GSE PreCalculus – Unit 7: Vectors
WS 7.2: Finding direction of vectors

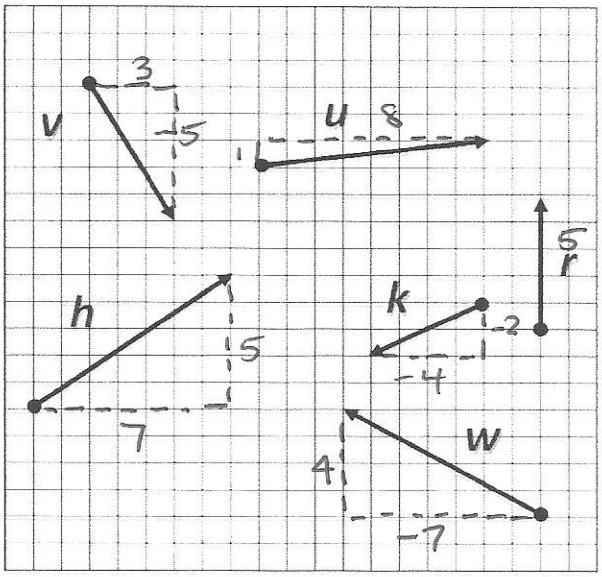
Name _____
Date _____ Day ___

Use the vectors to the right to figure out the component form, magnitude, and direction. Show work!
Round to the nearest tenth for magnitude & to the nearest degree for direction.

Component Form $< a, b >$

Magnitude $|v| = \sqrt{a^2 + b^2}$

Direction = θ



Case 1	$v = < a, b >$
If $a > 0$, then	$\theta = tan^{-1}(\frac{b}{a})$
Case 2	$v = < a, b >$
If $a < 0$, then	$\theta = tan^{-1}(\frac{b}{a}) + 180°$
Case 3	$v = < a, b >$
If $a = 0$, then	$\theta = \pm 90°$

Component Form	Magnitude	Direction
$v = \langle 3, -5 \rangle$	$\|\|v\|\| = \sqrt{3^2 + (-5)^2} \approx 5.8$	$\theta = \tan^{-1}(\frac{-5}{3}) = -59°$
$u = \langle 8, 1 \rangle$	$\|\|u\|\| = \sqrt{8^2 + 1^2} = 8.1$	$\theta = \tan^{-1}(\frac{1}{8}) = 7°$
$h = \langle 7, 5 \rangle$	$\|\|h\|\| = \sqrt{7^2 + 5^2} \approx 8.6$	$\theta = \tan^{-1}(\frac{5}{7}) = 36°$
$k = \langle -4, -2 \rangle$	$\|\|k\|\| = \sqrt{(-4)^2 + (-2)^2} = 4.5$	$\theta = \tan^{-1}(\frac{-2}{-4}) + 180° = 207°$ a is neg
$r = \langle 0, 5 \rangle$	$\|\|r\|\| = \sqrt{0^2 + 5^2} = 5$	$\theta = \pm 90° \rightarrow 90°$ b is +
$w = \langle -7, 4 \rangle$	$\|\|w\|\| = \sqrt{(-7)^2 + (4)^2} = 8.1$	$\theta = \tan^{-1}(\frac{4}{-7}) + 180° = 150°$ a is neg.