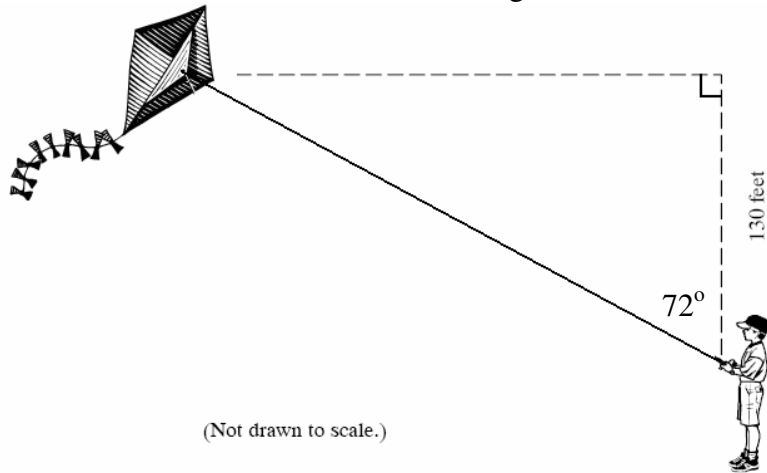


Name: _____ **Period:** _____ **Date:** _____

Open Response Trigonometry

1. Jack is flying a kite at an altitude of 130 feet, as shown in the figure below.

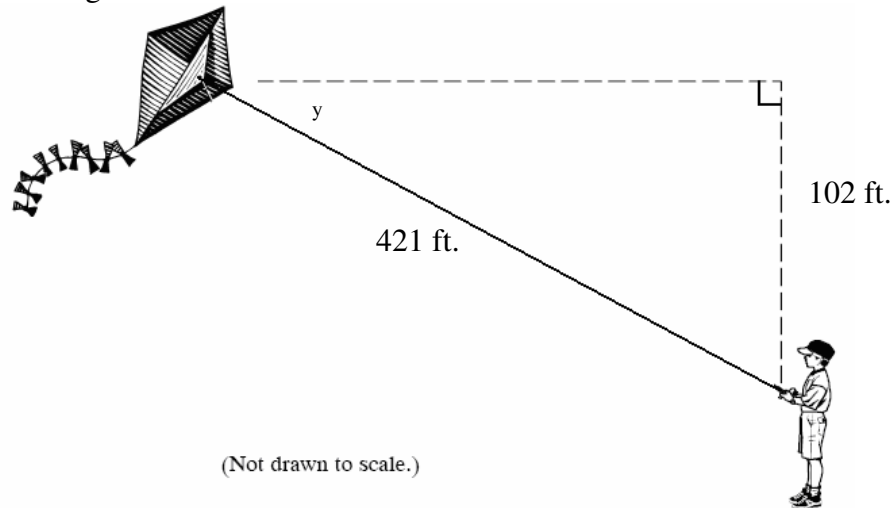


- What is the angle of elevation from Jack to the kite?
- At the moment the kite is at an altitude of 130 feet, Jack runs out of string. How many feet of string does Jack have, with correct units to the nearest foot?
- A strong gust of wind knocks the kite down and the altitude of the kite drops to 102 feet. Draw a picture to describe this situation, with correct units and appropriate variables for unknowns. (Note that the altitude and angle of depression has changed.)
- What is the angle of depression from the kite to Jack after the gust of wind, to the nearest degree?

A full-page sheet of white graph paper with a light gray grid. The grid consists of small squares, approximately 1 cm by 1 cm each. There are 20 columns and 20 rows of squares, creating a total area of 400 small squares. The grid lines are thin and evenly spaced.

Grading Rubric:

- a) 1 point for correct answer of 18° .
- b) 2 points total:
 - 1 point for correct answer 421 (rounded answer from 420.6888371)
 - i. $\cos(72^\circ) = 130 / x$ or $\sin(18^\circ) = 130 / x$
 - 1 point for correct units feet
- c) 2 points total
 - Correct drawing
 - i.



- Correct units feet
- d) 1 point total
 - 1 point for correct answer of 14° (rounded from 14.0211638)
 - i. $\sin(y) = 102 / 421$ implies $\sin^{-1}(102/421) = 14.0211638$

| Score | Points Scored |
|-------|---------------------------|
| 4 | Student scores 6 points |
| 3 | Student scores 4-5 points |
| 2 | Student scores 2-3 points |
| 1 | Student scores 1 point |
| 0 | Student scores 0 points |