Name:_____ **Date:**_____

Math 8 Honours HW 1.3 Dividing with Divisibility Rules

1. How many of the following numbers are divisible by 3? (No calculators)

a) 115	b) 285	c) 498	d)9381	e) 3951	f) 52376

2. How many of the following numbers are divisible by 11? (No calculators)

a) 4013	b) 4301	c) 30932	d)7392	e)69319	f)495614

3. How many of the following numbers are divisible by 7? (No calculators)

a)1645	b) 4398	c)23030	d)46231	e)18557	f)82311

4. Given that the following numbers are all divisible by 3, what are the values of "A"?

a) $4A3$	b) $3981A$	c)392AA	d)29A314A

5. Given that the following numbers are all divisible by 11, what are the values of "A"?

a) $6A2$	b) $1234A$	c)356A2A	d) 356AA

6. If the 5-digit number $1732p$ is divisible by 9, determine the value of p.

7. What digit can replace K so that the number $9K73K0$ is divisible by 6?

8. How many positive integers less than 124 are divisible by 2 and 3 but not 5?

9. What is the least positive integer divisible by 2, 3, 4, 5, and 6?

10. A boy can divide his marble collection into even groups of 3, 4, or 6. What is the smallest number of marbles in his collection?

11. If x and y are two distinctive natural numbers divisible by 13, determine the smallest possible sum of these two numbers.

12. What is the smallest 3 digit number divisible by the first 3 prime as well as the first 3 composite numbers?

13. The number $3N + 63$ is divisible by 7. Explain whether N would be divisible by 7.

14. Use the digits 4, 5, 7, 9, and one additional digit, construct the largest possible 5-digit number divisible by 6.

15. It is given that a number is divisible by both 6 and 26. Name two other factors of the number. Show your work.

16. The integers a and b are both divisible by 2. Determine and explain whether each of the following statements would be always true or not. Provide a counter example to prove that a statement may not always be true. [Hint: If you are stuck, consider plugging in numbers for a and b and see if you can determine a trend.]

    a. $a + b$ is divisible by 2

    b. $a - b$ is divisible by 2

c. $a+b$ is divisible by 4

e. ab is divisible by 4

d. a^2+b^2 is divisible by 4

17. How many numbers between 200 and 2000 are divisible by 6 or 7 but not both?

18. When Rachel divides her favourite number by 7, the remainder is 5. What will the remainder be if Rachel multiply her favourite number by 5 then divide by 7?

19. The integers r, s, and t are three consecutive integers. Their sum is always divisible by at least 2 integers. What are those two numbers?

19. How many of the integers between 1400 and 2400, inclusive are an integer multiple of either 15 or 16 (or both)?

20. Challenge: The digits 1, 2, 3, 4, and 5 are each used once to compose a five digit number *abcde* such that the three digit number *abc* is divisible by 4, *bcd* is divisible by 5, and *cde* is divisible by 3. Find the digit "a"

The number of positive integers between 200 and 2000 that are multiples of 6 or 7 but not both is:

(a) 469 (b) 471 (c) 513 (d) 514 (e) 557

The number of integers between 500 and 600 which have 12 as the sum of their digits is:

(A) 6 (B) 7 (C) 8 (D) 10 (E) 12

The digits 1, 2, 3, 4, and 5 are each used once to compose a five digit number *abcde* such that the three digit number *abc* is divisible by 4, *bcd* is divisible by 5, and *cde* is divisible by 3. Find the digit *a*.

The number of integers between 1400 and 2400, inclusive, which are an integer multiple of either 15 or 16 (or both) is:

(a) 65 (b) 120 (c) 125 (d) 130 (e) 150

BONUS

What is the remainder when $8^6 + 7^7 + 6^8$ is divided by 5?