

Divisibility Rules Poster

Congratulations on your purchase of this Really Good Stuff® **Divisibility Rules Poster**. This colorful poster will introduce your students to the Rules of Divisibility and provide practice in using and memorizing them.

This Really Good Stuff® product includes:

- **Divisibility Rules Poster**, laminated
- This Really Good Stuff® Activity Guide

Introducing the *Divisibility Rules Poster*

These activities assume that students have already learned division using long division, with the aid of a calculator, and in their heads. Introduce the **Divisibility Rules Poster** as a tool to help students do division problems. Emphasize that just as no one tool is right all the time when building a house, no one tool is right all the time when doing math. As with building tools, the more tools you have to choose from, the easier it is to do the job quickly and well. Point out that students will learn how to use the Divisibility Rules and when to use them. Review the terms *divisible*, *sum*, *digits*, and *remainder*.

Activity 1: Understanding Divisibility Rules

Read each rule and example of divisibility and then complete the last column of the chart

Divisible by	IF...	Use a calculator to prove each number is divisible
2	A number is divisible by 2 if it ends in 0 or is an even number. Example A: 30 is divisible by 2 because it ends in 0. Example B: 48 is divisible by 2 because it is an even number.	$30 \div 2 =$ $48 \div 2 =$
3	A number is divisible by 3 if the sum of the digits is divisible by 3. Example: 321 is divisible by 3 because $3+2+1=6$, and 6 is divisible by 3.	$321 \div 3 =$
4	A number is divisible by 4 if both the last two digits are 0 or if they are divisible by 4. Example A: 500 is divisible by 4 because it ends in two zeros. Example B: 2524 is divisible by 4 because 24 is divisible by 4.	$500 \div 4 =$ $2524 \div 4 =$
5	A number is divisible by 5 if it ends in 0 or 5. Example: 35 is divisible by 5 because it ends in 5.	$35 \div 5 =$
6	A number is divisible by 6 if it is divisible by both 2 and 3. Example: 150 is divisible by 6 because it is an even number and it can be divided by 3. See Rules 2 and 3.	$150 \div 6 =$
7	A number is divisible by 7 if you can double the last digit, subtract that number from the remaining digits of the original number, and the resulting answer is divisible by 7. Example: 357 is divisible by 7 because $7 \times 2 = 14$; $35 - 14 = 21$; 21 can be divided by 7.	$357 \div 7 =$
8	A number is divisible by 8 if the last three digits form a number that is divisible by 8. Example: 6008 is divisible because 008 can be evenly divided by 8.	$6008 \div 8 =$
9	A number is divisible by 9 if the sum of the digits is divisible by 9. Example: 81 is divisible by 9 because $8 + 1 = 9$; 9 is divisible by 9.	$81 \div 9 =$
10	A number is divisible by 10 if it ends in 0. Example: 400 is divisible by 10 because it ends in 0.	$400 \div 10 =$

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Activity 2: Matching Divisibility Rules

Place 2, 3, 4, 5, 6, 7, 8, 9, or 10 next to its rule of divisibility. Use each integer once only.

- _____ a. Last three digits form a number divisible by this integer
- _____ b. Last digit is 0 or an even number
- _____ c. Sum of the digits is divisible by this integer
- _____ d. Sum of the digits is divisible by this integer
- _____ e. Last two digits are both 0 or are divisible by this integer
- _____ f. Last digit is 5 or 0
- _____ g. Number is divisible by both 2 and 3
- _____ h. Double the last digit, subtract it from the remaining digits; answer is divisible by this integer
- _____ i. Last digit is 0

Activity 3: Practice Problems Using Divisibility Rules

Write "yes" next to all integers that divide evenly and then write the Divisibility Rule that supports your choice(s). The first problem has been completed as an example.

1. What divides evenly into 1850? (Example)

2	yes	Last digit is even or 0
3	no	
4	no	
5	yes	Last digit is zero or five
6	no	
7	no	
8	no	
9	no	
10	yes	Last digit is a 0

2. What divides evenly into 216?

2		
3		
4		
5		
6		
7		
8		
9		
10		

3. What divides evenly into 232?

2		
3		
4		
5		
6		
7		
8		
9		
10		

4. What divides evenly into 4992?

2		
3		
4		
5		
6		
7		
8		
9		
10		

5. What divides evenly into 1240?

2		
3		
4		
5		
6		
7		
8		
9		
10		

6. What divides evenly into 312?

2		
3		
4		
5		
6		
7		
8		
9		
10		

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Activity 4: Determining Divisibility

Test the divisibility of each of the numbers below and support your answers. Follow the example to set up your answers.

Example: Determine whether 225 is divisible by 2, 3, 4, 5, 6, 7, 8, or 9.
225 is not divisible by 2 since the last digit is not even.
225 is divisible by 3 since the sum of the digits is 9 and 9 is divisible by 3.
225 is not divisible by 4 since 25 is not divisible by 4.
225 is divisible by 5 since the last digit is 5.
225 is not divisible by 6 since it is not divisible by both 2 and 3.
225 is not divisible by 7 since 5 doubled and subtracted from 22 is not divisible by 7.
225 is not divisible by 8 since the last 3 digits are not divisible by 8.
225 is divisible by 9 since the sum of the digits is 9, and 9 is divisible by 9.

Answer: 225 is divisible by 3, 5, and 9.

Problem 1: Determine whether 644 is divisible by 2, 3, 4, 5, 6, 7, 8, or 9.

Answer: _____

Problem 2: Determine whether 3120 is divisible by 2, 3, 4, 5, 6, 7, 8, or 9.

Answer: _____

Problem 3: Determine whether 4725 is divisible by 2, 3, 4, 5, 6, 7, 8, or 9.

Answer: _____

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Activity 5: Multiple Choice

Read each question below. Circle the best answer. Support your answer with the Divisibility Rules that apply. Show all your work.

1. The number 300 is divisible by each of the following numbers except:
 - a. 2
 - b. 5
 - c. 8
 - d. 10
2. The number 4275 is divisible by each of the following numbers except:
 - a. 3
 - b. 5
 - c. 6
 - d. 9
3. Which of the following numbers is divisible by 3?
 - a. 4632
 - b. 261
 - c. 240
 - d. all of the above
4. Which of the following numbers is divisible by 6?
 - a. 644
 - b. 4160
 - c. 5700
 - d. none of the above
5. If a number is divisible by 9, then it is also divisible by which number?
 - a. 2
 - b. 3
 - c. 6
 - d. none of the above
6. Which of the following numbers have only one of the Divisibility Rules that apply to it?
 - a. 123
 - b. 38
 - c. 365
 - d. all of the above
7. Which of the following numbers is a prime number and therefore has no Divisibility Rules that apply to it?
 - a. 41
 - b. 481
 - c. 79
 - d. all of the above

Challenge Question

8. There are 20 students who need to be lined up. There can be any number of lines as long as each line has an equal number of students and a minimum number of five students. List all the possible ways the students could be lined up. Hint: Use the Divisibility Rules to help you.