Name:_____ **Date:**_____

Math8H 2025 Lesson 5 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. Indicate if the following statements are TRUE or FALSE:
   a) If a number is divisible by 9, then it must be divisible by 3

   b) If a number is divisible by 3, then it must be divisible by 9

   c) If a number is divisible by 2 and 4, then it must be divisible by 8

   d) All even numbers that are divisible by 3 are also divisible by 6

   e) If a number is divisible by 5, then the last digit must be a 0

   f) The number 3AA78 can never be divisible by 11

   g) If "A" is divisible by 3 and "B" is divisible by 3, then A+B is also divisible by 3

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

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

9. Suppose the 6 digit number 2A5A93 is divisible by both 3 and 11, what are the possible values of the single digit number "A"?

10. What is the smallest positive integer that is divisible by 2, 3, 4, 5, and 6?

11. 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?

12. What is the smallest 3 digit number that is 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. Find the least perfect square number which is divisible by each of the numbers 8 ,12 ,15 and 20

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

17. 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

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

    e. ab is divisible by 4

Challenge Section:

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?

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

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

22. Ultimate 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"