DIVISIBILITY RULES

ENGAGE:

Give the following prompts to your students and allow about 10 minutes of discussion. (this is on the PowerPoint)

- **Create a five digit number that is divisible by 2, 5, and 10.**
- **Create a five digit number that is divisible by 2, but not 5 or 10.**
- **Can you create a number that is divisible by 5, but not by ten?**

EXPLORE:

Spend a couple of minutes discussing the math prompts from above. Now have the students discuss what they know about divisibility of numbers (5-8 minutes). Use the next PowerPoint slide to begin the discussion and exploration of divisibility rules.

EXPLAIN:

Use the PowerPoint slides to go through each of the divisibility rules. Have the students make a foldable of the rules for 2, 3, 4, 5, 6, 8, 9, and 10. Here is a link on how to create a foldable for student note-taking. http://www.fortheloveofteachingmath.com/2011/09/21/divisibility-rules/
This would be a good place to stop and continue the rest of this lesson during a second class period. The students have a set of sheets where they must show what they know about divisibility rules. You can assign them all to the students and let them work together in small groups, or assign one to each group.

EXTEND:

After the students have had ample time working with the divisibility rules activity sheets, discuss their findings. Then use the last PowerPoint slide as a challenge for them to try to devise a plan for determining the divisibility rules for seven. This is the most difficult of all rules, so you may want to have some students just research the rule and test it out. How you handle this challenge would depend on the level of your students. It would also be appropriate to use calculators for some of the rules, like 8 and 9.

Divisibility Rule for 7:

If you double the last digit and subtract it from the rest of the number and the answer is 0 or a # divisible by 7, then the whole number is divisible by 7. You can apply this rule again if needed.

DIVISIBILITY RULES

How do you know if a number is divisible by 2?

Rule:

Are these numbers divisible by 2? Circle the ones that are divisible by 2.

21	28	45	36	68	72	79	88
54	32	87	91	44	27	35	62

239	428	323	634	241
235	845	1,247	2,358	3,357

Written response:

Explain why the numbers circled above are all divisible by 2.

Write a 6 digit number that is divisible by 2.

Write a 7 digit number that is divisible by 2.

Write an 8 digit number that is divisible by 2.

DIVISIBILITY RULES

How do you know is a number is divisible by 3?

Rule:

Are these numbers divisible by 3? Circle the ones that are divisible by 3.

21	28	45	36	68	72	79	88
54	32	87	91	44	27	35	62
239	428	323	634	241			
235	845	1,247	2,358	3,357			

Written response:

Explain why the numbers circled above are all divisible by 3.

Write a 6 digit number that is divisible by 3.

Write a 7 digit number that is divisible by 3.

Write an 8 digit number that is divisible by 3.

DIVISIBILITY RULES

How do you know a number is divisible by 4?

Rule:

Are these numbers divisible by 3? Circle the ones that are divisible by 4.

235	428	323	634	241
239	845	1,247	2,358	3,357
2,128	4,536	6,872	7,988	

Written response:

Explain why the numbers circled above are all divisible by 4.

Write a 6 digit number that is divisible by 4.

Write a 7 digit number that is divisible by 4.

Write an 8 digit number that is divisible by 4.

DIVISIBILITY RULES

How do you know a number is divisible by 5?

Rule:

Are these numbers divisible by 5? Circle the ones that are divisible by 5.

235	428	320	634	241
239	845	1,247	2,355	3,357
2,128	4,536	6,872	7,980	

Written response:

Explain why the numbers circled above are all divisible by 5.

Write a 6 digit number that is divisible by 5.

Write a 7 digit number that is divisible by 5.

Write an 8 digit number that is divisible by 5.

DIVISIBILITY RULES

How do you know a number is divisible by 6?

Rule:

Are these numbers divisible by 6? Circle the ones that are divisible by 6.

235	228	323	636	241	
390	845	2,247	2,358	3,357	
2,128	4,536	6,872	7,988		

Written response:

Explain why the numbers circled above are all divisible by 6.

Write a 6 digit number that is divisible by 6.

Write a 7 digit number that is divisible by 6.

Write an 8 digit number that is divisible by 6.

DIVISIBILITY RULES

How do you know a number is divisible by 8?

Rule:

Are these numbers divisible by 8? Circle the ones that are divisible by 8.

235	228	323	636	241	
390	845	2,247	2,358	3,357	
2,128	4,536	6,872	7,988		

Written response:

Explain why the numbers circled above are all divisible by 8.

Write a 6 digit number that is divisible by 8.

Write a 7 digit number that is divisible by 8.

Write an 8 digit number that is divisible by 8.

DIVISIBILITY RULES

How do you know a number is divisible by 9?

Rule:

Are these numbers divisible by 9? Circle the ones that are divisible by 9.

135	428	324	634	241
239	405	1,247	2,358	3,357
2,128	4,536	6,876	2,988	

Written response:

Explain why the numbers circled above are all divisible by 9.

Write a 6 digit number that is divisible by 9.

Write a 7 digit number that is divisible by 9.

Write an 8 digit number that is divisible by 9.

DIVISIBILITY RULES

How do you know a number is divisible by 10?

Rule:

Are these numbers divisible by 10? Circle the ones that are divisible by 10.

235	420	323	635	241
240	845	1,240	2,358	3,000
2,128	4,536	6,872	7,960	

Written response:

Explain why the numbers circled above are all divisible by 10.

Write a 6 digit number that is divisible by 10.

Write a 7 digit number that is divisible by 10.

Write an 8 digit number that is divisible by 10.