

Name Jack Date \_\_\_\_\_

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

<p>a. Is 2 a factor of 84?</p> <p>Yes. 84 is an even number. 2 is a factor of every even number.</p>	<p>b. Is 2 a factor of 83?</p> <p>No. 83 is an odd number. 2 is not a factor of odd numbers.</p>
<p>c. Is 3 a factor of 84?</p> <p>Yes.</p> $\begin{array}{r} 28 \\ 3 \overline{)84} \\ \underline{-6} \\ 24 \\ \underline{-24} \\ 0 \end{array}$	<p>d. Is 2 a factor of 92?</p> <p>Yes. 92 is an even number.</p>
<p>e. Is 6 a factor of 84?</p> <p>Yes.</p> $\begin{array}{r} 14 \\ 6 \overline{)84} \\ \underline{-6} \\ 24 \\ \underline{-24} \\ 0 \end{array}$	<p>f. Is 4 a factor of 92?</p> <p>Yes.</p> $\begin{array}{r} 23 \\ 4 \overline{)92} \\ \underline{-8} \\ 12 \\ \underline{-12} \\ 0 \end{array}$
<p>g. Is 5 a factor of 84?</p> <p>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.</p>	<p>h. Is 8 a factor of 92?</p> <p>No.</p> $\begin{array}{r} 11 \text{ R}4 \\ 8 \overline{)92} \\ \underline{-8} \\ 12 \\ \underline{-8} \\ 4 \end{array}$

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.

$$\begin{array}{r} 14 \\ 2 \overline{)28} \\ \underline{-2} \phantom{0} \\ 08 \\ \underline{-8} \\ 0 \end{array}$$

$2 \times 14 = 28$

$$\begin{array}{r} 7 \\ 4 \overline{)28} \\ \underline{-28} \\ 0 \end{array}$$

$4 \times 7 = 28$

$$\begin{array}{r} 3 \text{ R}4 \\ 8 \overline{)28} \\ \underline{-24} \\ 4 \end{array}$$

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

Example

$8 \times 5 = 40$

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

28 has 2 and 4 as factors but not 8.

