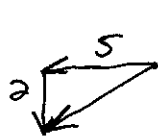


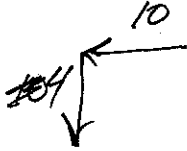


11) A maimed mouse walks 5cm [ W ], 2cm [ S ].



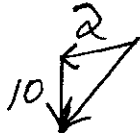
$$5^2 + 2^2 = c^2$$
$$c = 5.4 \text{ cm } [W 21.8^\circ S]$$

12) A dog walks 10m/s [ W ], 4m/s [ S ].



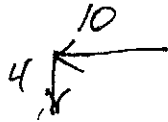
$$c = 10.77 \text{ m/s } [W 21.8^\circ S]$$

13) A maimed mouse walks 2cm/s [ W ], 10cm/s [ S ].



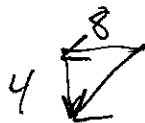
$$c = 10.19 \text{ cm/s } [W 78.7^\circ S]$$

14) A Caterpillar walks 10cm [ W ], 4cm [ S ].



$$c = 10.77 \text{ cm } [W 21.8^\circ S]$$

15) An ant walks 4cm [ N ], 8cm [ E ]

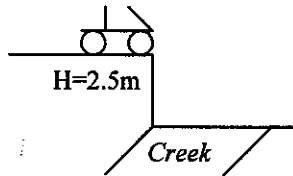


$$8.9 \text{ cm } [N 27^\circ E]$$

Use your own sheet of paper to solve the flowing problems.

Off the Cliff problems

- Tom wants to jump his bike over a creek. Tom is on a 2.5m tall cliff and the creek bank is 10m from the edge of the cliff. What will Tom's initial velocity have to be to jump the creek?



- Jamey intentionally drives her boyfriend's car off a cliff. The Cliff is 8m high and the car was traveling 12m/s when it flies off the cliff. How far from the cliff did the car land?

$$D = v_i t$$

$$D = 12m/s \cdot t$$

$$D = 15.3$$

$$D = \frac{1}{2} A t^2 + v_i t$$

$$t = 1.27$$

- Elwood was driving the blues mobile when he accidentally drove off the 2<sup>nd</sup> floor to a parking garage. Luckily he was only traveling 5m/s and the second floor was only 3.5m high. How far was Elroy from the wall when he landed his car?

$$D = v_i t$$

$$D = 5m/s \cdot t$$

$$D = 4.2m$$

$$D = \frac{1}{2} A t^2$$

$$t = .7$$

Ground to Ground Problems

- Frankie two toes shot an artillery shell at a 40° angle. The shell had a muzzle velocity of 230m/s. How far did the shell go before it hit the ground?

X TopY

$$18.4 v_1 7.8$$

$$18.4 v_2 0$$

$$0 A -9.8$$

$$29.4 D 3.1m$$

$$1.6 = t \Rightarrow \frac{1}{2} t = .796$$

- Amanda shoots an arrow into the air with a velocity of 20m/s and at an angle of 23° degrees. **How far** did the arrow fly, **how high** did the arrow go, & **what was the velocity** of the arrow just before it hit the ground?

$$v_{2y} = v_{1y} + A t$$

$$t = .796$$

$$D_y = \frac{(v_{1y} + v_{2y})}{2} t$$

$$D_y = 3.1m$$

$$D_x = \left( \frac{v_{1x} + v_{2x}}{2} \right) t$$



- Johnny wants to shoot an arrow 20m high, however he can only shoot at a 15° angle. What velocity must Johnny shoot his arrow?

X TopY

$$v_{1y} = \frac{1}{2} v_1$$

$$v_2 = 0$$

$$0 A -9.8$$

$$D 20m$$

$$4 sec t \quad \frac{1}{2} t = 2sec$$

$$v_{2y}^2 = v_{1y}^2 + 2AD$$

$$v_{1y} = 19.8m/s$$

$$D_y = \frac{1}{2} v_{1y} t + v_{1y} t$$

$$v_{2y} = v_{1y} + A t$$



$$\sin(15) = \frac{v_{1y}}{v_1}$$

$$v_1 = \frac{19.8}{\sin(15)} = v_1 = 76m/s$$

