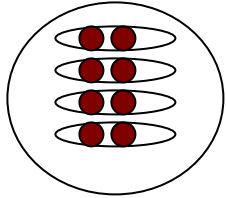


**Partial credit is based on work shown!**

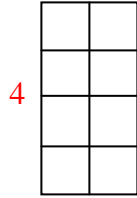
4pts

1. **Illustrate** that  $4 \times 2 = 8$  using the following **two different approaches**.

a. Set model

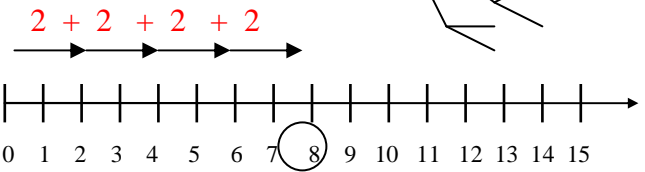


Four sets of two



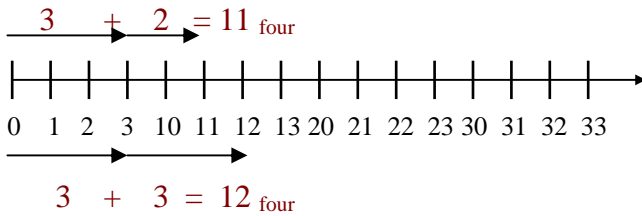
2

b. Number-line model



2pts

2. Use this base four number-line (or use “thinking strategies”) to do the following problems:



a.  $3_{four} + 2_{four} = \underline{11} \text{ four}$

b.  $2_{four} \times 3_{four} = \underline{12} \text{ four}$   
 2 sets of 3 = 3 + 3

4pts

3. Give the name of the property of whole numbers that each of the following illustrates.

a.  $5 \times 1 = 5$  identity for multiplication

b.  $3(8 + 7) = 3(8) + 3(7)$  distributive property

c.  $(9 \times 2) \times 7 = 9 \times (2 \times 7)$  associative property

d.  $5 + (4 + 3) = 5 + (3 + 4)$  commutative property

3pts

4. Is this set  $\{0, 5, 10, 15, 20, 25, 30, \dots\}$  of multiples of five closed for division? No  
 Explain.

When you divide two numbers from this set you may get answers that are NOT in this set.

For example: 10 divided by 5 = 2

2pts

5. Rewrite with a single exponent. Show your steps to illustrate the rules of exponents that you used.

$3^5 \cdot 9^3 = 3^5 \cdot (3^2)^3 = 3^5 \cdot 3^6 = 3^{11}$