Name

Date

Period

**Physics Review #2**

1 A dog is sniffing around for a lost bone. The dog travels 8 m to the west, then 4 m south, 2 m east, and then 2 m south. What is the dog’s displacement?

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| Draw the path of travel | Calculate for true displacement | Draw the triangle with labels | Calculate the dog’s true displacement |

2 A bicyclist is on the biking path around Lake Mead heading north. The bicyclist has a velocity of 3 m/s going downhill, but the wind is blowing at 1.5 m/s south. What is the bicyclist’s true velocity?

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| Draw the diagram | Calculate the true velocity of the bicyclist |

3 A soccer player kicks the soccer ball 45 m in the horizontal direction. The ball had an angle of 65 degrees above the horizontal axis. The soccer ball travelled at 42 m/s. Calculate BOTH the horizontal and vertical velocities. (Identify your variables, write your equation, rearrange your equation, plug-in your variables, add units, and circle your final answer.)

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| Draw the diagram | (resultant) Hyp-  (angle) 0-  (Vx) Adj-  (Vy) Opp- | (Horizontal velocity)  cos 0= adj/hyp | (Vertical velocity)  sin 0= opp/ hyp |

4 A player kicks a football 48 m horizontally with an initial velocity of 21 m/s with respect to the vertical axis. The angle that the football was kicked was 35 degrees and it took 3 s to hit the ground. Calculate the maximum height of the football. Assume initial velocity on the y-axis is 0 m/s.

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| Draw the diagram | List your variables | Calculate  y= viy(t) + 0.5 (ag) (t)2 |

5 Find the vertical and horizontal components (or velocity on each axis) of a baseball that was thrown with a velocity of 13 m/s with a 32 degree angle.

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| Draw the diagram | (resultant) Hyp-  (angle) 0-  (Vx) Adj-  (Vy) Opp- | (Horizontal velocity)  cos 0= adj/hyp | (Vertical velocity)  sin 0= opp/ hyp |

6 A person is hiking Red Rock National park and accidently drops their granola bar off of a cliff. The cliff is 45.0 m high and the granola bar falls 1.5 m on the horizontal axis. Assume initial velocity is 0 m/s. Calculate the time it took the granola bar to fall AND it’s velocity on the horizontal axis.

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| Draw the diagram | Identify your variables | Calculate the time  y= viy(t) + 0.5 (ag)(t)2 | Calculate horizontal velocity  x= vx(t) |