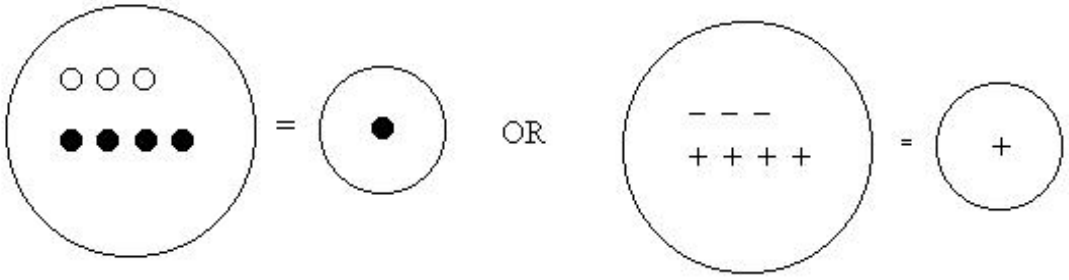
Math 325 Name KEY
Quiz 6

1. Draw either a chip or charged-field model for the operation $^-3 + 4$.



2. Simplify each of the following expressions as much as possible:

(a) $^-17 + 4 \cdot 3$

$$\begin{aligned} ^-17 + 4 \cdot 3 &= {}^-17 + 12 \\ &= {}^-5 \end{aligned}$$

(b) $(^-2)^4$

$$\begin{aligned} (^-2)^4 &= (^-2)(^-2)(^-2)(^-2) \\ &= 16 \end{aligned}$$

(c) $6 \div (3 - 6)$

$$\begin{aligned} 6 \div (3 - 6) &= 6 \div (^-3) \\ &= {}^-2 \end{aligned}$$

(d) $|4 - 6|$

$$\begin{aligned} |4 - 6| &= \left|^-2\right| \\ &= 2 \end{aligned}$$

3. Find all integers x that make the statement true.

(a) $^-x = 5$

$x = {}^-5$

(b) $|x| = 4$

$x = {}^-4$ or $x = 4$

(c) $^-x > 2$

x can be any integer less than $^-2$

(d) $x^2 = 9$

$x = {}^-3$ or $x = 3$

4. Determine if the number 624198 divisible by each of the following (make sure to explain your reasoning):

(a) divisible by 3.

The sum of the digits is 30.
Since $3|30$, it is divisible by 3.

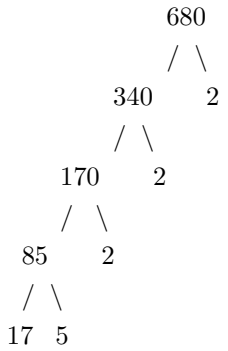
(b) divisible by 6.

Since the last digit is even, it is divisible by 2.
We know that it is divisible by 3 from part (a).
Since it is divisible by 2 and 3, it is divisible by 6.

(c) divisible by 8.

The 3-digit number at the end is 198. Since $8 \nmid 198$, the original number is not divisible by 8.

5. Find the prime factorization of 680.



$$680 = 2^3 \cdot 5 \cdot 17$$