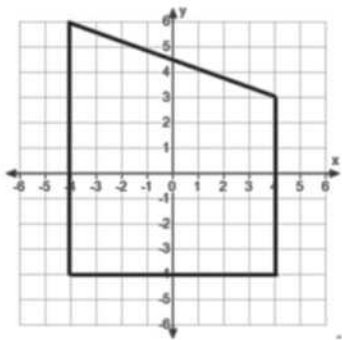

Area = 4.5π sq. units ≈ 14.13 sq. units

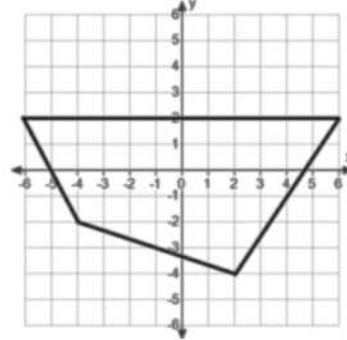**3.**
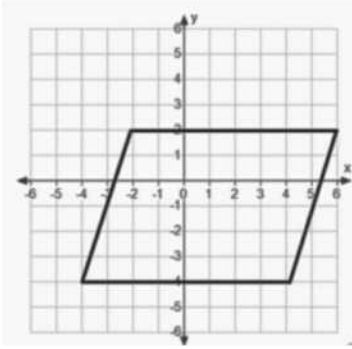
Area = 48 sq. units

4.
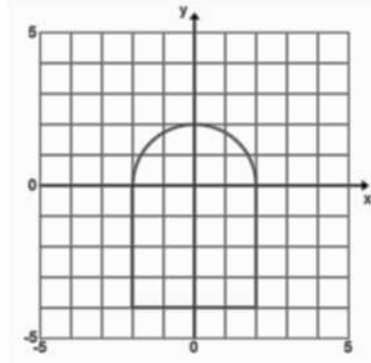
Area = $(2\pi + 16)$ sq. units ≈ 22.28 sq. units

5.
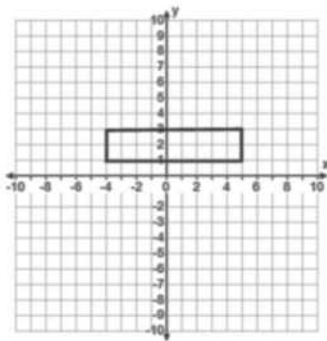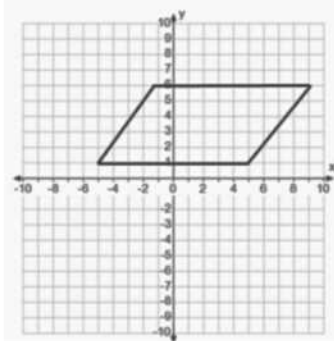
Area = 68 sq. units

6.

Area = 46 sq. units

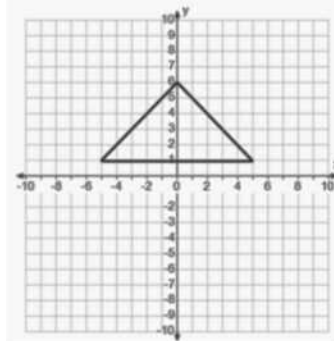For Problems 7–9, draw a figure in the coordinate plane that matches each description.

7. A rectangle with area = 18 sq. units
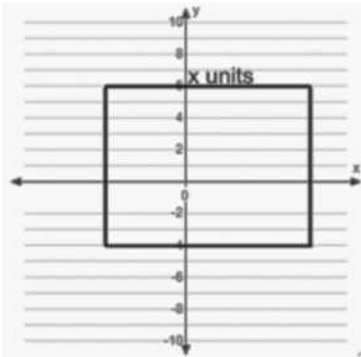
8. A parallelogram with area = 50 sq. units

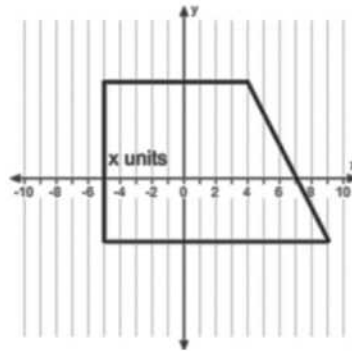**9.** A triangle with area = 25 sq. units

Find the unknown value labled as x on each figure.
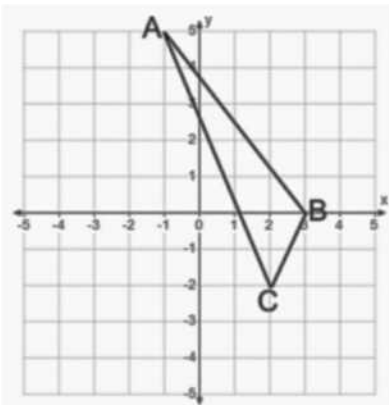
10. The rectangle has an area of 80 sq. units.

x units

$x = 8$

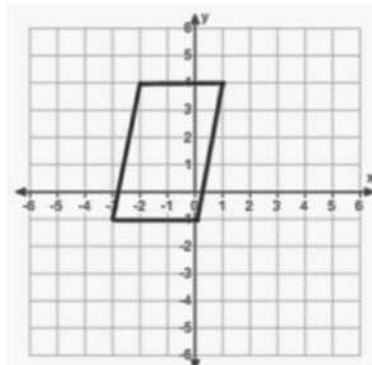11. The trapezoid has an area of 115 sq. units.

x units

$x = 10$

12. Find the area of triangle ABC.

Area $= 6.5$ *sq. units*

13. Find the area of the quadrilateral using two different methods. Describe the methods used and explain why they result in the same area.

Area $= 15$ *sq. units*

One method is by drawing a rectangle around the figure. The area of the parallelogram is equal to the area of the rectangle minus the area of the two triangles. A second method is to use the area formula for a parallelogram (Area = base × height).

14. Find the area of the quadrilateral using two different methods. What are the advantages or disadvantages of each method?
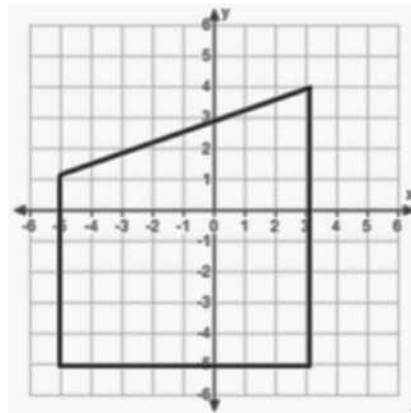
Area = 60 sq. units

One method is to use the area formula for a trapezoid, $A = \frac{1}{2}(base\ 1 + base\ 2) \times height$. The second method is to split the figure into a rectangle and a triangle. The second method required more calculations. The first method required first recognizing the figure as a trapezoid and recalling the formula for the area of a trapezoid.