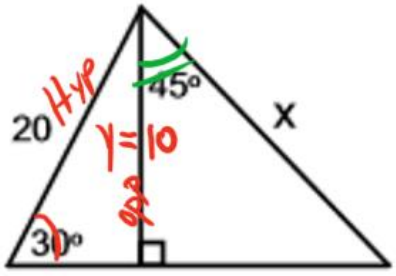
- Warm Up

Find the value of x.



$\sin(30) = \frac{y}{20}$

$y = 20\sin(30)$

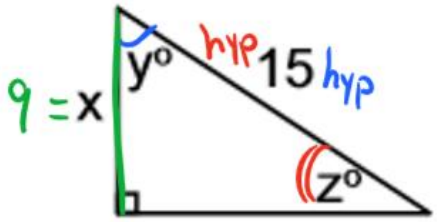
$y = 10$

$\cos(45) = \frac{10}{x}$

$x = \frac{10}{\cos(45)}$

$x = 10\sqrt{2}$

Find the value of x, y, and z.



$\sin(y) = \frac{12}{15}$

$y = \sin^{-1}\left(\frac{12}{15}\right)$

$y =$

$\cos(z) = \frac{12}{15}$

$z = \cos^{-1}\left(\frac{12}{15}\right)$

$z =$

$12^2 + x^2 = 15^2$

$144 + x^2 = 225$

$x^2 = 81$

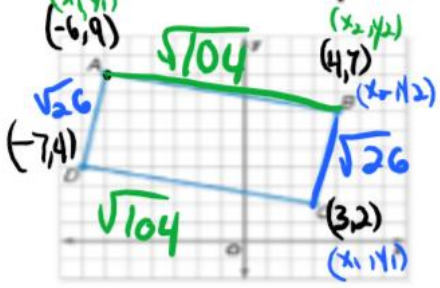
$x = 9$

Today our goals are:

- Find the perimeter of given figures
- Find the area of given figures

Distance Formula

What is the perimeter of this parallelogram?



Perimeter – add up all sides.

Use distance formula. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$m\overline{AB} = \sqrt{(4-(-6))^2 + (7-9)^2}$

$= \sqrt{(10)^2 + (-2)^2}$

$= \sqrt{100 + 4}$

$= \sqrt{104}$

$m\overline{AB} = m\overline{DC}$ because parallelogram

$m\overline{BC} = \sqrt{(3-4)^2 + (2-7)^2}$

$= \sqrt{(-1)^2 + (-5)^2}$

$= \sqrt{1 + 25}$

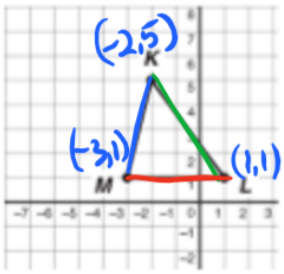
$= \sqrt{26}$

$m\overline{BC} = m\overline{AD}$ because parallelogram

$P = \sqrt{104} + \sqrt{26} + \sqrt{104} + \sqrt{26}$

$= 30.594$ units.

Find the perimeter of the given triangle.



$\overline{KM} = \sqrt{(-2-(-3))^2+(5-1)^2}$
$= \sqrt{1+16}$
$= \sqrt{17}$

$\overline{KL} = \sqrt{(1-(-2))^2+(1-5)^2}$
$= \sqrt{9+16}$
$= \sqrt{25}$
$= 5$

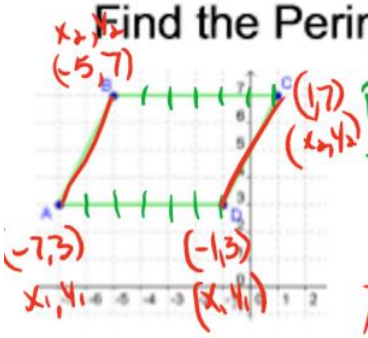
can count distance since its not slanted

$m\overline{ML} = 4$

$P = \sqrt{17}+4+5$
$= 13.123$ units

Knowledge Check

Find the Perimeter of the following shape.



P = Add up all sides

$\overline{BC} = 6$ (Count because its a straight line)

$\overline{AD} = 6$ counted again.

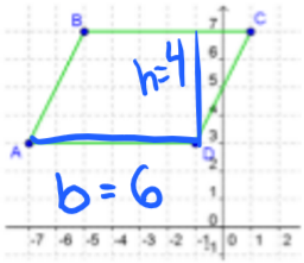
$\overline{AB} = \sqrt{(-5-(-7))^2+(7-3)^2}$
$= \sqrt{(2)^2+(4)^2}$
$= \sqrt{4+16}$
$\overline{AB} = \sqrt{20}$

$\overline{CD} = \sqrt{(1-(-1))^2+(7-3)^2}$
$= \sqrt{4+16}$
$= \sqrt{20}$

$P = 6+6+\sqrt{20}+\sqrt{20} = 20.944$ units

You've found perimeter, now we will find area.

Find the area of the following parallelogram.



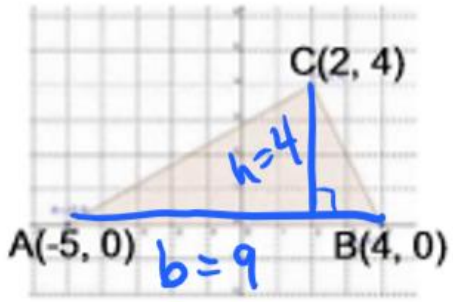
$A_{parallelogram} = b \cdot h$

b - a line with no slant is preferred.

h - perpendicular distance from base to base

$A_{ABCD} = 6 \cdot 4 = 24$ units^2

Find the area of the given triangle.



$A_{triangle} = \frac{1}{2} b \cdot h$

$A = \frac{1}{2}(9)(4)$

$A = 18$

Review:

What is equation for the area of a:

a. parallelogram → $A = b \cdot h$

b. triangle → $A = \frac{1}{2} b \cdot h$

What formula do you use to find the length of a side on the coordinate plane?

Use the distance formula