Ordering Materials

For each of the following questions, write and solve an algebraic equation.

1. Each of the four wings will need 200 receptacles and 4 boxes of wire. To wire all four wings, you will need 800 receptacles and 8000 feet of wire. How many feet of wire are in one box?

4(200 receptacles + 4 box) = 800 receptacles + 8000 feet

800 receptacles + 16 boxes = 800 receptacles + 8000 feet

16 boxes = 8000 feet

1 box = 500 feet

2. Each ceiling fan requires 30 feet of wire to connect the on/off switch. How many fans will use 120 feet of wire?

$30f = 120$

$f = 4$ fans

3. An order arrives with 7 boxes of wire nuts and 50 wire nuts in a plastic bag. You ordered 680 wire nuts. If the order was filled correctly, how many wire nuts are in each box?

$7n + 50 = 680$

$7n = 630$

$n = 90$

4. Seven boxes each contain two panels and a box of breakers. If you ordered 14 panels and 140 breakers, how many breakers are in each box?

7(2 panels +1 box) = 14 panels + 140 breakers

14 panels + 7 boxes = 14 panels + 140 breakers

7 boxes = 140 breakers

1 box= 20 breakers

5. Each bathroom needs a ground fault plug. There are 8 bathrooms in the office wing. You need a total of 24 ground fault plugs for the office wing and the homeless shelter wing. If $\frac{1}{2}$ of the ground fault plugs in the homeless shelter are for wash areas, how many ground fault plugs for the homeless shelter are for bathrooms?

24 = 8 + 1/2 (24 − 8) + homeless bathrooms (*hb*)   24 = 16 + *hb*

24 = 8 + 1/2 (16) + *hb*   8 = plugs for *hb*

24 = 8 + 8 + *hb*