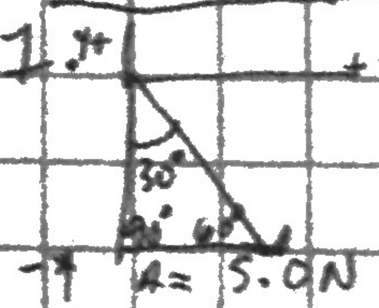
Activity:

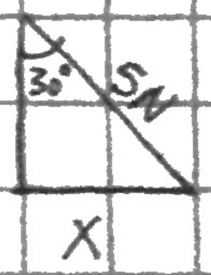
1. 

2. 30° CW from positive x-axis

1. A=5.0

2. 30° CW from the negative y-axis

3. Downward to the right

4. 

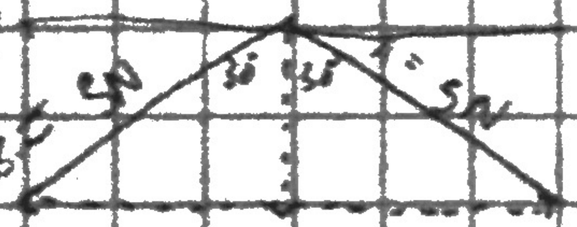
$-\cos(30)\cdot 5 = -4.33N$
$-\sin(30)\cdot 5 = -2.5N$

5. B = 5N

6. 30° CW from the negative y-axis

7. downward and to the left

8. $+\cos(30)\cdot 5 = -4.33N$
$+\sin(30)\cdot 5 = +2.5N$

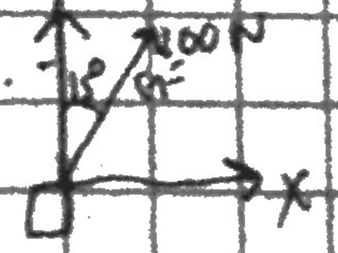
9. 

$X = -2.5N - 2.5N$
$X = 0N$

$y = \cos 30 \cdot 10 = -8.66N$
$X_p = \sin 30 \cdot 5 = -2.5N$
$X_p = +\sin 30 \cdot 5 = +2.5N$

10. $\sum F_x = F_{Ax} + F_{Bx}$
$\sum F_x = 2.5 + -2.5$
$\sum F_x = 0N$

$\sum F_y = F_{Ay} + F_{By}$
$\sum F_y = -4.33 + -4.33$
$\sum F_y = -8.66N$

11. 

$X_a = \sin(15) \cdot 100$
$X_a = 25.88N$
$Y_a = \cos(15) \cdot 100$
$y_a = 96.59N$

Explanation

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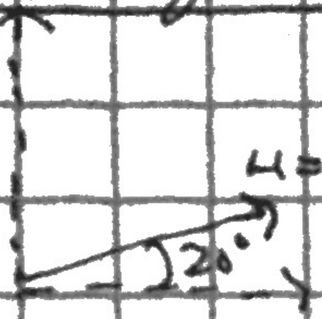
12.



$x_H = \sin(20) \times 50 = 17.10N$

$y_H = \cos(20) \times 50 = 46.98N$

13. $\sum F_x = F_{Gx} + F_{Hx}$

$\sum F_x = 25.88 + 17.10 = 42.98N$

$\sum F_y = F_{Gy} + F_{Hy}$

$\sum F_y = 96.59 + 46.98 = 143.57N$

Conclusion

1. Free body diagrams isolate problems making the issue discredible. Force vectors strip the motion down to the barest, most simple form. As such one can see that both free body diagrams and force vectors simplify and clear up problems.

2. To reduce the amount of force each of you must exert of both pull on a rope at the center of the front of the sled.