

*Important Concepts . . .*

# Preview Review



**Mathematics   Grade 7   TEACHER KEY**  
**W1 - Lesson 1: Divisibility Rules**

## Important Concepts of Grade 7 Mathematics

W1 - Lesson 1 .....	Divisibility Rules
W1 - Lesson 2 .....	Decimal Numbers
W1 - Lesson 3 .....	Fractions
W1 - Lesson 4 .....	Improper Fractions, Mixed Numbers, Percents, and Decimals
W1 - Lesson 5 .....	Integers, Number Lines, and Sequencing
W1 - Quiz	
W2 - Lesson 1 .....	Table of Values and Graphing Linear Equations
W2 - Lesson 2 .....	Modeling Expressions, Equations, and the Preservation of Equality
W2 - Lesson 3 .....	Algebra and Linear Equations
W2 - Lesson 4 .....	Statistics
W2 - Lesson 5 .....	Circle Graphs and Calculating Probability
W2 - Quiz	
W3 - Lesson 1 .....	Circles
W3 - Lesson 2 .....	Area of Triangles and Parallelograms
W3 - Lesson 3 .....	Line Segments
W3 - Lesson 4 .....	Parts and Plotting on a Cartesian Plane
W3 - Lesson 5 .....	Transformations
W3 - Quiz	

## Materials Required

Math set  
Calculator

**No Textbook  
Required**

**This is a stand-  
alone course.**

Mathematics Grade 7

Version 6

Preview/Review W1 - Lesson 1

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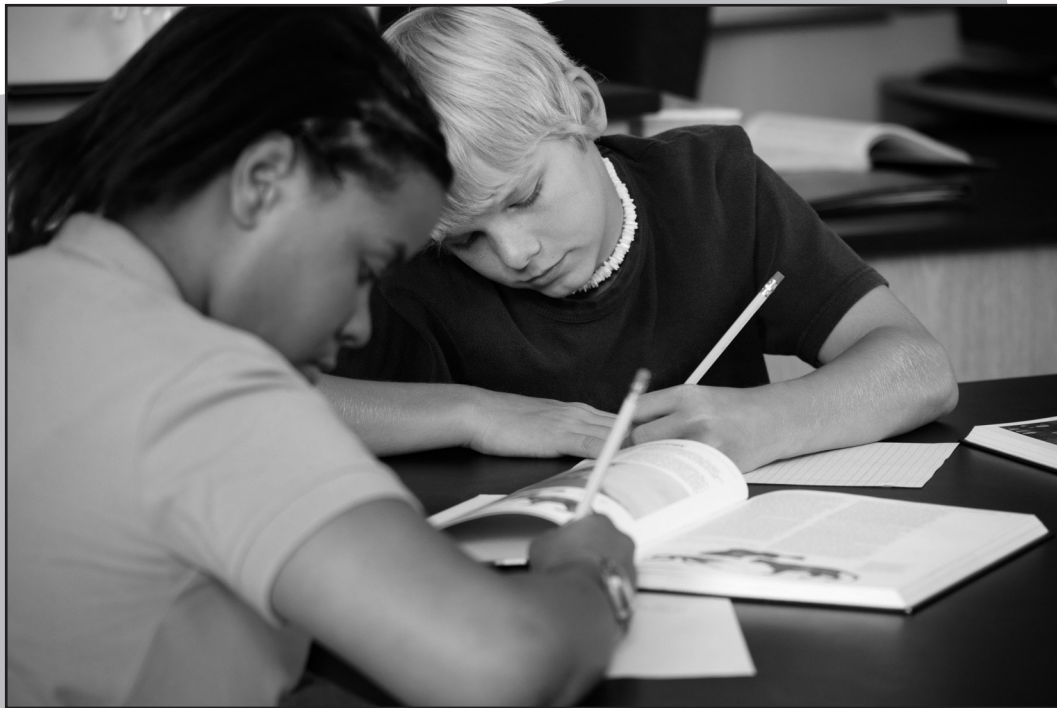
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# Preview/Review Concepts for Grade Seven Mathematics

## Teacher Key



***W1 – Lesson 1:***

***Divisibility Rules***

## **Introductory Information for Teachers**

Preview/Review courses are aimed mainly at students who have completed the regular course but who need to review some of the material before beginning the next grade. Other students may find Preview/Review courses useful in preparing for the new concepts they will study in their next grade.

No Preview/Review course is intended to replace the regular course because each covers only what the writers have decided are the top 15 concepts from the Program of Studies for that course.

Preview/Review materials are intended for use by teachers and students in one-subject and one-grade classrooms. This Preview/Review course contains fifteen lessons in three sections. Each section has five lessons. A short quiz is provided at the end of each section to test student knowledge of the material studied. In a classroom the course will likely be completed in three weeks.

This Preview/Review course is written to be stand-alone. There is no textbook required.

## W1 - Lesson 1: Divisibility Rules

### Objective:

- I can tell if a number can be divided by 2, 5, or 10.

### Looking for Divisibility Patterns

- Circle any boxes with numbers that are multiples of 2. Do you see a pattern?  
**All are even numbers.**
- Put an X through any boxes with numbers that are multiples of 5. Do you see a pattern?  
**Ends in 5 or 0.**
- Colour any boxes with numbers that are multiples of 10. Do you see a pattern?  
**Ends in 0.**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

#### A number is divisible

- by 2, when the last digit is **EVEN**
- by 5, when the last digit is **0 or 5**
- by 10, when the last digit is **0**

If a number is divisible by 10, it is also divisible by 2 and 5.

2278 is a multiple of 2; 2278 is also divisible by 2.

**Multiple of** and **divisible by** are very similar!

### Practice

Complete the chart. Put a (✓) if the number is divisible by 2, 5, or 10; put a (✗) if it is **not**.

	2	5	10
540	✓	✓	✓
330	✓	✓	✓
1 432	✓	✗	✗
2 256	✓	✗	✗
58 125	✗	✓	✗
950	✓	✓	✓
6 395	✗	✓	✗

**Objective:**

- *I can tell if a number can be divided by 4 and 8.*

**A number is divisible**

- by **4**, when the **last two digits** are a multiple of **4**
- by **8**, when the **last three digits** are a multiple of **8**

If a number is divisible by 4, it is also always divisible by 2.

If a number is divisible by 8, it is also always divisible by 2 and 4.

**Practice**

Complete the chart. Put a (✓) if the number is divisible by 2, 4, or 8; put a (✗) if it is **not**.

	2	4	8
2012	✓	✓	✗
330	✓	✗	✗
1 432	✓	✓	✓
2 140	✓	✓	✗
58 125	✗	✗	✗
720	✓	✓	✓
6 397	✗	✗	✗

Example: 2012

- 2 is even, 2012 is divisible by 2
- 12 is  $4 \times 3$ , 2012 is divisible by 4
- 2012 is not divisible by 8

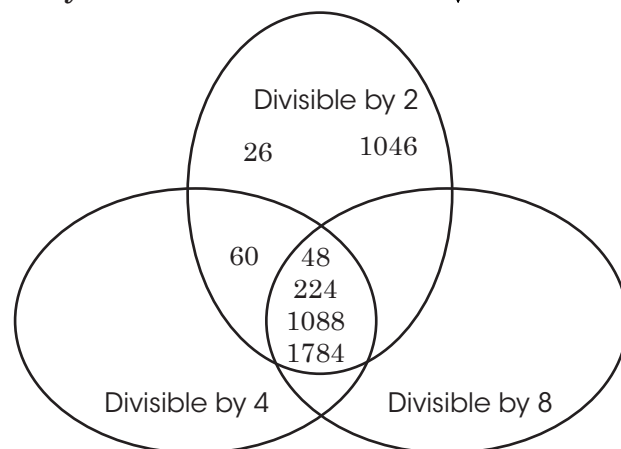
**Venn Diagram**

Draw a Venn diagram with three loops. Label the loops "divisible by 2", "divisible by 4", and "divisible by 8".

Put these numbers into the Venn Diagram.

26, 48, 224, 460, 1046, 1088, 1784

Hint: Putting a number in overlapping parts of the loops means the number is divisible by both or by all.



**Objective:**

- I can tell if a number can be divided by 3, 6, and 9.*

**A number is divisible**

- by **3**, when the sum of the digits are a multiple of **3**
- by **6**, when it is also divisible by **2 and 3**
- by **9**, when the sum of the digits are a multiple of **9**

If a number is divisible by 9, it is also always divisible by **3**.

**Practice**

Complete the chart. Put a (✓) if the number is divisible by 2, 3, 6, or 9; put a (✗) if it is **not**.

	2	3	6	9
4410	✓	✓	✓	✓
721	✗	✗	✗	✗
1 527	✗	✓	✗	✗
2 240	✓	✗	✗	✗
58 125	✗	✓	✗	✗
720	✓	✓	✓	✓
6 396	✓	✓	✓	✗

**Carroll Diagram**

Sort the following numbers into the proper position on the chart.

24, 32, 55, 72, 252, 1104, 1248, 9116, 11 337

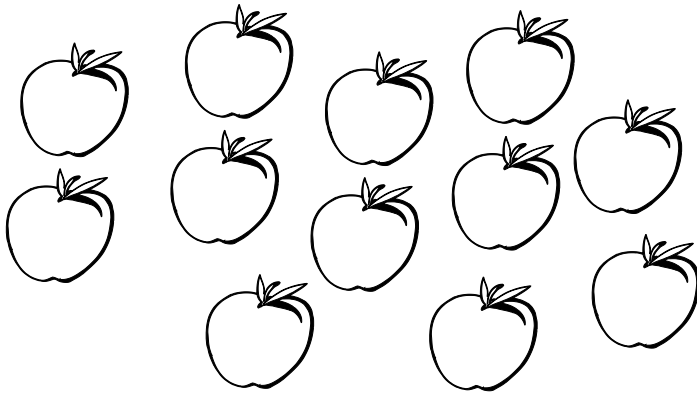
	Divisible by 3	Not Divisible by 3
Divisible by 4	24, 72, 252, 1104, 1248	32, 9116
Not Divisible by 4	11 337	55



**Objective:**

- *I can explain why a number is never divisible by 0.*

Twelve apples are on a table. If 3 people sit at the table, how many apples can each person have?



$$12 \div 3 = \underline{4}$$

What if no one sits at the table?

$$12 \div 0 = \underline{\textit{undefined}}$$

A guide needs to take 8 people across a river. How many times will he have to travel back and forth if the boat can take 2 passengers at a time?



$$8 \div 2 = \underline{4}$$

How many times would it take if the boat could fit only the guide?

$$8 \div 0 = \underline{\textit{undefined}}$$



## Summary and Practice:

- Using what you learned answer the following questions

- In your own words, write the correct divisibility rule in each section.

2	3	4	5
<i>The number is even.</i>	<i>The sum of the digits is divisible by 3.</i>	<i>The last two digits are divisible by 4.</i>	<i>The last digit is 5 or 0.</i>
<i>The number is divisible by 2 and 3.</i>	<i>The last three digits are divisible by 8.</i>	<i>The sum of the digits is divisible by 9.</i>	<i>The last digit is 0.</i>
6	8	9	10

### Divisibility Rules

- Write T if the statement is true or F if the statement is false:

  **T**   a. A number divisible by 9 is also divisible by 3.

  **T**   b. A number divisible by 4 is also divisible by 2.

  **F**   c. A number divisible by 5 is also divisible by 10.

- Explain, using divisibility rules, how you know the number 5439 is a multiple of 3 but not a multiple of 9?

*The sum of the digits ( $5 + 4 + 3 + 9 = 21$ ) is divisible by 3, but is not divisible by 9.*

4. Complete the chart. Put a (✓) if the number is divisible by 2, 3, 6, or 9; put a (✗) if it is **not**.

	2	3	4	5	6	8	9	10
4 410	✓	✓	✗	✓	✓	✗	✓	✓
34	✓	✗	✗	✗	✗	✗	✗	✗
645	✗	✓	✗	✓	✗	✗	✗	✗
1 458	✓	✓	✗	✗	✗	✗	✓	✗
2 832	✓	✓	✓	✗	✓	✓	✗	✗
7 420	✓	✗	✓	✓	✗	✗	✗	✓
6 396	✓	✓	✓	✗	✓	✗	✗	✗

5. Use the digits 0 to 9. Replace the \_\_\_ in each number to make a number divisible by 4. Find as many answers as you can.

a. 592\_\_\_

**0, 4, 8**

b. 771 5\_\_\_8

**0, 2, 4, 6, 8**

c. 95 \_\_\_16

**0 to 9**

6. What is the largest 4-digit number divisible by 5? How did you arrive at this number?

***9995 The largest single digit is 9. The number must end in 0 or 5, and 5 is greater than 0.***

7. Write a five-digit number that is divisible by 3 and 5. Explain how you came up with your number.

***Answers will vary. 10 005 The number must end in a 5 with the sum of the digits divisible by 3.***

8. If a number is divisible by 6 and 10, what is the smallest number other than 1 that it is also divisible by? How do you know?

***The number would be divisible by 2 because 10 and 6 are also divisible by 2.***

9. Sam is babysitting 4 toddlers. He has 224 jellybeans in a bag. With 4 crying kids hanging off him, how could Sam use divisibility rules to decide quickly if the jellybeans could be split evenly 4 ways?

***Sam has to look only at the last two digits (24) to know that the jellybeans will divide evenly among all 4 kids ( $24 \div 4 = 6$ ).***

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10. Andrew and Matthew discuss divisibility.

Andrew says, “280 is divisible by 5 and by 8.  
 $5 \times 8 = 40$ , so 280 is also divisible by 40.”

Matthew says, “296 is divisible by 4 and by 8.  
 $4 \times 8 = 32$ , so 296 is also divisible by 32.”

Are both Andrew and Matthew correct?

***Andrew is correct because  $280 \div 40 = 7$ .***

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***Matthew is incorrect because 296 is not divisible by 32.***

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***(Andrew should have said: “280 is divisible by 40 so it is also divisible by 5 and 8 because  $5 \times 8 = 40$ .”)***

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