Quiz #2   Name: _____Key_____

You must show your work to get full credit.

The following gives the relationship between variables p and q.

Δp .25   .25

p	2.00	2.25	2.50
q	20	18	16

Δq -2 -2

1. Explain why the relation between p and q could be linear. (This will involve both doing some calculation and writing at least one sentence in English.)

Both the slopes (or rates of change) are

$$\frac{\Delta p}{\Delta q} = \frac{.25}{-2} = \frac{\frac{1}{4}}{-2} = -\frac{1}{8}$$

2. Find p as function of q.

$$p = \frac{-q+36}{8} = -\frac{1}{8}q + 4.5$$

$$\frac{\Delta p}{\Delta q} = \frac{p-2}{q-20} = -\frac{1}{8}$$

$$8(p-2) = -(q-20)$$
$$8p-16 = -q+20$$
$$8p = -q+20+16 = -q+36$$
$$p = \frac{-q+36}{8}$$

3. If $p = 1.50$, what is the value of q? $q =$ _____24_____

Set $p = 1.50$ in the last equation

$$1.5 = \frac{-q+36}{8}$$
$$(1.5)8 = -q+36$$
$$12 = -q+36$$
$$q = 36-12 = 24$$