

Math 200 - Quiz 10

November 14, 2012

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (1 point) Is the following statement true or false? If false, give a counterexample.

If $x | 12$, then $x | 6$.

FALSE, $4 | 12$ BUT $4 \nmid 6$.

2. (1 point) Scotty posed the following test for divisibility by 24: A whole number is divisible by 24 if and only if it is divisible by both 4 and 6. Give a counterexample to show the test is not valid.

12 IS DIVISIBLE BY BOTH 4 AND 6,
BUT 12 IS NOT DIVISIBLE BY 24.

3. (2 points) Test 878460 for divisibility by 2, 3, 4, 5, 6, 8, 9, 10, and 11.

By 2: YES BECAUSE $2 | 0$

By 3: YES BECAUSE $8+7+8+4+6+0 = 33$ AND $3 | 33$

By 4: YES BECAUSE $4 | 60$

By 5: YES BECAUSE $5 | 0$

By 6: YES BECAUSE DIVISIBLE BY 2 & 3

By 8: NO BECAUSE $8 \nmid 460$

By 9: NO BECAUSE $9 \nmid 33$

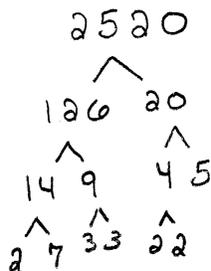
By 10: YES BECAUSE $10 | 0$

By 11: YES BECAUSE

$$(8+8+6) - (7+4+0) = 11$$

AND $11 | 11$

SUM OF DIGITS
↓



$$2520 = 2^3 \cdot 3^2 \cdot 5 \cdot 7$$