

DIVISIBILITY RULE POETRY!!

By what numbers is 54 divisible?



***Every good student who goes to school,
Needs to know every divisibility rule!!***

**Help your students master divisibility rules quickly
using these simple rhymes and step-by-step process for
implementation!**

Justification and Instructions for Using this Product

Teacher: "Simplify the fraction, $\frac{90}{225}$ "

Student: "I know I need to divide, but by what number?"

Teacher: "Find all the factors of 144?"

Student: "How can I determine what numbers divide 144 with no remainder?"

Teacher: "There are 24 blue marbles and 72 red marbles in a bag? If I pull one marble out, what is the probability that the marble is blue? Write your answer in simplest fractional form."

Student: "I know the probability is $\frac{24}{96}$. But how do I put it in simplest form?"

Teacher: "Is the number 87 prime or composite?"

Student: Composite means "more than two factors". But how do I quickly determine if 87 is composite?"

The answer to all of the student questions is simple: "**Divisibility Rules**". These rules are useful in so many ways:

- To find factors, common factors and greatest common factors.
- To determine whether a number is prime or composite.
- In simplifying fractions.
- To solve probability problems where the probability is expressed in fractional form.
- For whole number and decimal division
- For use in advanced high school math classes and on the PSAT and SAT tests (really ... I have had a number of former students tell me they used divisibility rules on these college entrance exams).

The list goes on and on. Divisibility rules are so useful that I require every student in my sixth grade classroom to master all of them, taking similar mastery tests again and again to ensure that they know how to apply the rules for divisors 1,2,3,4,5,6,9, and 10.

To assist them with these, I created "*Divisibility Rule Poetry*", which we recite and apply daily during a short but intensive divisibility rule unit to help ensure the rules are memorized and retained. The same former students who tell me they have used the rules in advanced high school math classes or college entrance exams can usually recite the poetry, word for word, several years after leaving my classroom. The poetry and examples of application of the poetry are included in this document. **Associated worksheets, keys, and mastery tests can be obtained individually in other "Divisibility Rule Poetry" products, or by purchasing the discounted, bundled "Divisibility Rule Poetry - Worksheets, Keys, and Mastery Tests" packet.**

Approximate Divisibility Rule Unit Schedule

Teachers should use this packet by roughly following the schedule below. The number of days required to ensure retention may be more or less than indicated, depending upon the ability level of the class (and, of course, the passion with which the poetry is taught).

Day 1:

- Explain the importance and usefulness of the rules
- Recite the "Divisibility Rule Poetry" (page 5 - having the students repeat it after you and explaining the rules as you go).
- Use the "Divisibility Rule Poetry Example/Notes" sheet (blank sheet on page 6, key on page 7) to have the students take notes on how to apply each rule.

Day 2:

- Recite the poetry again, this time saying the first line for each divisor and having the students complete the second line (for example, you say, "If it's even its true ..." and they say "*It's divisible by 2!*" in unison).
- Provide other numbers to the students and have them apply the divisibility rule poetry to these numbers as they did on the "Divisibility Rule Poetry Example/Notes" sheet on Day 1. For example, choose 2025 as the number to which to apply the divisibility rules, and then have the students explain whether 2025 is divisible by 1,2,3,4,5,6,9, and 10, and why/why not for each divisor. **To see the worksheet that I use for Day 2, along with the key, purchase "Divisibility Rule Poetry - Worksheets, Keys, and Mastery Tests" or purchase each worksheet separately in other "Divisibility Rule Poetry" products.** Be sure to emphasize that the *Divisibility Rules* must be used. Some students may choose to ignore the rules and simply divide (long division) by each divisor. Of course, this method completely defeats the purpose of having divisibility rules, and should be nixed as early as possible.

Day 3:

- Recite the poetry again. This time ask for volunteers for the poetry for each divisor, and see how many hands you get. Then, after the student recites the poetry for that divisor, have the entire class recite it together.
- Have the students correct their work from Day 2. Emphasize again that the *Divisibility Rules* must be used to get their answers, and that simply using division is unacceptable. Note that a variety of answers are acceptable, as long as they have demonstrated how they apply the rule to each particular divisor for the number in question (*simply re-writing the poetry as an explanation is NOT acceptable either, students should show the work they did to apply the poetry!*).
- Have the students attempt again to apply the Divisibility Rule Poetry to additional numbers WITHOUT referring to the poetry sheet unless necessary (see if they are getting the rules into their heads to the point where they no longer need the poetry sheet). Make sure they are again working through examples where they explain

reasons why a number is or is not divisible by each divisor. On the third day, you should also give the students more critical thinking examples to work through using divisibility rules. For example, the students could be asked to identify a number divisible by 2 AND 3 AND 4, which requires them to bring their divisibility thinking skills to a higher level. This level of critical thought helps to ensure retention of the rules. **To see the worksheet that I use for Day 3, along with the associated key, purchase "Divisibility Rule Poetry - Worksheets, Keys, and Mastery Tests".**

Day 4:

- Repeat the process used on Day 3 for reviewing the poetry.
- If you think the students have "got it", you may jump directly to a **mastery test**, which tests to ensure if ALL of the rules are mastered, at this point. If not, review the examples you did on Day 3, having the students self-correct them, and spend another day going through different examples and critical thinking problems. **To see the worksheet that I use for Day 4, along with the associated key, purchase "Divisibility Rule Poetry - Worksheets, Keys, and Mastery Tests".**

Day 5:

- Review another example using the poetry if you deem it necessary.
- Give the students a **Divisibility Rules Mastery Test** and see how many pass (this must be with NO errors ... every divisibility rule must be mastered!) on the first try. ***If you have followed these instructions to the letter, most of the students will pass on the first try!*** **To see the Mastery Tests that I use, along with the associated keys, purchase "Divisibility Rule Poetry - Worksheets, Keys, and Mastery Tests".**

Weeks 2 through 5 (or however long it takes for the entire class to pass the **mastery tests** ... my experience has been that 5 tests is more than enough):

- Do more warm-up problems for the entire class using divisibility rules (review for all is always good).
- Conduct remediation as necessary for those not passing.
- Give additional **mastery tests** until all students have passed.

Remainder of the school year:

- Use divisibility rules to find factors, divide, do fraction problems, determine probability, and anywhere and everywhere else they may apply. This should ensure your students both master and retain all of these divisibility rules.

Rest of your teaching career:

- Be prepared to have former students come back years later thanking you for what you have done for them using your divisibility rule poetry.

Best of luck with your implementation of this ***Divisibility Rule Poetry*** packet!

Divisibility Rule Poetry

Every good student who goes to school,
Needs to know every divisibility rule.....

- 1 If it's a whole number, you're done,
It's divisible by **one**.
- 2 If it's even, it's true
It's divisible by **two**.
- 3 Add the digits to see
If it's divisible by **three**.
- 4 Divide the last two digits by four,
And you'll get **four** for sure.
- 5 If it ends with five or zero,
It makes **five** a hero.
- 6 If you got two and three
You get **six** for free!
- 9 Add the digits, that's fine
To check on the **nine**.
- 10 A zero at the end
And we'll feel good about **ten**.

Memorize each and every single rule,
And you'll feel even better about coming to school.

Divisibility Rule Poetry Example/Notes

Use the poetry to test the number (dividend) **5622** for divisibility by each of the divisors.

Divisor	Poetry	Divisible (Y/N)	Why/Why Not?
<u>1</u>	If it's a whole number, you're done, It's divisible by one .		
<u>2</u>	If it's even, it's true It's divisible by two .		
<u>3</u>	Add the digits to see If it's divisible by three .		
<u>4</u>	Divide the last two digits by four, And you'll get four for sure.		
<u>5</u>	If it ends with five or zero, It makes five a hero.		
<u>6</u>	If you got two and three You get six for free!		
<u>9</u>	Add the digits, that's fine To check on the nine .		
<u>10</u>	A zero at the end And we'll feel good about ten .		

Divisibility Rule Poetry Example/Notes (KEY)

Use the poetry to test the number (dividend) **5622** for divisibility by each of the divisors.

Divisor	Poetry	Divisible (Y/N)	Why/Why Not?
<u>1</u>	If it's a whole number, you're done, It's divisible by one .	YES	All whole numbers are divisible by 1.
<u>2</u>	If it's even, it's true It's divisible by two .	YES	5622 is EVEN.
<u>3</u>	Add the digits to see If it's divisible by three .	YES	$5 + 6 + 2 + 2 = 15$. $15 \div 3 = 5$ (NO remainder!).
<u>4</u>	Divide the last two digits by four, And you'll get four for sure.	NO	$22 \div 4 = 5$ r2. There IS a remainder so 5622 is NOT divisible by 4.
<u>5</u>	If it ends with five or zero, It makes five a hero.	NO	5622 does NOT end in 5 or 0 (there is not a 5 or 0 in the ones place).
<u>6</u>	If you got two and three You get six for free!	YES	5622 IS divisible by BOTH 2 AND 3!
<u>9</u>	Add the digits, that's fine To check on the nine .	NO	$5 + 6 + 2 + 2 = 15$. $15 \div 9 = 1$ r6 (There IS a Remainder).
<u>10</u>	A zero at the end And we'll feel good about ten .	NO	5622 does NOT end in a 0 (there is not a 0 in the ones place).