



AREA OF TRIANGLES

Name _____

Score _____

AT:49

Example : Find the area of triangle PQR whose vertices are P(-9, -5), Q(-7, -8) and R(2, -8).

$$\begin{aligned} \text{Area} &= \frac{1}{2} [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)] \\ &= \frac{1}{2} [-9(-8 + 8) + -7(-8 + 5) + 2(-5 + 8)] \\ &= \frac{1}{2} [-9(0) + -7(-3) + 2(3)] \\ &= \frac{1}{2} [21 + 6] = \frac{27}{2} = \mathbf{13.5 \text{ square units}} \end{aligned}$$

Use the vertices of each triangle to compute the area.

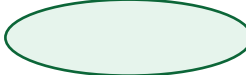
1)

F(-9, 0), G(-3, 0) and H(-3, 9)

Area =  square units

2)

A(0, 7), B(4, 0) and C(0, 0)

Area =  square units

3)

S(-3, -7), T(9, -3) and U(-8, -2)

Area =  square units

4)

L(6, -1), M(10, 7) and N(2, 7)

Area =  square units


5)

X(-10, -6), Y(-10, -9) and Z(6, -9)

Area =  square units

6)

P(4, -2), Q(6, -4) and R(7, -2)

Area =  square units



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Answer key

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Example : Find the area of triangle PQR whose vertices are P(-9, -5), Q(-7, -8) and R(2, -8).
 $x_1 \ y_1 \quad x_2 \ y_2 \quad x_3 \ y_3$

$$\begin{aligned} \text{Area} &= \frac{1}{2} [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)] \\ &= \frac{1}{2} [-9(-8 + 8) + -7(-8 + 5) + 2(-5 + 8)] \\ &= \frac{1}{2} [-9(0) + -7(-3) + 2(3)] \\ &= \frac{1}{2} [21 + 6] = \frac{27}{2} = \mathbf{13.5 \text{ square units}} \end{aligned}$$

Use the vertices of each triangle to compute the area.

1)

F(-9, 0), G(-3, 0) and H(-3, 9)

Area = **27** square units

2)

A(0, 7), B(4, 0) and C(0, 0)

Area = **14** square units

3)

S(-3, -7), T(9, -3) and U(-8, -2)

Area = **40** square units

4)

L(6, -1), M(10, 7) and N(2, 7)

Area = **32** square units

5)

X(-10, -6), Y(-10, -9) and Z(6, -9)

Area = **24** square units

6)

P(4, -2), Q(6, -4) and R(7, -2)

Area = **3** square units