Review

BP-95. THE BIRTHDAY PARTY PIÑATA

Review Name _____

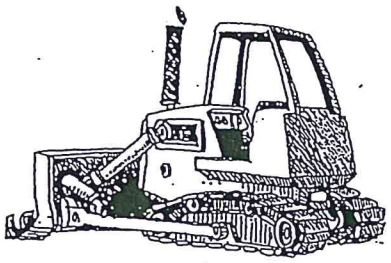
For Katja's party, her friends are going to hang a piñata half-way between two poles with a rope over the top of each pole. Both poles are 20 feet high, and they are 30 feet apart. The top of the piñata must hang four feet above the ground.

a) How much rope is needed to hang the piñata? Draw a diagram and write an equation to solve this problem. Show all your subproblems.

b) Katja's mom forgot to bring the rope. Bob found some rope in the trunk of his car. His rope is only 40 feet long, however the poles can be moved closer together. How far apart should the poles be placed so that the piñata remains four feet above the ground?

c) Scott is much taller than the other children so it was decided that the piñata should be raised to six feet above the ground during his turn. Using Bob's 40 foot rope, how far apart should the poles be for Scott's turn?

BP-28. A careless construction worker drove a tractor into a telephone pole, cracking the pole. The top of the pole fell as if hinged at the crack. The tip of the pole hit the level ground 24 feet from its base. The stump of the pole stood seven feet above the ground. If an additional five feet of the pole extends into the ground to anchor it, how long should the replacement pole be? Draw a diagram. Write an equation. Show all subproblems as you solve.



BP-49. A child's shoe box measures 4" x 6" x 3". What is the longest pencil you could fit into this box? An empty box may help you visualize the varies ways you could fit the pencil in the box. If possible, draw a diagram to show the pencil's position. Show your subproblems.

Review Questions

1. a) If $f(x) = |2x - 5|$, solve for $f(-3)$

   b) $f(x) = (3 - x^2)$, solve for $f(x) = -22$

2. Where does this system intersect? Solve algebraically, and then confirm your solutions with a graph. (Label all work.)

   $y = x^2 + 4x + 3$

   $y = x^2 - 5x - 6$

3. Simplify:

   a) $(2abc)^5 \cdot a^{-2}c^{-3}$ b) $\left(\frac{x}{2x}\right)^{-4}$ c) $\frac{4x^{-2}y^5}{16x^3y^{-6}}$