Name _____   Date _____

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

a. Is 2 a factor of 72? Yes because 72 is even and 2 is a factor of all even numbers.	b. Is 2 a factor of 73? No because 73 is odd and 2 is not a factor of odd numbers.
c. Is 3 a factor of 72? $\begin{array}{r} 24 \\ 3\overline{)72} \\ -6 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$ Yes because $3 \times 24 = 72$	d. Is 2 a factor of 60? Yes because 60 is even.
e. Is 6 a factor of 72? $\begin{array}{r} 12 \\ 6\overline{)72} \\ -6 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$ Yes because $6 \times 12 = 72$.	f. Is 4 a factor of 60? $\begin{array}{r} 15 \\ 4\overline{)60} \\ -4 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$ Yes because $4 \times 15 = 60$
g. Is 5 a factor of 72? No because 72 does not have a 5 or 0 in the ones place.	h. Is 8 a factor of 60? $\begin{array}{r} 7\ R4 \\ 8\overline{)60} \\ -56 \\ \hline 4 \end{array}$ No because there is a remainder.

COMMON CORE | **Lesson 23:** Use division and the associative property to test for factors and observe patterns.
Date: 8/28/13

engage^ny   **3.F.24**

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2. Use the associative property to find more factors of 12 and 30.

    a. $12 = 6 \times 2$

    $= (\underline{2} \times 3) \times 2$

    $= \underline{2} \times (3 \times 2)$

    $= \underline{2} \times 6$

    $= \underline{12}$

    b. $30 = \underline{6} \times 5$

    $= (\underline{2} \times 3) \times 5$

    $= \underline{2} \times (3 \times 5)$

    $= \underline{2} \times 15$

    $= \underline{30}$

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 $10 = 5 \times 2$ to show that 2 and 5 are factors of 70, 80, and 90.

    $70 = 10 \times 7$

    $= (2 \times 5) \times 7$

    $= 2 \times (5 \times 7)$

    $= 2 \times 35$

    $= 70$

    $80 = 10 \times 8$

    $= (2 \times 5) \times 8$

    $= 2 \times (5 \times 8)$

    $= 2 \times 40$

    $= 80$

    $90 = 10 \times 9$

    $= (2 \times 5) \times 9$

    $= 2 \times (5 \times 9)$

    $= 2 \times 45$

    $= 90$

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

    Ⓐ If a number has 2 and 6 as factors, then it has 12 as a factor.

    Ⓑ If a number has 12 as a factor, then both 2 and 6 are factors.

Ⓐ is false because 2 and 6 are factors of 18, but 12 is <u>not</u> a factor of 18.

Ⓑ is true because if 12 is a factor then 2 and 6 <u>must</u> also be factors since $12 = 2 \times 6$.

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engage^{ny}   3.F.25