Name Jack Date _____

1. Explain your thinking or use division to answer the following.

a. Is 2 a factor of 84? Yes. 84 is an even number. 2 is a factor of every even number.	b. Is 2 a factor of 83? No. 83 is an odd number. 2 is not a factor of odd numbers.
c. Is 3 a factor of 84? Yes. $3\overline{)84}$ → 28; −6; 24; −24; 0	d. Is 2 a factor of 92? yes. 92 is an even number.
e. Is 6 a factor of 84? yes. $6\overline{)84}$ → 14; −6; 24; −24; 0	f. Is 4 a factor of 92? yes. $4\overline{)92}$ → 23; −8; 12; −12; 0
g. Is 5 a factor of 84? No. 84 does not have a 5 or 0 in the ones place. All numbers that have 5 as a factor have a 5 or 0 in the ones place	h. Is 8 a factor of 92? No. $8\overline{)92}$ → 11 R4; −8; 12; −8; 4

2. Use the associative property to find more factors of 24 and 36.

a. $24 = 12 \times 2$

$= (4 \times 3) \times 2$

$= 4 \times (3 \times 2)$

$= 4 \times 6$

$= 24$

b. $36 = 9 \times 4$

$= (3 \times 3) \times 4$

$= 3 \times (3 \times 4)$

$= 3 \times 12$

$= 36$

3. In class, we used the associative property to show that when 6 is a factor, then 2 and 3 are factors, because $6 = 2 \times 3$. Use the fact that $8 = 4 \times 2$ to show that 2 and 4 are factors of 56, 72, and 80.

$56 = 8 \times 7$

$= (4 \times 2) \times 7$

$= 4 \times (2 \times 7)$

$= 4 \times 14$

$= 56$

$72 = 8 \times 9$

$= (4 \times 2) \times 9$

$= 4 \times (2 \times 9)$

$= 4 \times 18$

$= 72$

$80 = 8 \times 10$

$= (4 \times 2) \times 10$

$= 4 \times (2 \times 10)$

$= 4 \times 20$

$= 80$

4. The first statement is false. The second statement is true. Explain why using words, pictures, or numbers.

If a number has 2 and 4 as factors, then it has 8 as a factor.
If a number has 8 as a factor, then both 2 and 4 are factors.

$2 \overline{)28}$ → 14, -2, 08, -8, 0

$2 \times 14 = 28$

$4 \overline{)28}$ → 7, -28, 0

$4 \times 7 = 28$

$8 \overline{)28}$ → 3 R4, -24, 4

28 has 2 and 4 as factors but not 8.

Any number that can be divided exactly by 8 can also be divided by 2 and 4 instead since $8 = 2 \times 4$.

Example

$8 \times 5 = 40$

$(4 \times 2) \times 5 = 40$