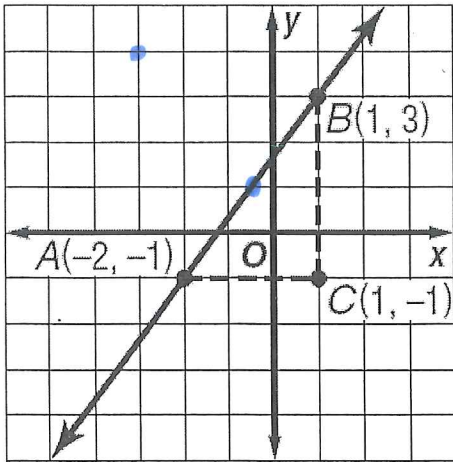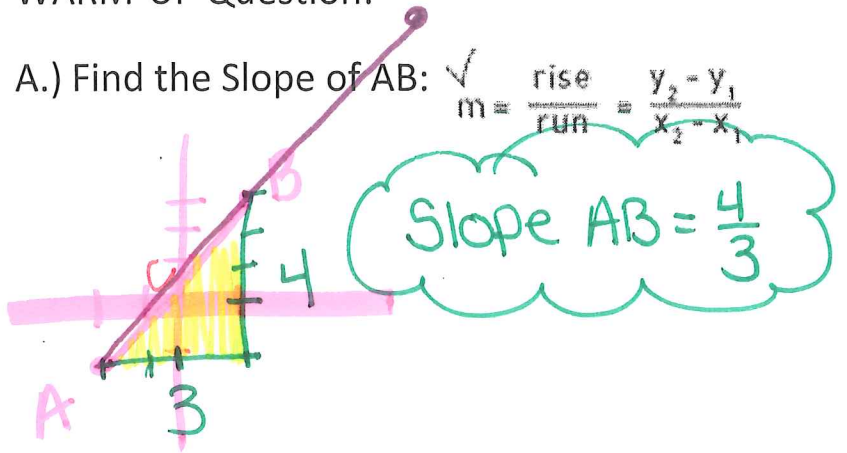Name: **Key**

Distance, Midpoint & Slope Notes

WARM-UP Question:

A.) Find the Slope of AB: ✓ $m = \dfrac{\text{rise}}{\text{run}} = \dfrac{y_2 - y_1}{x_2 - x_1}$

Slope $AB = \dfrac{4}{3}$

B.) Find the distance of AB: You may use the Pythagorean theorem or distance formula:

Pythagorean Theorem:
$a^2 + b^2 = c^2$

Distance Formula:
$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$3^2 + 4^2 = AB^2$ ✳

$9 + 16 = AB^2$

$\sqrt{25} = \sqrt{AB^2}$

$\boxed{5 = AB}$ ✳

C.) Find the midpoint of AB:

Midpoint on a Coordinate Plane	If a segment has endpoints with coordinates (x_1, y_1) and (x_2, y_2), then the coordinates of the midpoint of the segment are $\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$.

Endpoints: $A(-2, -1)$ $B(1, 3)$
          $x_1 \ y_1$ $x_2 \ y_2$ ordered pair

midpt $\left(\dfrac{-2+1}{2}, \dfrac{-1+3}{2}\right) = \left(-\dfrac{1}{2}, 1\right)$

$\left(-\dfrac{1}{2}, \dfrac{2}{2}\right)$

D.) Find endpoint of segment AX if B is the midpoint:

HS

$A(-2, -1)$ $X(a, b)$ $\left(\dfrac{-2+a}{2}, \dfrac{-1+b}{2}\right) = (1, 3)$
  $x_1 \ y_1$ $x_2 \ y_2$

Algebra

midpt $B(1, 3)$

$\boxed{X(4, 7)}$

$2 \cdot \dfrac{-2+a}{2} = 1 \cdot 2$

$-2 + a = 2$

$a = 4$

$\dfrac{-1+b}{2} = 3$

$-1 + b = 6$

$b = 7$